The 5th Conference of the

European Society for Cognitive

and Affective Neuroscience

23-26 June, 2021

ONLINE

CONTENTS

WELCOME

We welcome the participants of the 5th Conference of the European Society for Cognitive and Affective Neuroscience on behalf of the community of cognitive and affective neuroscientists in Hungary!

The vision to host the conference was conceived in 2016, and we hoped to bring together scientists from all over Europe in the Budapest summer for an exchange of ideas, for getting to know like-minded and passionate researchers, and to form bonds that strengthen the fabric of science for years to come. Due to the COVID-19 pandemic, first we had to postpone the conference and then move it to a virtual format. But even without the possibility for an in-person meeting, the cognitive and affective neuroscience community showed its strength with more than 440 researchers from 36 countries presenting their results this week, as well as two pre-conference satellite events. We are honored and proud to host keynote lectures by Catherine Tallon-Baudry, Simone Shamay-Tsoory, and Philippe Schyns.

Although the program is packed into the three-and-a-half days of the conference, an upside of the online format is that all the content will be available online until the end of August, so you are not going to miss out on any of it. To facilitate interactions, all oral and poster presentations will already be available from the opening of the online conference platform.

We are grateful for the advice, guidance and support provided during these extraordinary times by the past and present presidents of ESCAN: Bernhard Hommel and Manos Tsakiris as well as the ESCAN Board. We thank Asszisztencia Ltd., Krisztina Jeszenői, Krisztina Szigedi, Csilla Fülöp and Kata Ferentziné Szegfű for their flexibility and unfaltering support during the preparations.

We are looking forward to meeting you online and wish you a pleasant and successful conference!

Zsófia Anna Gaál, Ferenc Honbolygó, János Horváth
Research Centre for Natural Sciences, Budapest, Hungary

CONGRESS COMMITTEES

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KEYNOTES

WEDNESDAY 23 JUNE 10:00 CEST

Prof. Catherine Tallon-Baudry

Ecole Normale Supérieure de Paris

Catherine Tallon-Baudry seeks to understand how brain activity turns into conscious experience. She currently investigates the role of both gastric-brain and heart-brain coupling in very different aspects of subjectivity.

VISCERAL INPUTS, BRAIN DYNAMICS AND SUBJECTIVITY

Subjectivity refers to the first-person perspective inherent to all aspects of conscious mental life, from sensory perception to decision making, from self-related cognition to emotions. Where does subjectivity come from? I propose and review experimental evidence that ascending visceral inputs, coming in particular from heart and stomach, might play a role in the generation of subjectivity.

THURSDAY 24 JUNE 10:00 CEST

Prof. Philippe Schyns

University of Glasgow

Philippe Schyns is a professor at University of Glasgow. His main research interest is the information processing mechanisms of face, object and scene categorization in the brain.

INFORMATION PROCESSING IN THE BLACK BOX OF THE BRAIN (AND DEEP NETWORKS)

A fundamental challenge in neuroscience is to understand how the brain processes information to make sense of the environment. How do we recognise that an image shows London instead of Glasgow? Neuroscientists often approach this question by measuring brain activity at different granularities. However, we must go beyond this and understand what these activities represent in terms of the specific stimulus information processed. We make this brain-activity-to-information leap with new tools that can reconstruct from brain activity the information processing that leads to recognition. Our novel methodology precisely varies stimuli to modulate the brain and behavioural responses of humans who recognize them (e.g. as "London" or "Glasgow"). From these variations, we can reconstruct the information processing networks that reveal where, when and how the brain processes specific stimulus-information to flexibly categorise scenes, objects and faces to behave adaptively.

FRIDAY 24 JUNE 10:00 CEST

Prof. Simone Shamay-Tsoory

University of Haifa

Simone Shamay-Tsoory is a professor at Haifa University, and lab director of Social and Affective Neuroscience Lab. Her main research interest is the understanding the neural mechanisms underlying social cognition and emotional experiences.

THE EMPATHY FEEDBACK-LOOP: A TWO-BRAIN APPROACH FOR UNDERSTANDING EMPATHY

Empathy allows us to understand and share one another's emotional experiences. Despite the developments in the study of empathy, the vast majority of empathy paradigms focus only on passive observers, carrying out artificial empathy tasks in socially deprived environments. This approach significantly limits our understanding of interactive aspects of empathy and how empathic responses affect the distress of the sufferer.

We recently proposed a brain model that characterizes how empathic reactions alleviate the distress of a target. In a series of experiments, we examined brain-to-brain coupling during empathic interactions. We show that, brain-to-brain coupling in the observation-execution (mirror) network increases in empathy conditions. Critically we found that brain-to-brain coupling predicts distress regulation in the target. We extend this work to understand interaction of groups and show aberrant synchrony in autism spectrum conditions.

We conclude that employing this multi-brain approach may provide a highly controlled setting in which to study social behavior in health and disease.

ESCAN YOUNG RESEARCHER AWARD LECTURE

THURSDAY 24 JUNE 18:05 CEST

Dr Leor Zmigrod

University of Cambridge

Dr Leor Zmigrod is a Research Fellow at the University of Cambridge. Her research harnesses experimental psychology and cognitive neuroscience to investigate the neurocognitive traits that underpin ideological dogmatism and extremism.

A NEUROCOGNITIVE MODEL OF IDEOLOGICAL THINKING

Since the birth of modern civilisation, humans have been creating stories that capture their theories about how the world works and how they should act within this complex world. These narratives both describe and prescribe human action, and exist in a kaleidoscope of forms – from religious doctrines to authoritarian nationalism to political manifestos. Why - and how - do these explosive ideologies seduce and captivate the human brain? New research illustrates that our ideologies may be tightly interconnected with our perceptual and cognitive architecture. Data-driven approaches highlight that ideological beliefs are amenable to careful cognitive and computational analysis, revealing the cocktail of cognitive traits that can make a mind more (or less) susceptible to ideological dogmatism.

WEDNESDAY, 23 JUNE 2021

Hours	CHANNEL 1	CHANNEL 2
9:50-10:00	Opening	
10:00-10:50	Keynote lecture by Catherine Tallon-Baudry	
11:00-12:20	**Symposium session 1.** Cognitive fatigue in the brain and body: A multi-method approach	**Symposium session 2.** The neural mechanisms underpinning joint action
12:20-12:50	Break	
12:50-13:55	**Symposium session 3.** The social cerebellum and its role in interaction sequences	**Symposium session 4.** Cortical and subcortical inhibition systems: Overlap and/ or interaction?
14:00-14:15	Break	
14:15-16:15	Oral presentations and posters	
16:15-16:30	Break	
16:30-17:50	**Symposium session 5.** Who doesn't like to be touched? Social and biological factors influencing affective touch perception	**Symposium session 6.** Person perception as a function of attention, emotion and learning history: Recent findings from electrophysiology
17:50-18:05	Break	
18:05-19:10	**Symposium session 7.** Using data-driven approaches to reveal the structure of emotion	**Symposium session 8.** Neurobiological underpinnings of event representations

WEDNESDAY, 23 JUNE 2021

	CHANNEL 1
10:00-10:50	KEYNOTE LECTURE BY PROF. CATHERINE TALLON-BAUDRY

Keynote speaker: Catherine Tallon-Baudry

A-0551   VISCERAL INPUTS, BRAIN DYNAMICS AND SUBJECTIVITY

Catherine Tallon-Baudry | *Ecole Normale Supérieure de Paris*

11:00-12:05	COGNITIVE FATIGUE IN THE BRAIN AND BODY: A MULTI-METHOD APPROACH

Session lead: Henk Van Steenbergen

This symposium showcases recent work from four different research groups on the impact of fatigue on the human brain, body, and cognition. A wide range of methods are employed, ranging from behavioral, physiological (pupil diameter and cardiovascular activity), and neural measures (EEG and fMRI) to neurochemical methods (MRS). In the first talk, Wiehler presents the first evidence that fatigue has specific effects on decision-making that can be linked to altered levels of glutamate accumulation in the prefrontal cortex. In the second talk, Lorist presents new data showing that typing behavior in the lab and office are sensitive to fatigue and that lab behavior is associated with altered neural processes measured with EEG. In the third talk, Van Steenbergen shows that alternating body posture alleviates specific fatigue-induced cognitive impairments in attention and decision making and that these changes relate to concomitant changes in cardiac effort. In the fourth talk, Apps put forward a unifying computational framework – a fatigue equation – that characterizes fluctuations in fatigue and behavior. He also shows that brain systems earlier associated with effort-based decision-making are involved in these computations.

Taken together, this symposium will help to facilitate a rich understanding the mechanisms at the cognitive, neuro-computational, neurochemical, and physiological level that together underlie fatigue-induced decrements in cognitive performance.

WEDNESDAY, 23 JUNE 2021

A-0296 HOW EXECUTIVE FATIGUE ARISES AND AFFECTS DECISION-MAKING

Antonius Wiehler[1], Francesca Branzoli[2], Isaac Adanyeguh[2], Fanny Mochel[3,4], Mathias Pessiglione[1] | *[1]Motivation brain behavior lab, Institut du Cerveau et de la Moelle épinière; (ICM), Sorbonne Universités Paris, France; [2]Center for Neuroimaging Research; (CENIR), Institut du Cerveau et de la Moelle épinière; (ICM), Sorbonne Universités Paris, France; [3]Institut du Cerveau et de la Moelle épinière; (ICM), Sorbonne Universités Paris, France; [4]Assistance Publique – Hôpitaux de Paris, Pitié-Salpêtrière Hospital, Paris, France*

A-0297 MONITORING MENTAL FATIGUE; FROM THE LAB TO THE OFFICE

Monicque M. Lorist, Marlon de Jong | *University of Groningen, The Netherlands*

A-0298 STAND UP FOR YOUR BRAIN: THE EFFECT OF BODY POSTURE ON MENTAL FATIGUE AND COGNITIVE PERFORMANCE

Henk van Steenbergen | *Leiden University, the Netherlands*

A-0299 NEURO-COMPUTATIONAL MECHANISMS OF MOMENT-TO-MOMENT FATIGUE AND ITS IMPACT ON MOTIVATION

Matthew Apps[1,2] | *[1]University of Oxford; [2]University of Birmingham*

	CHANNEL 2
11:00-12:20	THE NEURAL MECHANISMS UNDERPINNING JOINT ACTION

Session leads: Anna Zamm and Arianna Curioni

The ability to coordinate one's own actions with others' actions is fundamental to many social behaviours, from team sports to conversational speech. Interpersonal coordination of actions affords numerous social benefits such as enhanced rapport, compassion, and prosocial behavior between co-actors. One question facing the field of social neuroscience is what neural mechanisms allow individuals to coordinate actions with others in joint tasks. The current symposium brings together speakers whose work utilizes advances in neuroimaging to address neural mechanisms underlying joint action, and whose work represents two distinct theoretical approaches in the field of joint action. The first approach is the "two-brain approach" (Konvalinka & Roepstorff), which proposes that the neural mechanisms of interpersonal coordination can be understood only through measuring inter-brain correspondences during joint action tasks. Drs. Heggli and Zimmermann will present work that adopts a "two-brain" approach, describing how inter-brain synchronization between joint action partners might facilitate coordination in simple (Dr. Heggli) and more complex (Dr. Zimmermann) joint actions. In contrast, Drs. Sacheli, Zamm, and Curioni will present work that adopts a representational approach (Fuchs & De Jaegher, 2009) by assuming that meaningful information about the neural correlates of joint action can be derived from measuring single individuals' brain activity when they are engaged in or observing joint actions. Taken together, the current symposium presents recent contributions to the field of social neuroscience that highlight distinct approaches to understanding the neural mechanisms underpinning joint action.

A-0268   SELF-OTHER INTEGRATION AND ITS RELATION TO INTERBRAIN SYNCHRONIZATION

Ole Adrian Heggli[1], Ivana Konvalinka[2], Morten L. Kingelbach[3], Peter Vuust[1] | *[1]Aarhus University, Dept. of Clinical Medicine; [2]Technical University of Denmark, DTU Compute, Section for Cognitive Systems; [3]Oxford University, Dept. of Psychiatry*

A-0272   INTER-BRAIN SYNCHRONIZATION DURING INTERACTION AND OBSERVATION IN A MIRROR-GAME PARADIGM

Marius Zimmermann, Ivana Konvalinka | *Technical University of Denmark, DTU Compute, Section for Cognitive Systems*

A-0271   INTERPERSONAL COORDINATION OF EXPRESSIVE SILENCE IN MUSICAL INTERACTION: A DUAL-BRAIN EEG STUDY

Anna Zamm[1], Stefan Debener[2], Ivana Konvalinka[3], Natalie Sebanz[1], Günther Knoblich[1] | *[1]Central European University, Department of Cognitive Science; [2]University of Oldenburg, Dept. of Psychology; [3]Technical University of Denmark, DTU Compute, Section for Cognitive Systems*

A-0269   UNDERSTANDING COLLABORATION: NEURAL EVIDENCE FOR INFANT'S ATTRIBUTION OF GOALS TO JOINT ACTIONS

Arianna Curioni[1], Katarina Begus[2], Guenther Knoblich[1], Gyorgy Gergely[1] | *[1]Central European University, Dept. of Cognitive Science; [2]Rutgers University, Dept. of Psychology*

A-0270   NEUROFUNCTIONAL EVIDENCE FOR THE PREDICTIVE NATURE OF HUMAN INTERACTIONS

Lucia Maria Sacheli, Eraldo Paulesu | *University of Milano-Bicocca, Dept. of Psychology and Milan Center for Neuroscience (NeuroMi)*

CHANNEL 1
12:50-13:55 THE SOCIAL CEREBELLUM AND ITS ROLE IN INTERACTION SEQUENCES

Session lead: Frank Van Overwalle

This symposium explores the role of the cerebellum in the social understanding of actions and emotions, and in particular in understanding others' mental states. Its aim is to alert the neuroscientific community that a large part of the social brain – the cerebellum – has been ignored in past research on social cognition. Nonetheless, understanding what the cerebellum does might dramatically increase our insights in what determines proficient social functioning. To illustrate, recent investigations show that dysfunction of the cerebellum at birth is the largest non-genetic risk factor for autism. The hypothesis is put forward that the cerebellum supports the detection and prediction of action sequences in the social domain. It is argued that understanding actions in their correct order is a prerequisite for inferring the mental state of other persons, and to anticipate their next series of actions. Novel evidence is presented that largely support this hypothesis – research with cerebellar patients demonstrates that they are strongly impaired in identifying the sequences of actions, especially when taking into account the beliefs held by the observed agents. Other research shows that learning and generation of such action sequences is supported by the posterior cerebellum. Moreover, this symposium presents novel research on social sequence learning regarding inconsistencies in actions, in action trajectories, in emotion, and in trait inferences and predictions, as well as regarding explicit or implicit sequence learning and the effect of neurostimulation. Collectively, these research findings may broaden our understanding of the critical role of the cerebellum in social cognition.

A-0287   THE SOCIAL CEREBELLUM: NEW INSIGHTS AND EVIDENCE ON ACTION SEQUENCING
Frank Van Overwalle | *Vrije Universiteit Brussel*

A-0288   THE CEREBELLAR ENGAGEMENT IN RECONSTRUCTING ACTION SEQUENCES – A STUDY ON CEREBELLAR PATIENTS.
Libera Siciliano[1], E. Heleven[2], M. Leggio[3] | *[1]Sapienza University of Rome, Italy; [2]Vrije Universiteit Brussel, Belgium; [3]Department of Psychology, Sapienza University of Rome, Italy*

A-0289 THE SOCIAL CEREBELLUM: NEW SEQUENCING TASKS AND CEREBELLO-CORTICAL CONNECTIONS

Elien Heleven, Frank Van Overwalle | *Vrije Universiteit Brussel*

A-0290 NEUROSTIMULATION OF THE AFFECTIVE CEREBELLUM. EXPLORATION OF LATERALIZATION EFFECTS DURING THE PROCESSING OF OTHERS' EMOTIONAL EXPRESSIONS.

Chiara Ferrari[1], Andrea Ciricugno[2], Francesca Fiori[3], Zaira Cattaneo[3] | *[1]University of Pavia, Italy; [2]IRCCS Mondino Foundation, Pavia, Italy; [3]University of Milano-Bicocca, Milan, Italy*

CHANNEL 2
12:50-13:55	CORTICAL AND SUBCORTICAL INHIBITION SYSTEMS: OVERLAP AND/ OR INTERACTION?

Session lead: Leon Kenemans

In recent years dedicated brain networks have been described postulated to send inhibitory signals to other brain areas, such as the various levels of the motor system. On the one hand networks with a cortical center of gravity have been identified, especially in the context of cognitive control, e.g. suppressing ongoing preparation. These include a more reactive variety centered around the preSMA (and manifest in the ERP frontal P3 component), and a perhaps more proactive component including right inferior frontal gyrus. On the other hand, especially in the context of fear and freezing, a subcortical circuit including amygdala and peri-aquaductal grey has been implicated. The question is whether these cortical versus subcortical networks operate independently or interact. For example, subcortical structures have been implicated in stopping an ongoing response in a split-second all-or-none fashion, e.g., subthalamic nucleus; and cortical preSMA regions have been reported to be activated by threat signals. Furthermore, for both cortical and subcortical mechanisms it has been suggested that they are very much instrumental in facilitating post-suppression or post-freezing perception AND action.

A-0310 BEHAVIORAL AND EMG MEASURES OF STOPPING REFLECT DIFFERENT CONTROL PROCESSES IN ACTION CANCELLATION

René J. Huster, Christina Thunberg, Mari S. Messel, Liisa Raud | *Department of Psychology, University of Oslo, Norway*

A-0311 CRITICAL INVOLVEMENT OF THE ANTEROLATERAL PREFRONTAL CORTEX IN STARTLE REGULATION

Johanna M.P. Baas[1], Irina C. van Dijk[1], Floris Klumpers[2], Dennis Hofman[1], J. Leon Kenemans[1] | *[1]Department of Experimental Psychology, Helmholtz Institute, Utrecht University, Utrecht, The Netherlands; [2]Donders Institute for Brain, Cognition and Behaviour, Centre for Cognitive Neuroimaging, Radboud University, Nijmegen, The Netherlands*

A-0312 CORTICO-SUBCORTICAL INTERACTIONS AND THE CONTROL OF HUMAN DEFENSIVE ACTION

Floris Klumpers, Mahur Hashemi, Wei Zhang, Reinoud Kaldewaij, Vanessa van Ast, Saskia Koch, Thomas Gladwin, Karin Roelofs | *Radboud University, Behavioural science and Donders institutes, Nijmegen, The Netherlands*

A-0313 AFFERENT PROCESSES TO RESPONSE INHIBITION - ATTENTION, MOTIVATION, AND THE ROLE OF TRIGGER FAILURES

C. Nico Boehler, Roos A. Doekemeijer, Ruth M. Krebs, Frederick Verbruggen | *Department of Experimental Psychology, Ghent University, Belgium*

CHANNEL 1
14:15-16:15	ORAL PRESENTATIONS AND POSTERS

A-0001 MECHANISMS OF FAR TRANSFER FROM COGNITIVE TRAINING: SHOULD WE TRAIN THE ABILITY TO IGNORE DISTRACTIONS?

Annie Desmarais, Alessandro Pozzi, Lysandre Provost, Hugo Fitzback-Fortin, François Vachon | *School of Psychology, Université Laval, Quebec city, Canada*

A-0007 SOCIAL PREFERENCES CORRELATE WITH CORTICAL THICKNESS OF THE ORBITO-FRONTAL CORTEX

Andrea Fariña[1], Michael Rojek-Giffin[1], Jörg Gross[1], Carsten K.W. de Dreu[1,2] | *[1]Leiden University, Institute of Psychology; [2]University of Amsterdam, Center for Research in Experimental Economics and political Decision-making*

A-0008 BEYOND FIXATIONS: ALEXITHYMIA EXPLAINS ATYPICAL SPATIO-TEMPORAL DYNAMICS OF GAZE AND AROUSAL IN AUTISM

Hélio Clemente Cuve[1], **Santiago Castiello[1]**, **Brook Shiferaw[2]**, **Caroline Catmur[3]**, **Geoffrey Bird[1,4]** | *[1]Department of Experimental Psychology, University of Oxford, United Kingdom; [2]Centre for Human Psychopharmacology, Swinburne University of Technology, Australia; [3]Department of Psychology, Institute of Psychiatry, Psychology & Neuroscience, King's College London, United Kingdom; [4]Social, Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom*

A-0009 TESTING THE REINFORCEMENT LEARNING HYPOTHESIS OF SOCIAL CONFORMITY

Marie Levorsen[1], **Ayahito Ito[1,2]**, **Shinsuke Suzuki[3]**, **Keise Izuma[1,2]** | *[1]University of Southampton, Southampton, United Kingdom; [2]Kochi University of Technology, Kochi, Japan; [3]The University of Melbourne, Melbourne, Australia*

A-0010 TASK/MODALITY-SPECIFICITY OF PERCEPTUAL BI-/MULTISTABILITY

István Winkler | *Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary*

A-0011 THE HEARTBEAT EVOKED POTENTIAL: A META-ANALYSIS

Jennifer Murphy[1], **Hannah Hobson[2]**, **Michel Pierre Coll[3]**, **Geoffrey Bird[3,4]** | *[1]Department of Psychology, Royal Holloway, University of London; [2]University of York; [3]Department of Experimental Psychology, University of Oxford; [4]Social, Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, Psychology and Neuroscience, King's College London*

A-0015 SHORT-TERM FATIGUE IN THE SPATIAL TEMPORAL ORDER JUDGMENT TASK

Júlia Simon[1,2], **István Winkler[1]** | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]Department of Cognitive Science, Faculty of Natural Sciences, Budapest University of Technology and Economics, Budapest, Hungary*

A-0016 ATTENTION TO INTENTION: PUPILLOMETRY AS TEMPORAL MEASURE FOR INTENTIONAL COMPONENT DURING EMOTIONAL IMAGERY

Dalit Milshtein[1,2], Ronen Hershman[1,2], Avishai Henik[2,3] | [1]*Department of Cognitive and Brain Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel;* [2]*Zlotowski Center for Neuroscience, Ben-Gurion University of the Negev, Beer-Sheva, Israel;* [3]*Department of Psychology, Ben-Gurion University of the Negev, Beer-Sheva, Israel*

A-0017 SHARING MAKES THE DIFFERENCE: HOW SHARED ATTENTION MECHANISM AMPLIFIES THE PROCESSING OF EMOTIONAL FACES

Arianna Schiano Lomoriello[2], Paola Sessa[1], Mattia Doro[1], Ivana Konvalinka[2] | [1]*University of Padova, Department of Developmental Psychology and Socialization, Italy;* [2]*Denmark technical University, DTU Compute, Denmark*

A-0018 FOLLOWING THE HERD: REDUCED GROUP SYNCHRONY IN ASD

I.Z Marton-Alper[1], H.Z. Gvirts[2], M. Nevat[1], M. Karklinsky[3], S.G. Shamay-Tsoory[1] | [1]*Department of Psychology, University of Haifa, Haifa, Israel;* [2]*Department of Behavioral Sciences and Psychology, Ariel University, Ariel, Israel;* [3]*Department of Computer Science and Applied Mathematics, Weizmann Institute of Science, Rehovot, Israel*

A-0019 THE ROLE OF HYPNOTICALLY MODULATED EMPATHY IN VICARIOUS FEAR LEARNING

Alexa Müllner-Huber[1], Lisa Anton-Boicuk[1], Ekaterina Pronizius[1], Lukas Lengersdorff[1], Andreas Olsson[2], Claus Lamm[1] | [1]*Social, Cognitive and Affective Neuroscience Unit, Department of Cognition, Emotion, and Methods in Psychology, University of Vienna, Vienna, Austria;* [2]*Department of Clinical Neuroscience, Division of Psychology, Karolinska Institute, Stockholm, Sweden*

A-0021 ACTION INTENTION DRIVES SPECIFIC TOP-DOWN PREDICTIONS REFLECTED IN THE EARLY AUDITORY PROCESSING: EVIDENCE FROM TWO ERP STUDIES

Betina Korka[1], Erich Schröger[1], Andreas Widmann[1,2] | [1]*Cognitive and Biological Psychology, University of Leipzig, Germany;* [2]*Leibniz Institute for Neurobiology, Magdeburg, Germany*

A-0023 MIND THE OVERLAP: ELUCIDATING TWO INTERACTING CONTRIBUTORS TO EMOTION RECOGNITION ACCURACY

Connor Tom Keating[1], Jennifer Louise Cook[1] | *[1]University of Birmingham, UK*

A-0026 MIND OVER CHOCOLATE? AN ERP STUDY ON THE EFFECTS OF IMAGINED CONSUMPTION OF CHOCOLATE ON VISUAL FOOD CUE REACTIVITY

Saša Zorjan[1,2], Daniela Schwab[1], Anne Schienle[1] | *[1]Clinical Psychology, University of Graz, BioTechMed Graz, Austria; [2]Department of Psychology, Faculty of Arts, University of Maribor, Slovenia*

A-0027 BINDING WITH ROBOTS: OBSERVED ROBOTIC ACTIONS INDUCE AN IMPLICIT SENSE OF AGENCY

Luca Pascolini, Andrew Bayliss, Natalie Wyer | *University of East Anglia, Norwich, United Kingdom*

A-0029 DO YOU SEE WHAT I SEE? INDIVIDUAL DIFFERENCES IN CONTEXTUALIZED EMOTION RECOGNITION

Noga S. Ensenberg, Ran R. Hassin, Hillel Aviezer | *The Hebrew University of Jerusalem, Jerusalem, Israel*

A-0030 CAN EYE GIVE YOU A HAND? THE ROLE OF EYE GAZE DURING DYADIC HAND COORDINATED JOINT ATTENTION.

Nathan Caruana[1,2], Christine Inkley[1], Patrick Nalepka[2,3,4], David M. Kaplan[1,2,4], Michael J. Richardson[2,3,4] | *[1]Department of Cognitive Science, Macquarie University, Sydney, Australia; [2]Perception in Action Research Centre, Macquarie University, Sydney, Australia; [3]Department of Psychology, Macquarie University, Sydney, Australia; [4]Centre for Elite Performance, Expertise and Training, Macquarie University, Sydney, Australia*

A-0032 IMPLICIT REINFORCEMENT LEARNING BASED ON SOCIO-EMOTIONAL CONSEQUENCES OF ACTION

Rocco Mennella[1,2], Inès Mentec[2], Julie Grèzes[2] | *[1]Laboratoire des interactions cognition action émotion; (LICAE), UFR STAPS, Université Paris Nanterre, 200 avenue de la République 92001 Nanterre; [2]Laboratoire de neurosciences cognitives et computationnelles; (LNC2), Inserm U960, Département d'études cognitives; (DEC), École Normale Supérieure, PSL Université, 29 rue d'Ulm, 75005, Paris, France*

WEDNESDAY, 23 JUNE 2021

A-0034 EVIDENCE FOR INDIVIDUAL-SPECIFIC EXPRESSIONS OF FRUSTRATION

Esther Bosch, David Käthner, Uwe Drewitz, Klas Ihme | *German Aerospace Centre*

A-0036 THE RELATIONSHIP BETWEEN HEARTBEAT COUNTING AND HEARTBEAT DISCRIMINATION: A META-ANALYSIS.

Lydia Hickman[1], Aida Seyedsalehi[2], Jennifer Cook[1], Geoffrey Bird[3,4], Jennifer Murphy[5] | *[1]School of Psychology, University of Birmingham, UK; [2]Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; [3]Social, Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; [4]Department of Experimental Psychology, University of Oxford, UK; [5]Department of Psychology, Royal Holloway, University of London, UK*

A-0037 THE NEUROPHYSIOLOGICAL CORRELATES OF THE TRIARCHIC MODEL OF PSYCHOPATHY

Tiago O. Paiva[1,2], Pedro R. Almeida[3], Rui C. Coelho[1], Rita Pasion[1], Fernando Barbosa[1], Fernando Ferreira-Santos[1], António J. Bastos-Leite[2], João Marques-Teixeira[1] | *[1]University of Porto, Faculty of Psychology and Education Sciences, Laboratory of Neuropsychophysiology; [2]University of Porto, Faculty of Medicine, Department of Medical Imaging; [3]University of Porto, Faculty of Law, School of Criminology and Interdisciplinary Research Center on Crime, Justice and Security*

A-0038 MEANNESS PSYCHOPATHIC TRAITS PREDICT REDUCED FAIRNESS SENSITIVITY: AN ERP STUDY ON THE ULTIMATUM GAME

Tiago O. Paiva[1,2], Rita Pasion[1], Fernando Ferreira-Santos[1], Joana B. Vieira[3], Fernando Barbosa[1], Carina Fernandes[1], Rui C. Coelho[1], Pedro R. Almeida[4], João Marques-Teixeira[1] | *[1]Laboratory of Neuropsychophysiology, Faculty of Psychology and Educational Sciences of the University of Porto; [2]Faculty of Medicine of the University of Porto; [3]Department of Clinical Neuroscience, Karolinska Institutet; [4]School of Criminology and Interdisciplinary Research Center on Crime, Justice and Security, Faculty of Law of the University of Porto*

A-0039   MORE THAN MERELY EMOTION PERCEPTION AND PERCEPTUAL SALIENCE: EVIDENCE FOR ANTERIOR INSULA REPRESENTING AFFECT SHARING DURING EMPATHY FOR PAIN

Yili Zhao[1], Markus Rütgen[1], Lei Zhang[1,2], Claus Lamm[1,3] | *[1]Social, Cognitive and Affective Neuroscience Unit, Department of Cognition, Emotion, and Methods in Psychology, Faculty of Psychology, University of Vienna, 1010 Vienna, Austria; [2]Neuropsychopharmacology and Biopsychology Unit, Department of Cognition, Emotion, and Methods in Psychology, Faculty of Psychology, University of Vienna, 1010 Vienna, Austria; [3]Vienna Cognitive Science Hub, University of Vienna, 1010 Vienna, Austria*

A-0040   AGEING DISRUPTS REINFORCEMENT LEARNING WHILST LEARNING TO HELP OTHERS IS PRESERVED

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A-0041   INDIVIDUAL SCHIZOTYPAL TRAITS INFLUENCE PERIPERSONAL SPACE PLASTICITY

Ferroni Francesca[1], Ardizzi Martina[1], Ferri Francesca[2], Tesanovic Ana[1], Langiulli Nunzio[1], Tonna Matteo[3], Marchesi Carlo[1], Gallese Vittorio[1,4] | *[1]Department of Medicine and Surgery, Unit of Neuroscience, University of Parma, Parma, Italy; [2]Department of Neuroscience, Imaging and Clinical Science, University G. D'Annunzio, Chieti, Italy; [3]Department of Mental Health, Local Health Service, Parma, Italy; [4]Berlin School of Mind and Brain, Humboldt-Universität zu Berlin*

A-0042   PLENTY MORE FISH IN THE SEA: LEAVING SOCIAL PARTNERS IS SHAPED BY ANIMAL FORAGING PRINCIPLES

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A-0045 THE IMPACT OF KINEMATICS & EYE CONTACT ON ACTION PERCEPTION IN A SOCIAL CONTEXT

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A-0046 BABY DON'T CRY. MEASURING THE EMPATHETIC RESPONSE TOWARDS INFANT CRIES IN A SINGAPOREAN CONTEXT.

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A-0048 RESTING HEART RATE VARIABILITY AND SELF-CONSCIOUS EMOTION RESPONSE

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A-0051 TRANSCRANIAL DIRECT CURRENT STIMULATION FOR THE TREATMENT OF MOTOR SEQUENCE LEARNING IN PARKINSON'S PATIENTS WITH MILD COGNITIVE IMPAIRMENT.

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A-0053 SHARPENED SELF-OTHER DISTINCTION IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

Rebecca Boehme[1,4], Morgan Frost Karlsson[1], Markus Heilig[1,4], Håkan Olausson[1,3,4], Andrea Johansson Capusan[1,2] | [1]*Center for Social and Affective Neuroscience, Linköping University, Department of Biomedical and Clinical Sciences, Linköping, Sweden; [2]Department of Psychiatry, Linköping University, Linköping, Sweden; [3]Department of Clinical Neurophysiology, Linköping University Hospital, Linköping, Sweden; [4]Center for Medical Imaging and Visualization, Linköping University, Linköping, Sweden*

A-0054 RELATING RESTING-STATE EEG DYNAMICS TO THE FEAR AND PERCEPTION OF AVERSIVE BODILY SENSATIONS

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A-0055 IMPROVED VOCAL EMOTION RECOGNITION IN INDIVIDUALS WITH NATURALLY GOOD MUSICAL ABILITIES

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A-0056 PERCEPTUAL PRIORITISATION OF SELF-ASSOCIATED VOICES

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A-0057 SELF-FACE AND EMOTIONAL FACES – ARE THEY SIMILARLY PROCESSED?

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A-0059 CAN TRAINING MODULATE RESTING-STATE NEURAL NETWORK DYNAMICS? – AN AGE-RELATED MULTISCALE ENTROPY AND SPECTRAL POWER DENSITY STUDY ON TASK-SWITCHING

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A-0060   HOW DOES ACUTE STRESS AFFECT OUR EFFORT TO GAIN REWARDS FOR OURSELVES AND OTHERS?

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A-0062   UNFOLDING THE NEGATIVE EXPECTANCY BIAS IN SOCIAL ANXIETY: A NEUROCOMPUTATIONAL ASSESSMENT OF SOCIAL FEEDBACK-BASED LEARNING

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A-0063   NEURO-COMPUTATIOANAL MECHANISMS MOTIVATING EFFORTS TOWARDS LOOMING DEADLINES

M. Andrea Pisauro, Matthew Apps | *University of Oxford*

A-0067   GENERALIZABILITY OF ACTION-EFFECT RELATED MOTOR ADAPTION TO VISUAL STIMULI

Erika György[1,2], Virág Vass[1,3], Bence Neszmélyi[1,4], Sámuel Varga[1,2], János Horváth[1,5] | *[1]Research Centre for Natural Sciences, Budapest, Hungary; [2]Budapest University of Technology and Economics, Budapest, Hungary; [3]University of Debrecen, Debrecen, Hungary; [4]Pázmány Péter Catholic University, Budapest, Hungary; [5]Károli Gáspár University of the Reformed Church in Hungary, Budapest, Hungary*

A-0068   THE ROLE OF MOVEMENT KINEMATICS IN FACIAL EMOTION EXPRESSION PRODUCTION AND RECOGNITION

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A-0069   BODY MASS INDEX AND EXECUTIVE CONTROL, THE ROLE OF REWARD CONTEXT.

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A-0070   MINDFULNESS AND INHIBITORY CONTROL, THE ROLE OF REWARD CONTEXT

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A-0071   NOVEL COGNITIVE BIOMARKERS IN OBJECTIVE QUANTIFICATION OF PARKINSONIAN DISORDERS FOR DEEP BRAIN STIMULATION, DIAGNOSTICS, AND DRUG TRIALS

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A-0072   THE INTEROCULAR TRANSFERENCE OF THE EFFECT OF LINEAR PERSPECTIVE CUES AND TEXTURE GRADIENTS IN PERCEPTUAL RESCALING MECHANISMS

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A-0073 HOW DO MONETARY REWARD AND CURIOSITY INFLUENCE INCIDENTAL MEMORY ENCODING OF DYNAMIC STIMULI IN THE BRAIN?

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A-0074 BEHAVIOURAL STUDY OF SENSORIMOTOR SYNCHRONIZATION AND ITS RELATION TO PHONOLOGICAL AWARENESS AND READING

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A-0075 SEX DIFFERENCES IN ECONOMIC DECISION-MAKING: ESTRADIOL HAS OPPOSING EFFECTS ON FAIRNESS SENSITIVITY IN WOMEN AND MEN

Marie Coenjaerts[1], Frederike Pape[1], Virginia Santoso[1], Franziska Grau[1], Birgit Stoffel-Wagner[2], Alexandra Philipsen[3], Johannes Schultz[4], René Hurlemann[5], Dirk Scheele[1] | *[1]Division of Medical Psychology, University of Bonn, Bonn, Germany; [2]Institute for Clinical Chemistry and Pharmacology, University of Bonn, Bonn, Germany; [3]Department of Psychiatry and Psychotherapy, University of Bonn, Bonn, Germany; [4]Center for Economics and Neuroscience, University of Bonn, Bonn, Germany; [5]Department of Psychiatry, University of Oldenburg Medical Campus, Bad Zwischenahn, Germany*

A-0076 OPTIMIZING PSYCHOPHYSIOLOGICAL MEASUREMENTS OF TRACE FEAR CONDITIONING.

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WEDNESDAY, 23 JUNE 2021

A-0078 THE VOCAL CHAMELEON: PSYCHOLOGICAL AND NEURAL MARKERS FOR SOCIAL VOCAL CONTROL EFFICACY

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A-0080 INFLUENCE OF STRESS AND EARLY LIFE ADVERSITY ON HEART RATE VARIABILITY WAVELET COHERENCE IN GROUPS

Bernadette Denk[1,2], Stephanie Dimitroff[1], Eva Unternährer[1,3], Tara Zerbe[1], Meike Zyschka[1], Jens Pruessner[1,2,4] | *[1]University of Konstanz; [2]Centre for the Advanced Study of Collective Behaviour; [3]University of Basel; [4]Mc Gill University Montreal*

A-0082 ASSESSING HUMAN THREAT CONDITIONING BY OVERT BEHAVIORS

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A-0083 INVESTIGATING THE EFFECT OF TRUSTWORTHINESS ON INSTRUCTION-BASED REFLEXIVITY

Mathias Van der Biest, Emiel Cracco, David Wisniewski, Marcel Brass, Carlos González-García | *Ghent University, Ghent, Belgium*

A-0084 MUSIC LISTENING AND COGNITIVE PERFORMANCE IN YOUNG AND OLDER ADULTS: DOES A DIFFERENT DURATION OF EXPOSURE TO DIFFERENT MUSIC PIECES AFFECT SUBSEQUENT COGNITIVE PERFORMANCE?

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A-0088 DOPAMINERGIC MODULATION OF LEARNING FROM SOCIAL AND INDIVIDUAL INFORMATION

Alicia Rybicki, Bianca Schuster, Sophie Sowden, Jennifer Cook | *University of Birmingham, Birmingham, UK*

A-0091 DYNAMIC ACTION-EFFECT RELATED MOTOR ADAPTATION

Sámuel Varga[1,2], Nándor Hajdú[1,2], Bence Neszmélyi[1,3], Erika György[1,2], János Horváth[1,4] | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]Budapest University of Technology and Economics, Budapest, Hungary; [3]Pázmány Péter Catholic University, Budapest, Hungary; [4]Károli Gáspár University of the Reformed Church in Hungary, Budapest, Hungary*

A-0093 MIRROR MIRROR ON THE WALL, WHO'S THE MOST CONNECTED OF THEM ALL: THE ROLE OF MOVEMENT SYNCHRONIZATION AND COMPLEXITY IN THE EXPERIENCE OF TOGETHERNESS

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A-0095 JOINT ACTION WITH ARTIFICIAL AGENTS: ON THE ROLE OF EMBODIMENT IN SENSORIMOTOR SYNCHRONIZATION

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A-0096 INTEROCEPTIVE SENSITIVITY IS ASSOCIATED WITH PROSOCIAL EFFORT-REWARD TRADE-OFFS

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A-0097 A NOVEL CLINICAL GROUP WITH LOWER OXYTOCIN CONCENTRATIONS AND REDUCED EMPATHY ABILITY

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A-0099 THE COGNITIVE MODULATION OF NOCICEPTIVE HYPER-SENSITIVITY: DOES AUTONOMIC AROUSAL PLAY A ROLE?

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A-0100 AN ECOLOGICAL FRAMEWORK FOR PROSOCIAL BEHAVIOUR: FORAGING FOR OTHERS' REWARDS

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A-0101 INTENTION AND ACTION: HOW VICARIOUS SENSE OF AGENCY EMERGES IN HUMAN-ROBOT INTERACTION.

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A-0104 AUDITORY DYADIC INTERACTIONS THROUGH THE 'EYE' OF THE SOCIAL BRAIN: HOW VISUAL IS THE POSTERIOR STS INTERACTION REGION?

Julia Landsiedel, Kami Koldewyn | *Bangor University, Bangor, UK*

A-0105 EFFECTS OF LONG-TERM USE OF BENZODIAZEPINES ON THE NEURAL PROCESSING OF FACIAL EXPRESSIONS OF EMOTION

Helena Garcez[1], Carina Fernandes[1], Mariana R. Pereira[1,2], Celeste Silveira[3], Fernando Barbosa[1], João Marques-Teixeira[1], Ana R. Gonçalves[1] | *[1]Laboratory of Neuropsychophysiology, Faculty of Psychology and Education Sciences, University of Porto, Porto, Portugal; [2]UCL GOS Institute of Child Health, London, UK; [3]São João University Hospital Center, Porto, Portugal*

A-0106 MEASURING TACTILE INTERACTIONS THROUGH SKIN-TO-SKIN FRICTION-INDUCED VIBRATIONS

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A-0107 START TO STOP: THE ROLE OF TRIGGER FAILURES IN REWARD-MODULATED RESPONSE INHIBITION

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A-0110 WEARING A VIRTUAL BODY AND BEING TOUCHED ON IT BY DIFFERENT GENDER AND ETHNICITY AVATARS.

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A-0114 DISSOCIATING SOCIAL AND INDIVIDUAL LEARNING

Jennifer Cook | *University of Birmingham, Birmingham, UK*

A-0117 THE TRAINABILITY OF REAPPRAISAL INVENTIVENESS WITH A SHORT-TERM INTERVENTION: NEURONAL AND BEHAVIORAL EFFECTS

Corinna M. Perchtold-Stefan[1], Andreas Fink[1], Christian Rominger[1], Elisabeth M. Weiss[2], Ilona Papousek[1] | *[1]University of Graz, Austria; [2]University of Innsbruck, Austria*

A-0118 RISK-TAKERS DO NOT MODULATE PROACTIVE STRATEGIES AS A FUNCTION OF THEIR REACTIVE CAPACITIES

Pierre Le Denmat[1], Fanny Grisetto[1], Yvonne Delevoye-Turrell[1], Isabelle Desenclos-El Ghoulti[2], Andreea Dinca[2], Clémence Roger[1] | *[1]University of Lille, CNRS, UMR 9193, SCALab-Sciences Cognitives et Sciences Affectives, Lille, France; [2]ECCA Conduite, Lyon, France*

A-0119   SLOWER CONTROL STRATEGY ADAPTATION IN A PROACTIVE TASK IN INDIVIDUALS WITH HIGH IMPULSIVE PERSONALITY TRAITS

Fanny Grisetto, Yvonne Delevoye-Turrell, Clémence Roger | *University of Lille, CNRS, UMR 9193 - SCALab - Sciences Cognitives et Sciences Affectives, Lille, France*

A-0120   PERCEPTUAL SIMILARITY BETWEEN FACIAL EXPRESSIONS: THE ROLES OF FACIAL MOTION, EMOTIONAL INTENSITY AND FACE-BASED SIMILARITY.

Laura Manno, Mintao Zhao | *University of East Anglia, Norwich, United Kingdom*

A-0123   THE INTERFERENCE EFFECT OF DIRECT EYE GAZE IN THE STROOP PARADIGM

Letizia Amodeo[1,3], Danna Oomen[1,3], Marcel Brass[2,3], Roeljan Wiersema[1,3] | *[1]Department of Experimental Clinical and Health Psychology, Ghent University, Belgium; [2]Department of Experimental Psychology, Ghent University, Belgium; [3]EXPLORA - EXperimental PsychoLOgical Research on Autism, Ghent University, Belgium*

A-0124   PROCESSING AND REGULATING EMOTIONS IN REMITTED DEPRESSION

Rozemarijn S. van Kleef, Jan-Bernard C. Marsman, André Aleman, Marie-José van Tol | *Cognitive Neuroscience Center, University Medical Center Groningen, Groningen, the Netherlands*

A-0128   NEURAL MECHANISMS UNDERLYING OPPOSING INTERPRETATION OF POLITICAL MOVIE-CLIPS

Yaara Yeshurun, Noa Katabi | *Tel-Aviv University, Tel-Aviv, Israel*

A-0129   INTEROCEPTIVE ACCURACY PREDICTS SPONTANEOUS DECEPTION IN THE 'TEMPTATION TO LIE CARD GAME'

Alisha Vabba, Giuseppina Porciello, Maria Serena Panasiti, Salvatore Maria Aglioti | *Sapienza University of Rome, Italy*

A-0131   EXAMINING THE PRO-SOCIAL BEHAVIOR OF THE ARCHERFISH

Orit Nafcha, Simone Shamay-Tsoory, Shai Gabay | *University of Haifa, Haifa, Israel*

A-0137 HOW FAR IN THE FUTURE CAN WE PREDICT OTHERS' AFFECTIVE STATES?

Elisa Cappello[1], Giada Lettieri[1], Giacomo Handjaras[1], Veronica Domenici[2], Emiliano Ricciardi[3], Pietro Pietrini[3], Luca Cecchetti[1] | *[1]Social and Affective Neuroscience Group, IMT School for Advanced Studies Lucca, Lucca, Italy; [2]University of Pisa, Pisa, Italy; [3]Molecular Mind Laboratory, IMT School for Advanced Studies Lucca, Lucca, Italy*

A-0138 THE VALUE OF YOUR PAIN: HUMANS MAKE MORE OPTIMAL DECISIONS DURING PROSOCIAL COMPARED TO SELF-ORIENTED LEARNING

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A-0140 FOCUSED AND DISTRACTED: ERP EVIDENCE FROM AN AUDITORY DISTRACTION STUDY

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A-0141 USING FNIRS TO STUDY FACE TO FACE SOCIAL INTERACTION

Antonia Hamilton, Paola Pinti, Sujatha Krishnan-Barman, Paul Burgess, Ilias Tachtsidis | *Institute of Cognitive Neuroscience, University College London*

A-0143 SURVIVAL PROCESSING EFFECT AND METACOGNITION

Dilan Çabuk, Alper Yelimlieş, Terry Eskenazi, Çağlar Akçay | *Koç University, Istanbul, Turkey*

A-0144 FACE, BODY AND OBJECT REPRESENTATION IN CANINE TEMPORAL AND OCCIPITAL CORTICES

Magdalena Boch[1,2], Sabrina Karl[3], Isabella C. Wagner[1], Ludwig Huber[3], Claus Lamm[1] | *[1]Social, Cognitive and Affective Neuroscience; (SCAN) Unit, Department of Cognition, Emotion, and Methods in Psychology, University of Vienna, Vienna, Austria; [2]Department of Cognitive Biology, University of Vienna, Vienna, Austria; [3]Messerli Research Institute, Veterinary University Vienna, Medical University of Vienna and University of Vienna, Vienna, Austria*

A-0145 EFFECTIVE CONNECTIVITY WITHIN CEREBELLO-CEREBRAL SOCIAL MENTALIZING NETWORK: DYNAMIC CAUSAL MODELING OF RESTING-STATE FMRI DATA

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A-0148 TRANSLATION OF NEUROBEHAVIORAL RISK PROFILES FOR ADOLESCENTS` ALCOHOL (AB)USE INTO SCREENING/ PREVENTION TOOLS

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A-0149 IS THERE AN INTERACTION BETWEEN BULLYING, EMPATHY AND ALCOHOL USE IN ADOLESCENTS?

Maren Prignitz[1], Tobias Banaschewski[2], Gareth J. Barker[3], Arun L.W. Bokde[4], Erin Burke Quinlan[5], Sylvane Desrivières[5], Herta Flor[1,6], Vincent Frouin[7], Hugh Garavan[8], Penny Gowland[9], Andreas Heinz[10], Bernd Ittermann[11], Jean-Luc Martinot[12], Marie-Laure Paillère Martinot[13], Dimitri Papadopoulos Orfanos[8], Herve Lemaitre[7](15), Tomáš Paus[16], Luise Poustka[17], Sabina Millenet[2], Juliane H. Fröhner[18], Michael N. Smolka[18], Henrik Walter[10], Robert Whelan[19], Gunter Schumann[5](20), Frauke Nees[1], the IMAGEN Consortium | *[1]Department of Cognitive and Clinical Neuroscience, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany; [2]Department of Child and Adolescent Psychiatry and Psychotherapy, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany; [3]Department of Neuroimaging, Institute of Psychiatry, Psychology & Neuroscience, King's College London, United Kingdom, [4]Discipline of Psychiatry, School of Medicine and Trinity College Institute of Neuroscience, Trinity College Dublin, Dublin, Ireland; [5]Centre for Population Neuroscience and Precision Medicine; (PONS), Institute of Psychiatry, Psychology & Neuroscience, SGDP Centre, King's College London, United Kingdom;*

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A-0151 TRANSPOSED LETTER EFFECT IN DEAF READERS

Vera Varga[1,2], Valéria Csépe[1] | [1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Budapest University of Technology and Economics, Budapest, Hungary

A-0152 EFFECTS OF MUSICAL TRAINING ON THE DEVELOPMENT OF MUSIC PERCEPTION ABILITIES INVESTIGATED WITH THE MUSIC MULTIFEATURE ERP PARADIGM

Ferenc Honbolygó[1,2], Borbála Lukács[1,3], Emese Maróti[4], Kata Asztalos[5] | [1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [4]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [5]Kodály Institute, Liszt Ferenc Academy of Music, Budapest, Hungary

A-0155 TEMPORO-PARIETAL BRAIN OSCILLATIONS IMPLEMENTING PRO-SOCIAL DECISION-MAKING AND PERSPECTIVE TAKING – A TACS STUDY

Patricia Christan[1,2], Alexander Soutschek[1,2] | [1]Department for Psychology, Ludwig Maximilian University Munich, Munich, Germany; [2]Graduate School for Systemic Neuroscience, Ludwig Maximilian University Munich, Munich, Germany

A-0156 SPECTRAL CORRELATES OF EMOTION REGULATION IN THE EEG OF TEENAGERS

Alexandra Huh[1], Raul C. Muresan[2], Andrei C. Miu[1] | [1]Cognitive Neuroscience Laboratory, Department of Psychology, Babes-Bolyai University, Cluj-Napoca, Romania; [2]Transylvanian Institute of Neuroscience, Cluj-Napoca, Romania

A-0157 HUMAN OR MACHINE? EXPECTATIONS REGARDING THE TEMPORAL ASPECT OF HUMAN AND HUMAN-MACHINE INTERACTIONS

Bence Neszmélyi[1,2], János Horváth[1,3] | [1]Research Centre for Natural Sciences, Budapest, Hungary; [2]Pázmány Péter Catholic University, Budapest, Hungary; [3]Károli Gáspár University of the Reformed Church in Hungary, Budapest, Hungary

A-0159 LANGUAGE SPECIFIC WORD STRESS PROCESSING OF GERMAN NATIVE SPEAKERS

Borbála German[1,2], Ferenc Honbolygó[1,3] | [1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [3]Institute of Psychology, Eötvös Loránd University, Budapest, Hungary

	CHANNEL 1
16:30-17:50	WHO DOESN'T LIKE TO BE TOUCHED? SOCIAL AND BIOLOGICAL FACTORS INFLUENCING AFFECTIVE TOUCH PERCEPTION

Session leads: Federica Riva and Daniela M. Pfabigan

In humans, affective touch plays a significant part in forming and maintaining social relationships. However, how it is experienced varies greatly according to diverse factors. Despite the blooming of research investigating affective touch and its neurophysiological correlates, the impact of different social and biological factors on hedonic aspects of touch is still largely unknown. With this symposium, we will address this knowledge gap and discuss novel findings regarding how social and biological factors impact affective touch processing and its neurophysiological correlates.

Daniela Pfabigan will discuss how a state of hunger influences the pleasantness of affective touch and its underlying neuronal activity. In the third talk, Claudia Massaccesi will detail the reactions to social touch under stress following morphine administration. Next, Sara Kroll will present a cross-over double-blind study reporting the effects of opioids on affective touch and its interplay with psychological state. Lastly, by adopting an opposite perspective, Giovanni Novembre will discuss why a partner vs. a stranger's affective touch leads to differential endogenous oxytocin release.

In the end, an integrative discussion of the studies presented will be conducted by Prof. Uta Sailer, a leading figure in affective touch research. The purpose of this symposium is not only to present innovative research on affective touch, but also to highlight new perspectives and to develop future challenges in this research field.

A-0283 BEING HUNGRY DECREASES THE PLEASANTNESS OF TOUCH

Daniela M. Pfabigan, Anbjørn Ree, Uta Sailer | *University of Oslo, Oslo, Norway*

A-0547 ENHANCED MOTIVATION AND HEDONIC REACTIONS TO SOCIAL TOUCH UNDER STRESS FOLLOWING MORPHINE ADMINISTRATION

Claudia Massaccesi[1], Matthäus Willeit[2], Boris Quednow[3], Urs Nater[1], Giorgia Silani[1] | *[1]University of Vienna, Vienna, Austria; [2]Medical University of Vienna, Vienna, Austria; [3]University of Zürich, Zürich, Switzerland*

A-0285   MORPHINE EFFECTS ON SOCIAL TOUCH

Sara L. Kroll | *Linköping University, Linköping, Sweden*

A-0286   HUMAN TOUCH INFLUENCES ENDOGENOUS OT, WITH BIASED NEURAL RESPONSES DEPENDING ON RECENT SOCIAL INTERACTION HISTORY

Giovanni Novembre[1], Linda Handlin[2], Robin Kämpe[1], India Morrison[1] | *[1]Linköping University, Linköping, Sweden; [2]University of Skövde, Skövde, Sweden*

A-0549   THE INTERPLAY BETWEEN AFFECTIVE TOUCH AND BIOLOGICAL, PSYCHOLOGICAL AND SOCIAL FACTORS: AN INFORMED DISCUSSION OF THE SYMPOSIUM CONTRIBUTIONS

Uta Sailer | *University of Oslo*

	CHANNEL 2
16:30-17:50	PERSON PERCEPTION AS A FUNCTION OF ATTENTION, EMOTION AND LEARNING HISTORY: RECENT FINDINGS FROM ELECTROPHYSIOLOGY

Session leads: Florian Bublatzky and Sebastian Schindler

Human faces are particularly important social signals, with high emotional relevance based on inherent affective meaning (e.g., facial expressions) or acquired information (e.g., learning history). However, the extent to which these sources of information jointly modulate face perception is not well understood. The present symposium comprises studies using a variety of experimental approaches to enable a better understanding of face and person perception. A particular focus is on electrocortical activity (e.g., EEG/ERP) and its relation to peripheral physiological responding (e.g., startle EMG), behavioral performance and subjective evaluations (e.g. recognition memory, ratings). Providing a neurophysiological starting point, Malena Mielke will present ERP data from epileptic patients after amygdala resection, showing that amygdala loss reduces very early and late ERP emotion correlates. Following, Sabine Schellhaas reports about the impact of social threat and safety learning on face perception and source memory in healthy participants and individuals with adverse childhood experiences. Sebastian Schindler focuses on the impact of task-relevance on ERP modulations, showing a differential vulnerability of early and late emotion effects by feature-based attention. Julia Baum demonstrates how person information and attractiveness affect ERP modulations, showing parallel mid-latency but interactive effects. Finally, Pedro Guerra concludes the session with data on psychophysiological responding to smiling and angry loved familiar face pictures serving as threat or safety cues. Taken together, this symposium covers a broad range of perspectives on face perception – from basic neurophysiology, emotion, memory and attention task, to high-level semantic person representations in healthy and clinical populations.

A-0362   AFFECTIVE FACE PROCESSING IN THE ABSENCE OF RIGHT TEMPORAL LOBE STRUCTURES

Malena Mielke[1], Lea Marie Stieghorst[2], Christian G. Bien[2], Johanna Kißler[1] | *[1]Department of Psychology, University of Bielefeld, Germany; [2]Epilepsy Centre Bethel, Krankenhaus Mara, Bielefeld, Germany*

A-0363 THE IMPACT OF ADVERSE CHILDHOOD EXPERIENCES ON SOCIAL LEARNING, FACE PERCEPTION AND RECOGNITION: AN ERP STUDY

Sabine Schellhaas[1], Nina R. Arnold[2], Christian Schmahl[1], Florian Bublatzky[1] | *[1]Department of Psychosomatic Medicine and Psychotherapy, Central Institute of Mental Health, Medical Faculty Mannheim, University of Heidelberg, Germany; [2]Department of Psychology, School of Social Sciences, University of Mannheim, Germany*

A-0364 ATTENTIONAL CONDITIONS DIFFERENTIALLY AFFECT EARLY, INTERMEDIATE AND LATE NEURAL RESPONSES TO EMOTIONAL EXPRESSIONS AND CONDITIONED EMOTIONAL FACES

Sebastian Schindler, Maximilian Bruchmann, Thomas Straube | *Institute of Medical Psychology and Systems Neuroscience, University of Muenster*

A-0365 BEAUTIFUL IS GOOD, MORAL IS BETTER: SOCIAL JUDGMENTS BASED ON FACIAL ATTRACTIVENESS AND AFFECTIVE INFORMATION

Julia Baum, Rasha Abdel Rahman | *Berlin School of Mind and Brain, Humboldt-Universität zu Berlin*

A-0366 VERBAL THREAT LEARNING AS A FUNCTION OF PERSONAL RELEVANCE AND EMOTIONAL EXPRESSION: INSIGHTS FROM PERIPHERAL PHYSIOLOGY

Pedro Guerra[1], Cristina Morato[1], Florian Bublatzky[2] | *[1]Department of Personality, Assessment, and Psychological Treatment, University of Granada, Spain; [2]Department of Psychosomatic Medicine and Psychotherapy, Central Institute of Mental Health Mannheim, Medical Faculty Mannheim / Heidelberg University*

CHANNEL 1	
18:05-19:10	USING DATA-DRIVEN APPROACHES TO REVEAL THE STRUCTURE OF EMOTION

Session lead: Ajay Satpute and Leah Somerville

Affective science has historically imposed theoretically-based rules and categories to organize emotional experiences and related behaviors, as seen in facial expression categories, affective experiences, and in neural bases of emotion. This symposium features new research that exploits both supervised and unsupervised data-driven methods to recover the underlying structure of a range of emotion-relevant signals and behaviors, revealing new insights regarding the structure and mechanisms of emotion. Speaker Jack will showcase the use of data-driven tools to reveal the complex dynamics of facial expressions, their underlying structure, cross-cultural variability, and how these dynamics can be used to guide artificial agents. Speaker Somerville will show how adolescents' tendency to experience heightened negative affect is actually comprised of multiple subtypes of affective change, based on data-driven clustering analyses. Speaker Neta will use supervised data-driven approaches to identify the neural systems that support regulation of biased interpretation of emotional stimuli. Finally, speaker Satpute will present neural and physiological findings showing within-category variation in fear and a new computational approach to model such variation. Together, these presentations bring insights into the structure of emotion processing that often deviate from traditionally-held assumptions about the categories, boundaries, and neural mechanisms of emotion across instances and individuals.

A-0358 MODELLING DYNAMIC FACIAL EXPRESSIONS OF EMOTION USING DATA-DRIVEN METHODS
Rachael Jack | *University of Glasgow*

A-0359 CHARACTERIZING VARIABILITY IN AFFECTIVE EXPERIENCES ACROSS ADOLESCENCE
Leah Somerville | *Harvard University*

A-0360 FUNCTIONAL BRAIN NETWORKS MEDIATING INDIVIDUAL DIFFERENCES IN VALENCE BIAS
Maital Neta | *University of Nebraska, Lincoln*

A-0361 DEGENERACY IN NEURAL MODELS OF AFFECT AND EMOTION

Ajay Satpute | *Northeastern University*

CHANNEL 2
18:05-19:10	NEUROBIOLOGICAL UNDERPINNINGS OF EVENT REPRESENTATIONS

Session leads: Adam Takacs and Bernhard Hommel

Humans represent the events they perceive in a distributed fashion, which calls for some sort of feature integration. People bind the cognitive codes of event features into temporary event files: complex, multi-level representational structures including object and response features. To give a complete overview of this complex phenomenon, this symposium will be interdisciplinary. Event files will be presented from different perspectives and using different methodologies via behavioral, electrophysiology, clinical, and brain-imaging studies.

A-0260 CONNECTING EEG SIGNAL DECOMPOSITION AND RESPONSE SELECTION USING THE THEORY OF EVENT CODING

Adam Takacs[1], Nicolas Zink[1], Nicole Wolff[1], Alexander Münchau[2], Moritz Mückschel[3], Christian Beste[3] | *[1]Cognitive Neurophysiology, Department of Child and Adolescent Psychiatry, Faculty of Medicine, TU Dresden; [2]Department of Pediatric and Adult Movement Disorders and Neuropsychiatry, Institute of Neurogenetics, Center for Brain, Behaviour and Metabolism, University of Lübeck; [4]Cognitive Neurophysiology, Department of Child and Adolescent Psychiatry, Faculty of Medicine, TU Dresden*

A-0261 PERCEPTION-ACTION BINDING IS INCREASED IN TOURETTE SYNDROME

Christian Beste[1], Maximilian Kleimaker[2], Adam Takacs[1], Giulia Conte[3], Rebecca Onken[4], Julius Verrel[4], Tobias Bäumer[4], Alexander Münchau[4] | *[1]Cognitive Neurophysiology, Department of Child and Adolescent Psychiatry, Faculty of Medicine, TU Dresden; [2]Department of Neurology, University Hospital Schleswig-Holstein, Campus Lübeck; [3]Department of Human Neuroscience, Institute of Child and Adolescent Neuropsychiatry, Sapienza University of Rome; [4]Department of Pediatric and Adult Movement Disorders and Neuropsychiatry, Institute of Neurogenetics, Center for Brain, Behaviour and Metabolism, University of Lübeck*

A-0262   WATCHING THE BRAIN AS IT BINDS: EEG ALPHA/BETA POWER RELATED TO DISTRACTOR-RESPONSE BINDING

Christian Frings, Bernhard Pastötter, Birte Moeller | *Cognitive Psychology, Psychology Department, University of Trier*

A-0263   ENCODING AND RETRIEVAL OF EVENT REPRESENTATIONS

Bernhard Hommel | *Cognitive Psychology Unit, Psychology Department, Leiden University*

THURSDAY, 24 JUNE 2021

Hours	CHANNEL 1	CHANNEL 2
10:00–10:50	Keynote lecture by Philippe Schyns	
11:00–12:20	**Symposium session 9.** Social motivation and beliefs in health and psychopathology	**Symposium session 10.** Neurocognitive mechanisms in emotional vulnerability and resilience: Implications for intervention and treatment
12:20–12:50	Break	
12:50–13:55	**Symposium session 11.** The neurobiological basis of naturalistic social interactions	**Symposium session 12.** Enhancing replicability: standardising and optimising measurement in behavioural research
14:00–14:15	Break	
14:15–16:15	Oral presentations and posters	
16:15–16:30	Break	
16:30–17:50	**Symposium session 13.** What do you desire? Multiple facets of motivation in social decision-making	**Symposium session 14.** 'Better safe than sorry'. An overview on safety learning and its consequences when impaired
17:50–18:05	Break	
18:05–18:55	Lecture by Leor Zmigrod (recepient of the 2020 Young Researcher Award of ESCAN)	

THURSDAY, 24 JUNE 2021

	CHANNEL 1
10:00-10:50	KEYNOTE LECTURE BY PROF. PHILIPPE SCHYNS

Keynote speaker:: Philippe Schyns

A-0550 INFORMATION PROCESSING IN THE BLACK BOX OF THE BRAIN (AND DEEP NETWORKS)

Philippe Schyns | *University of Glasgow*

11:00-12:20	SOCIAL MOTIVATION AND BELIEFS IN HEALTH AND PSYCHOPATHOLOGY

Session leads: Grit Hein and Sören Krach

Social motivation and beliefs are the drivers of human social behaviors. Thus, in order to understand why a person behaves in a certain way it is essential to understand the underlying motives and beliefs. In the same vein, understanding the changes of motives and beliefs related to psychopathology can deepen our understanding of psychological and psychiatric disorders and contribute to more effective treatments. Our symposium brings together scientists from five different research institutions (Universities of Amsterdam, Lübeck, Vienna and Würzburg, MPI Cologne) in three European countries (Austria, The Netherlands and Germany) that present their research on different aspects of social motivation and beliefs, and discuss potential clinical applications. In more detail, our symposium provides insights into the metabolic modulation of motivation and belief updating (Bojana Kuzmanovic), outlines how learning contexts affect confidence and how these alterations are related to psychopathology (Jan Engelmann), and shows how self-related beliefs are formed and modulated by social anxiety and self-esteem (Laura Müller-Pinzler). The second part of the symposium focuses on social motivation, elucidating the interplay between financial incentives and social motivation (Vassil Iotzov), and discussing neuro-pharmacological and clinical aspects of social motivational states (Giorgia Silani). Together, the presentations of the invited experts provide insights into the neurobiological and psychological mechanisms that shape social motivation and beliefs, show how they interact with psychopathology, and discuss the role of motives and beliefs in clinical applications and mental well-being.

THURSDAY, 24 JUNE 2021

A-0291 METABOLIC MODULATION OF BELIEF UPDATING AND MOTIVATION

Bojana Kuzmanovic | *Max-Planck-Institute for Metabolism Research, Cologne*

A-0292 CONFIDENCE BIASES IN REINFORCEMENT LEARNING AND PSYCHOPATHOLOGY

Jan B. Engelmann | *CREED and Amsterdam Brain and Cognition, University of Amsterdam*

A-0293 SELF-ESTEEM AND SOCIAL ANXIETY MODULATE BELIEF FORMATION ABOUT OWN ABILITIES IN A PERFORMANCE CONTEXT

Laura Müller-Pinzler | *Social Neuroscience Lab, Department of Psychiatry, University of Lübeck*

A-0294 HOW FINANCIAL INCENTIVES EFFECT EMPATHY

Vassil Iotzov[1], Anne Saulin[1], Jochen Kaiser[2], Shihui Han[3], Grit Hein[1] | *[1]Translational Social Neuroscience Unit, Department of Psychiatry, University of Würzburg; [2]Institute of Medical Psychology, University of Frankfurt; [3]School of Psychological and Cognitive Sciences, PKU-IDG/McGovern Institute for Brain Research, Peking University, Beijing*

A-0295 UNDERSTANDING SOCIAL MOTIVATION: A NEURO-PHARMACOLOGICAL AND CLINICAL ACCOUNT

Giorgia Silani[1], S. Korb[2], C. Massaccesi[2], S. Götzendorfer[2], E. Chiappini[2], C. Eisenegger[2], M. Willeit[2] | *[1]University and Medical University of Vienna; [2]University of Vienna*

THURSDAY, 24 JUNE 2021

	CHANNEL 2
11:00-12:20	NEUROCOGNITIVE MECHANISMS IN EMOTIONAL VULNERABILITY AND RESILIENCE: IMPLICATIONS FOR INTERVENTION AND TREATMENT

Session leads: Nazanin Derakhshan and Florin Dolcos

The steady rise in mental disorders calls for an urgent need to identify potential risk markers that can be targeted to develop effective interventions in the treatment and prevention of psychological vulnerability.

Neurocognitive mechanisms of attentional control networks have become increasingly informative in explaining emotional vulnerability and resilience. The predictive value of such neural mechanisms can help design and inform effective interventions aimed at improving cognitive efficiency and empowering resilience in every day functioning.

This symposium brings together younger as well as more experienced researchers who will present their pioneering original work on the value of neurocognitive processes in emotional and cognitive health in vulnerable populations. Nick Berggren will talk about how task manipulations influencing relevant neurocognitive networks can attenuate toxic attentional biases in high anxiety. Bethany Chapman will be discussing the role of the ERN (error-related negativity) in explaining cancer related cognitive and emotional vulnerability in survivors of breast cancer, with implications for improving quality of life. Vida Mirabolfathi's talk will present data on the neural underpinnings of visual working memory impairments in PTSD and the effects of adaptive cognitive training in improving quality of life in PTSD sufferers. Florin Dolcos will be presenting a novel cognitive-emotion training intervention targeting the learning of emotion-regulation strategies with direct effects on neuroplasticity- induced change improving resilience in veterans. Nazanin Derakshan, as Discussant, will integrate and highlight key facts from the four talks with suggestions for future strategies promoting translational neuorscientific research in clinical practice.

A-0340   TASK-SET PRECISION MODULATES ATTENTIONAL BIASES TO TASK-IRRELEVANT THREAT: EVIDENCE FROM A HIGH TRAIT ANXIOUS SAMPLE

Nick Berggren, Martin Eimer | *Department of Psychological Sciences, Birkbeck University of London, London, UK*

A-0341 THE ROLE OF THE ERN IN EMOTIONAL VULNERABILITY AND RESILIENCE IN SURVIVORS OF PRIMARY BREAST CANCER

Bethany Chapman[1], Jessica Swainston[1], Jason Moser[2], Nazanin Derakhshan[3] | *[1]The BRiC Centre, Department of Psychological Sciences, Birkbeck University of London; [2]Michigan State University, USA; [3]The BRiC Centre, Birkbeck University of London, London UK*

A-0342 NEUROCOGNITIVE MARKERS OF IMPAIRED ATTENTIONAL CONTROL IN PTSD AND THEIR ROLE IN IMPROVING QUALITY OF LIFE IN PTSD

Vida Mirabolfathi[1], Mohammad Hasan Choobin[2], Alireza Moradi[1,2], Nazanin Derakhshan[3] | *[1]Institute of Cognitive Science Studies; (ICCS), Tehran, Iran; [2]Kharazmi University, Tehran, Iran; [3]Birkbeck University of London*

A-0343 CULTIVATING AFFECTIVE RESILIENCE: TRANSLATIONAL BENEFITS FROM A NOVEL COGNITIVE-EMOTIONAL TRAINING INTERVENTION

Florin Dolcos[1], Yifan Hu[2], Christian Williams[3], Howard Berenbaum[3], Sanda Dolcos[4] | *[1]Department of Psychology, Neuroscience Program, Beckman Institute for Advanced science and Technology, University of Illinois at Urbana Champaign, Campaign, IL, USA; [2]Department of Psychology, Neuroscience Program, University of Illinois at Urbana–Champaign, Champaign, IL, United States; [3]Department of Psychology, University of Illinois at Urbana–Champaign, Champaign, IL, United States; [4]Department of Psychology, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana–Champaign, Champaign, IL, United States*

A-0344 THE HIDDEN CONTRIBUTION OF NEUROSCIENCE IN COGNITIVE AND EMOTIONAL HEALTH

Nazanin Derakhshan | *Department of Psychological Sciences, Birkbeck University of London, London UK*

CHANNEL 1	
12:50-13:55	THE NEUROBIOLOGICAL BASIS OF NATURALISTIC SOCIAL INTERACTIONS

Session lead: Satja Mulej Bratec and Simon Guendelman

Until fairly recently, social neuroscience investigated effects of socially-relevant stimuli on brain activity changes, rather than social interactions per se. Embracing the emerging neuroscience of real-life, naturalistic social interactions, the proposed symposium will provide an overview of latest research and developments within the field.

The specific talks will approach the topic of naturalistic social interactions from two theoretical standpoints. Two of the four talks will focus on interpersonal emotion regulation, emphasizing the role of social interactions in regulating emotions. Simón Guendelman will reveal how regulating negative emotions of another person reduces own stress, focusing on the neurobiological correlates and the role of individual differences in empathy, while Satja Mulej Bratec will present the neural underpinnings of having your emotions regulated by another person – either via social reappraisal or via simple supportive social presence.

The remaining two talks will instead focus on our tendency to align with our interactive partners in terms of behaviors and emotions - emphasizing the role of similarity in neural activity during social alignment. Heini Saarimäki will discuss the behavioral and neural substrates of emotional alignment and the flow of emotions from one person to another, while Hila Gvirts will talk about inter-brain neural synchrony during reciprocal social interactions, proposing a core mechanism for social connectedness comprising of a loop between inter- brain synchrony within the "Social Attention System" and the "Social Alignment Loop".

A-0354 REGULATING NEGATIVE EMOTIONS OF OTHERS REDUCES OWN STRESS: NEURAL CORRELATES AND THE ROLE OF EMPATHY

Simón Guendelman[1], Mareike Bayer[1], Kristin Prehn[2], Isabel Dziobek[1] | [1]Clinical Psychology of Social Interaction, Berlin School of Mind & Brain & Institute of Psychology, Humboldt-Universität zu Berlin, Germany; [2]Department of Psychology, Medical School Hamburg, Hamburg, Germany

A-0355 BRAIN MECHANISMS OF SOCIAL EMOTION REGULATION

Satja Mulej Bratec[1], Georg Starke[2], Teresa Bertram[2], Christian Sorg[3] | *[1]Department of Psychology, Faculty of Arts, University of Maribor, Maribor, Slovenia; [2]Department of Neuroradiology and TUM-NIC Neuroimaging Center, Klinikum rechts der Isar, Technische Universität München, Munich, Germany; [3]Department of Neuroradiology, Department of Psychiatry, and TUM-NIC Neuroimaging Center, Klinikum rechts der Isar, Technische Universität München, Munich, Germany*

A-0356 NEURAL BASIS OF EMOTIONS IN SOCIAL INTERACTION

Heini Saarimäki[1], Dmitry Smirnov[2], Anna Aksiuto[2], Lauri Nummenmaa[3] | *[1]Human Information Processing Laboratory, Faculty of Social Science, Tampere University, Finland; [2]Brain and Mind Laboratory, Department of Neuroscience and Biomedical Engineering, Aalto University, Finland; [3]Turku PET Centre and Department of Psychology, University of Turku, Finland*

A-0357 INTER-BRAIN NEURAL SYNCHRONY DURING RECIPROCAL SOCIAL INTERACTION

Hila Gvirts[1], Rotem Perlmutter[2] | *[1]The Department of Behavioral Sciences and Psychology, Ariel University, Ariel, Israel; [2]The Department of Psychology, University of Haifa, Haifa, Israel*

	CHANNEL 2
12:50-13:55	ENHANCING REPLICABILITY: STANDARDISING AND OPTIMISING MEASUREMENT IN BEHAVIOURAL RESEARCH

Session leads: Dominik Bach and Filip Melinscak

In many fields of behavioural research and experimental psychology, the measurement of dependent variables is heterogeneous. This concerns the observables used, their pre-processing and statistical analysis, and the experimental setup in which to interrogate the impact of an independent variable For any researcher planning a new study, this heterogeneity mandates choices. Empirical research should ideally be objective (independent from the personal preferences of the researcher) and rational (optimal for the research goal). However, there are few criteria on which to base these choices.

In this symposium, we provide four perspectives on this conundrum. The first perspective underlines that measurement choices can have dramatic impact on research conclusions, and should therefore be made in an objective manner. [The second perspective introduces the calibration framework and the concept of retrodictive validity. This provides an objective and rational criterion for the lassessment of measurement methods, and thus allows optimising measurement methods. The third perspective concerns the evaluation and optimisation of the experimental setup to which an independent variable is added. This is based on simulation-based experimental design optimisation. The fourth perspective is to provide institutional infrastructure to facilitate open science practices such as preregistration, and to distribute empirical work. This highlights the role of multiple independent actors to standardise research.

Taken together, this symposium addresses several of the theoretical issues that currently limit the replicability of experimental research in psychology and behavioural sciences, and provides practical solutions to these problems.

A-0386 NAVIGATING THE GARDEN OF FORKING PATH OF EXPERIMENTAL MEASUREMENT IN FEAR CONDITIONING RESEARCH

Tina B. Lonsdorf | *Institute for Systems Neuroscience, University Medical Center Hamburg Eppendorf*

A-0387 CALIBRATING THE MEASUREMENT OF COGNITIVE VARIABLES IN EXPERIMENTAL RESEARCH

Dominik Bach | *University College London*

A-0388 OPTIMISING EXPERIMENTS THROUGH SIMULATION-BASED DESIGN

Filip Melinscak | *University of Vienna*

A-0389 DEVELOPING AND PROVIDING AN INFRASTRUCTURE FOR OPEN SCIENCE – WHAT ZPID HAS TO OFFER

Stefanie Mueller | *Leibniz Institute for Psychology (ZPID)*

	CHANNEL 1
14:15-16:15	ORAL PRESENTATIONS AND POSTERS

A-0160 EYEBROW ANGLE AND GAZE DIRECTION AS MODULATORS OF THE EMOTIONAL VALUE OF SCHEMATIC FACES: A VISUAL MISMATCH NEGATIVITY (VMMN) STUDY

Annika Kask[1,2], Nele Põldver[1], Kairi Kreegipuu[1] | *[1]Institute of Psychology, University of Tartu, Tartu, Estonia; [2]Doctoral School of Behavioural, Social and Health Sciences, Tartu, Estonia*

A-0163 DANCE EXPERTISE MODULATES EMOTION SENSITIVITY: INSIGHTS FROM FACE PROCESSING AND EMBODIED COGNITION USING SOMATOSENSORY EVOKED POTENTIALS

Vasiliki Meletaki, Bettina Forster, Beatriz Calvo-Merino | *Cognitive Neuroscience Research Unit, Department of Psychology, City, University of London, UK*

A-0167 AGE-RELATED DIFFERENCES IN THE VARIABILITY OF BOLD SIGNAL FOR SPATIAL AND TEMPORAL SOURCE MEMORY INFLUENCE INFORMATION PROCESSING CAPACITY

H. Wang[1], M. N. Rajah[2,3], F. Burles[1], S. Pasvanis[3], A. B. Protzner[1,4] | *[1]University of Calgary, Department of Psychology, Calgary, Canada; [2]McGill University, Psychiatry, Verdun, Canada; [3]Douglas Institute, Verdun, Canada; [4]Hotchkiss Brain Institute, Calgary, Canada*

A-0169 LEARNING TO PRESERVE: FOREIGN LANGUAGE TRAINING AS COGNITIVE TRAINING TO PREVENT OLD AGE DISORDERS?

Saskia E. Nijmeijer[1], Merel Keijzer[2], Marie-José van Tol[1] | *[1]University Medical Center Groningen, The Netherlands; [2]University of Groningen, The Netherlands*

A-0171 THE ROLE OF STATISTICAL LEARNING IN VOCABULARY ACQUISITION OF DOGS AS EVIDENCED BY AWAKE EEG AND FMRI

Marianna Boros[1,2], Anett Bozsik[1,3], Dávid Török[1,3], Andrea Deme[4,5], Attila Andics[1,2] | *[1]MTA-ELTE 'Lendület' Neuroethology of Communication Research Group, Budapest, Hungary; [2]Department of Ethology, Eötvös Loránd University, Budapest, Hungary; [3]University of Veterinary Medicine, Budapest, Hungary; [4]Department of Applied Linguistics and Phonetics, Faculty of Humanities, Eötvös Loránd University, Budapest, Hungary; [5]MTA-ELTE 'Lendület' Lingual Articulation Research Group, Budapest, Hungary*

A-0172 THE EFFECT OF AMBIGUOUS AND UNAMBIGUOUS STIMULI ON TARGET PROCESSING IN LESS CREATIVE AND CREATIVE GROUPS

Petra Csizmadia[1,2],Boglárka Nagy[1,2], István Czigler[1], Zsófia Anna Gaál[1] | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]Budapest University of Technology and Economics, Doctoral School of Psychology; (Cognitive Science), Budapest, Hungary*

A-0173 INTEGRATION OF REWARD WITH EFFORT DURING SUBSEQUENT STAGES OF MOTIVATED BEHAVIOR

Davide Gheza[1,4], Eliana Vassena[2,3], Gilles Pourtois*[4], Annekathrin Schacht*[1] | *[1]Department of Affective Neuroscience and Psychophysiology, Georg-August-University Göttingen, Göttingen, Germany; [2]Experimental Psychopathology and Treatment group, Behavioral Science Institute, Radboud University, Nijmegen, The Netherlands; [3]Donders Institute for Brain Cognition and Behaviour, Radboudumc, Nijmegen, the Netherlands; [4]Department of Experimental Clinical and Health Psychology, Ghent University, Ghent, Belgium, *Contributed equally*

A-0175 AGE-RELATED EFFECTS ON VARYING CONFLICT IN A FLANKER TASK – AN ERP STUDY

Zsófia Kardos[1,2], Andrea Kóbor[1], Kata Horváth[3,4,5], Márk Molnár[4,6] | [1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [3]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [4]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [5]Brain, Memory and Language Research Group, Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [6]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary

A-0176 EFFECTS OF SOCIAL ISOLATION AND FASTING ON STRESS-RESPONSES, AFFECTIVE STATES AND MOTIVATED BEHAVIOR

Ana Stijovic[1], Livia Tomova[2], Nadine Skoluda[1], Urs Nater[1], Giorgia Silani[1] | [1]University of Vienna, Vienna, Austria; [2]University of Cambridge, Cambridge, UK

A-0177 EARLY DIAGNOSIS OF EPILEPSY IN CHILDREN WITH DEVELOPMENTAL DELAY

Kseniya Gladun | [1]Institute of Higher Nervous Activity and Neurophysiology of RAS; (IHNA&NPh RAS), Moscow, Russia; [2]Goncharov Dynasty Medical Center, Moscow, Russia

A-0180 INVESTIGATING THE DIFFERENTIAL EFFECTS OF AGE AND WORKING MEMORY LOAD ON THE ERROR RELATED NEGATIVITY (ERN) AND EMOTIONAL REACTIVITY FOLLOWING A WORRY INDUCTION. A BEHAVIOURAL AND ERP STUDY.

Patricia Beloe[1], Jason Moser[2], Nazanin Derakhshan[1] | [1]Birkbeck University of London, UK; [2]Michigan State University, USA

A-0188 TO BE OR NOT TO BE FLEXIBLE: SELECTIVE IMPAIRMENTS IN COGNITIVE FLEXIBILITY AS A MEANS TO DIFFERENTIATE BETWEEN DEPRESSION AND PTSD SYMPTOMS

Shilat Haim-Nachum, Einat Levy-Gigi | Bar-Ilan University, Ramat-Gan, Israel

A-0190   METRIC BODY REPRESENTATIONS IN MIRROR-SENSORY SYNAESTHESIA

Natalie C. Bowling[1,2], Michael J. Banissy[2] | *[1]University of Greenwich, London, UK; [2]Goldsmiths, University of London, UK*

A-0194   NEUROPHYSIOLOGICAL EVIDENCE OF THE INFLUENCE OF EMOTIONAL COMPETENCIES DURING EMOTION AND ATTENTION INTERACTION.

Simon Rigoulot[1,2], Jean-Philippe Caron[1,2], Benoit Brisson[1,2] | *[1]Department of Psychology, Université du Québec à Trois-Rivières, Canada; [2]CogNAC Laboratory, Université du Québec à Trois-Rivières, Canada*

A-0195   INCREASED MPFC-ACC FUNCTIONAL CONNECTIVITY IS ASSOCIATED WITH INCREASED PAIN PERCEPTION IN MIGRAINE

Gyongyi Kokonyei[1,2,3], Attila Galambos[3,4], Kinga Gecse[1,2], Dora Dobos[1,2], Csaba Aranyi[5], Miklos Emri[5], Lajos R. Kozak[6], Gyorgy Bagdy[2,7], Gabriella Juhasz[1,2,8] | *[1]SE-NAP2 Genetic Brain Imaging Migraine Research Group, Hungarian Academy of Sciences, Semmelweis University, Budapest, Hungary; [2]Department of Pharmacodynamics, Faculty of Pharmacy, Semmelweis University, Budapest, Hungary; [3]Institute of Psychology, ELTE Eotvos Lorand University, Budapest, Hungary; [4]Doctoral School of Psychology, ELTE Eotvos Lorand University, Budapest, Hungary; [5]Division of Nuclear Medicine and Translational Imaging, Department of Medical Imaging, Faculty of Medicine, University of Debrecen, Hungary; [6]MR Research Center, Semmelweis University, Budapest, Hungary; [7]MTA-SE Neuropsychopharmacology and Neurochemistry Research Group, Hungarian Academy of Science, Semmelweis University, Budapest, Hungary; [8]Neuroscience and Psychiatry Unit, Division of Neuroscience and Experimental Psychology, School of Biological Sciences, Faculty of Biological, Medical and Human Sciences, The University of Manchester and Manchester Academic Health Sciences Centre, Manchester, UK*

A-0196   DEVELOPMENT OF ATTENTION TO SOCIAL INTERACTIONS IN SCENES

Mihai Ioana[1], Skripkauskaite Simona[1,2], Koldewyn Kami[1] | *[1]Bangor University, United Kingdom; [2]University of Oxford, United Kingdom*

A-0198 DOES VERBAL CONTEXT MODULATE ELECTROPHYSIOLOGICAL CORRELATES OF AFFORDANCE COMPETITION DURING OBJECT PERCEPTION?

Godard Marc[1], Kalénine Solène[1], Delepoulle Samuel[2], Wamain Yannick[1] | *[1]Univ. Lille, CNRS, UMR 9193 - SCALab - Sciences Cognitives et Sciences Affectives, F-59000 Lille, France; [2]Univ. Littoral Côte d'Opale, EA 4491 – LISIC – Informatique Signal et Image de la Côte d'Opale, F – 62228, France*

A-0200 IN SEARCH OF THE MECHANISMS OF EMOTION CONGRUENCE IN EMOTION PERCEPTION

Dmitry Lyusin[1,2], Yulia Kozhukhova[3], Ekaterina Suchkova[1], Maria Malygina[1] | *[1]National Research University Higher School of Economics, Moscow, Russia; [2]Institute of Psychology of the Russian Academy of Sciences, Moscow, Russia; [3]RANEPA, Moscow, Russia*

A-0202 SITUATING THE "ME" IN THE "WE": THE EFFECT OF TEMPORAL COORDINATION ON HOW WE MOVE AND HOW WE FEEL ABOUT OURSELVES AND OTHERS

Merle T. Fairhurst[1,2]*, Ana Tajadura-Jiménez[3,4]*, Peter E. Keller[5], Ophelia Deroy[1,2,6] | *[1]Institute for Psychology, Bundeswehr University Munich, Munich, Germany; [2]Faculty of Philosophy & Philosophy of Science & Munich Center for Neuroscience, Ludwig Maximilian University, Munich, Germany; [3]DEI Interactive Systems Group, Department of Computer Science, Universidad Carlos III de Madrid, Madrid, Spain; [4]UCL Interaction Centre; (UCLIC), University College London, London, United Kingdom; [5]The MARCS Institute for Brain, Behaviour and Development, Western Sydney University, Sidney, Australia; [6]Centre for the Study of the Senses, School of Advanced Study, University of London, London, UK*First authorship shared*

A-0203 SUBJECTIVE FATIGUE AS THE MOST OBJECTIVE FATIGUE MEASURE: COMPARISON OF DIFFERENT FATIGUE MEASURES IN A VISUAL MISMATCH NEGATIVITY EXPERIMENT

Kairi Kreegipuu, Nele Põldver | *University of Tartu, Tartu, Estonia*

A-0204 THE IMPACT OF GAME ELEMENTS ON COGNITIVE TRAINING EFFECTIVENESS

Annie Desmarais, Alessandro Pozzi, François Vachon | *Université Laval, Quebec, Canada*

A-0205   POSSIBLE ASSOCIATION BETWEEN SPINDLE FREQUENCY AND REVERSAL-LEARNING IN AGED FAMILY DOGS

Ivaylo B. Iotchev[1], Dóra Szabó[1], Anna Kis[2], Enikő Kubinyi[1] | *[1]Department of Ethology, Eötvös Loránd University, Budapest, Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary*

A-0206   AGE-RELATED POSITIVITY EFFECT ON BEHAVIOURAL RESPONSES OF DOGS TO HUMAN VOCALISATIONS

Iris Smit[1,2], Dora Szabo[1], Enikő Kubinyi[1] | *[1]Eötvös Loránd University, Department of Ethology, Budapest, Hungary; [2]HAS University of Applied Sciences, 's-Hertogenbosch, The Netherlands*

A-0207   THE ELECTROPHYSIOLOGY OF SEMANTIC PROCESSING IN MENTALISTIC SOCIAL SITUATIONS

Bálint Forgács[1], Judit Gervain[2], Eugenio Parise[3], Gergely Csibra[4], György Gergely[4], Zsuzsanna Üllei Kovács[1], Lívia Elek[1], Ildikó Király[1] | *[1]Eötvös Loránd University, Hungary; [2]Università Padua, Italy; [3]Lancaster University, UK; [4]Central European University, Hungary*

A-0208   TEMPORAL CONSTRAINTS OF ACTION-EFFECT RELATED MOTOR ADAPTATION AND SCHIZOTYPY

Olivér Nagybányai Nagy[1], Bence Neszmélyi[2,3,4], Márta Volosin[2,5], János Horváth[1,2] | *[1]Institute of Psychology, Károli Gáspár University of the Reformed Church in Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [3]Budapest University of Technology and Economics, Budapest, Hungary; [4]Pázmány Péter Catholic University, Budapest, Hungary; [5]Institute of Psychology, University of Szeged*

A-0210   THE RELATIONSHIP BETWEEN RECOGNITION OF ONE'S OWN AND OTHERS' NON-EMOTIONAL INTERNAL STATES IN CHILDHOOD AND ADOLESCENCE

Lara Carr, Federica Biotti, Dawn Watling, Rebecca Brewer | *Royal Holloway, University of London, Egham, UK*

A-0212 DIFFERENCES IN EXPRESSION OF BASIC EMOTIONS DEPENDING ON THE VISUAL OR VERBAL MODALITY OF THE TASK

Liina Juuse[1,2,3], **Nele Põldver**[1], **Annika Kask**[1,3], **Jüri Allik**[1,4], **Tiit Mogom**[1], **Gholomreza Anbarjafari**[2], **Kairi Kreegipuu**[1] | *[1]Institute of Psychology, University of Tartu, Tartu, Estonia; [2]iCV Research Lab, Institute of Technology, University of Tartu, Tartu, Estonia; [3]Doctoral School of Behavioural, Social, Health Sciences, University of Tartu, Tartu, Estonia; [4]Estonian Academy of Sciences, Tallinn, Estonia; Institute of Psychology, University of Tartu, Tartu, Estonia*

A-0215 PSYCHOPATHY PHENOTYPES AND INTEROCEPTIVE PROCESSING: A STUDY PROTOCOL WITH HEARTBEAT-EVOKED POTENTIALS

Carlos Campos[1,2,3], **Nuno Rocha**[3], **Fernando Barbosa**[1] | *[1]Laboratory of Neuropsychophysiology, Faculty of Psychology and Education Sciences, University of Porto, Porto, Portugal; [2]Faculty of Medicine, University of Porto, Porto, Portugal; [3]Center for Rehabilitation Research, School of Health, Polytechnic Institute of Porto, Porto, Portugal*

A-0216 DIFFERENCES IN CORTICAL WORKING MEMORY CODING OF BIOLOGICAL MOTION OF ONESELF AND OTHERS

Mateusz Woźniak[1,2,3*], **Timo Torsten Schmidt**[3*], **Yuan-hao Wu**[3], **Felix Blankenburg**[3], **Jakob Hohwy**[1] | *[1]Cognition and Philosophy Lab, Monash University, Melbourne, Australia; [2]Social Mind and Body Lab, Central European University, Vienna, Austria; [3]Neurocomputation and Neuroimaging Unit, Freie Universität Berlin, Berlin, Germany*

A-0217 EMOTION PERCEPTION AND ITS PHYSIOLOGICAL SIGNATURE: MODALITY MATTERS!

Julia Folz, Amandine Lassalle, Wouter Boekel, Donatella Fiacchino, Mariska E. Kret | *Cognitive Psychology Unit, Faculty of Social Sciences, Leiden University, Netherlands*

A-0218 A MMN MULTIFEATURE PARADIGM FOR PROFILING THE CENTRAL AUDITORY PROCESSING OF ADULTS.

Maria Ioanna Zavogianni[1,2], **Ferenc Honbolygó**[1,3] | *[1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Multilingualism Doctoral School, University of Pannonia, Veszprém, Hungary; [3]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary*

A-0221 REAL-TIME WRITING AND PSYCHOPHYSIOLOGICAL CORRELATES OF EXPRESSIVE WRITING

Rui A. Alves[1], Teresa Jacques[1], Setareh Fadaei[1], Francisca Costa[1], Fernando Barbosa[2] | *[1]Neurocognition and Language Lab, Faculty of Psychology and Education Sciences, University of Porto, Portugal; [2]Neuropsychophysiology Lab, Faculty of Psychology and Education Sciences, University of Porto, Portugal*

A-0224 INVOLVEMENT OF CENTROMEDIAL AND BASOLATERAL SUBDIVISIONS OF THE HUMAN AMYGDALA IN INSTRUMENTAL LEARNING

Emilia Kolada[1], Mateusz Wilk, Krzysztof Bielski[1], Izabela Szopa[2], Sylwia Adamus[1], Marek Wypych[3], Iwona Szatkowska[1] | *[1]Laboratory of Emotions Neurobiology, Nencki Institute of Experimental Biology PAS, Warsaw, Poland; [2]Neuro Device Group, Warsaw, Poland; [3]Laboratory of Brain Imaging, Nencki Institute of Experimental Biology PAS, Warsaw, Poland*

A-0225 A REAL-WORD TRIAL OF EMOTION RECOGNITION TRAINING IN INDIVIDUALS TAKING ANTIDEPRESSANTS

Steph Suddell[1], Chung Yen Looi[1,2], Jim Lumsden[1], Kiri Granger[2], Jennifer H Barnett[2,3], Marcus Munafò[1,4], Ian Penton-Voak[1] | *[1]School of Psychological Science, University of Bristol, UK; [2]Cambridge Cognition Ltd., UK; [3]Department of Psychiatry, University of Cambridge, UK; [4]MRC Integrative Epidemiology Unit, University of Bristol, UK*

A-0226 UNDERSTANDING NEUROCOGNITIVE WORKING MECHANISMS OF RELAPSE PREVENTION – THE ROLE OF EMOTION PROCESSING IN REMITTED MAJOR DEPRESSIVE DISORDER

Marie-José van Tol[1], Ronja M. Eike[2], Rozemarijn S. van Kleef[1], Evelien van Valen[3], Jan-Bernard Marsman[1], André Aleman[1], Claudi L.H. Bockting[4] | *[1]University Medical Centre Groningen, Department of Neuroscience, section Cognitive Neuropsychiatry, Groningen, the Netherlands; [2]University of Groningen, Faculty of Science and Engineering, Groningen, the Netherlands; [3]University Medical Center Utrecht, department of Geriatrics, Utrecht, the Netherlands; [4]University of Amsterdam, Centre for Urban Mental Health and Department of Psychiatry, UMC, location AMC, the Netherlands*

A-0230 THE NEUROPHYSIOLOGICAL CORRELATES OF ATTACK AND DEFENCE CONFLICTS

Rui C. Coelho[1], Tiago O. Paiva[1], Rita Pasion[1], Eva Dias-Oliveira[2], Pedro R. Almeida[3], Fernando Barbosa[1] | *[1]Laboratory of Neuropsychophysiology, Faculty of Psychology and Educational Sciences of the University of Porto; [2]LeadLab, Catolica Porto Business School, Portuguese Catholic University, Porto, Portugal; [3]School of Criminology and Interdisciplinary Research Center on Crime, Justice and Security, Faculty of Law of the University of Porto*

A-0238 PROCESSING OF OWN AND OTHER-AGE FACES: AN ERP STUDY

Carina Fernandes, Ana R. Gonçalves, Rita Pasion, Mariana R. Pereira, Fernando Ferreira-Santos, Fernando Barbosa, João Marques-Teixeira | *[1]Laboratório de Neuropsicofisiologia, Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto; [2]UCL GOS Institute of Child Health, London, United Kingdom*

A-0240 MULTILEVEL ANALYSIS OF FLOW – GENETIC FACTORS AND ELECTRODERMAL CORRELATES

Eszter Kotyuk[1], Helga Stadler[1], Szabolcs Zimonyi[1], Krisztian Kasos[2,1], Zsolt Ronai[3], Anna Szekely[1] | *[1]MTA-ELTE Lendület Adaptation Research Group, Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [2]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]Department of Medical Chemistry, Molecular Biology and Pathobiochemistry, Semmelweis University, Budapest, Hungary*

A-0241 MAPPING JOINT ACTIONS IN FREE PLAY

Anna Szekely[1], Bianka Gonye[2,1], Eszter Kotyuk[1], Krisztian Kasos[2,1], Luca Csirmaz[1], Peter Haga[3], Tamas Borsos[3], Andras Veres[3] | *[1]MTA-ELTE Lendület Adaptation Research Group, Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [2]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]Obimon Systems Ltd*

THURSDAY, 24 JUNE 2021

A-0242 INCONGRUENCE BETWEEN FACIAL EMOTIONS AND CONTEXTUAL INFORMATION: AN FMRI STUDY

Brigitte Biró[1,2,3], Renáta Cserjési[2], Gabriella Juhász[3,4], Gyöngyi Kökönyei[2,3,4] | [1]*Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [2]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]SE-NAP; [2]Genetic Brain Imaging Migraine Research Group, Hungarian Academy of Sciences, Semmelweis University, Budapest, Hungary; [4]Department of Pharmacodynamics, Faculty of Pharmacy, Semmelweis University, Budapest, Hungary*

A-0244 HIGHER SCORES ON OWNER-RATED ADHD QUESTIONNAIRE ARE ASSOCIATED WITH POORER SLEEP EFFICIENCY IN DOGS' SLEEP EEG

Cecília Carreiro[1], Vivien Reicher[1], Anna Kis[2], Márta Gácsi[1,3] | [1]*Department of Ethology, Eötvös Loránd University, Budapest, Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [3]MTA-ELTE Comparative Ethology Research Group, Budapest, Hungary*

A-0245 HOW DOES EMOTION CONTRIBUTE TO THE ROLE OF METACOGNITIVE ABILITY IN CONFORMITY?

Cansin Gungor, Huseyin Guven, Terry Eskenazi | *Koc University, Istanbul, Turkey*

A-0246 AGE-RELATED DIFFERENCES IN A 'REFERENCE-BACK' TASK BOTH WITH AND WITHOUT IRRELEVANT DISTRACTORS

Zsófia Anna Gaál[1], Béla Petró[1], Petia Kojouharova[1], Katalin Scheiling[1], Boglárka Nagy[1,2], Petra Csizmadia[1,2], István Czigler[1] | [1]*Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]Budapest University of Technology and Economics, Doctoral School of Psychology (Cognitive Science), Budapest, Hungary*

A-0249 EXPLORING THE DIFFERENCES BETWEEN GAZE AND ARROW: IS IT POSSIBLE THAT YOUR GAZE DISTRACTS ME?

Cristina Narganes-Pineda[1], Andrea Marotta[1], Andrew Bayliss[2], Ana Chica[1], Juan Lupiáñez[1] | [1]*Department of Experimental Psychology and Mind, Brain, and Behavior Research Center; (CIMCYC), University of Granada, Spain; [2]School of Psychology, University of East Anglia, Norwich, England*

THURSDAY, 24 JUNE 2021

A-0253 THE NEURAL AND BEHAVIORAL CHARACTERISTICS OF TIMING FUNCTIONS IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

Eri Miyauchi, Shoko Kinumaki, Masahiro Kawasaki | *Department of Intelligent Interaction Technology, Graduate School of Systems and Information Engineering, University of Tsukuba, Japan*

A-0254 IDENTIFICATION OF EMOTIONAL EXPRESSIONS AND ITS INTEGRATION WITH GAZE DIRECTION IN INDIVIDUALS WITH HIGH AUTISTIC TRAITS.

Andrea Marotta[1], Belén Aranda-Martín[1], Marco DeCono[2], María Ángeles Ballesteros-Duperón[1], María Casagrande[2], Juan Lupiáñez[1] | *[1]Department of Experimental Psychology and Mind, Brain, and Behavior Research Center; (CIMCYC), University of Granada, Spain; [2]Dipartimento di Psicologia Dinamica e Clinica, Sapienza Università di Roma, Rome, Italy*

A-0256 AN ERP STUDY ON THE INFLUENCE OF EMOTIONAL SELF-RELEVANT STIMULI ON ATTENTION AND MEMORY

Alfred Veldhuis, Sanjay Kumar, Clare Rathbone, Michael Pilling | *Oxford Brookes University, Oxford, United Kingdom*

A-0257 NEURAL REWARD RESPONSE AND MOTOR INHIBITION ARE RELATED TO IMPULSIVITY IN DOGS

Anna Gábor[1], Nóra Bunford[2,3], Márta Gácsi[2,4], Attila Andics[1,2] | *[1]MTA-ELTE 'Lendület' Neuroethology of Communication Research Group; [2]Department of Ethology, Eötvös Loránd University; [3]'Lendület' Developmental and Translational Neuroscience Research Group, Természettudományi Kutatóközpont; [4]MTA-ELTE Comparative Ethology Research Group*

A-0259 IMPLICIT LEARNING OF HUNGARIAN VOWEL HARMONY

Albertyna Paciorek, Stanisław Turno, Łukasz Baszczak, Łukasz Budyta, Apolonia Bokszycka, Dominika Pieszczek | *Faculty of Psychology, University of Warsaw*

A-0265 EXTRAORDINARY BODIES: HOW THE ABLE-BODIED BRAIN PERCEIVES PERSONS WITH PHYSICAL DISABILITIES

Helge Gillmeister | *University of Essex*

A-0378 RACIAL BIAS IN NEURAL RESPONSE TO OTHER-RACE PEOPLE IS REDUCED WITH EXPOSURE TO POSITIVE SOCIAL INFORMATION

Alessandra Brusa, Antonia Pesič, Alice Mado Proverbio | *Dept. of Psychology, University of Milano-Bicocca, Milano, Italy*

A-0379 ACUTE PHYSICAL ACTIVITY INFLUENCES INTERCEPTIVE PROCESSING: THE MODERATING ROLE OF CHRONIC STRESS

Amie Wallman-Jones, Mirko Schmidt | *Institute of Sport Science, University of Bern, Switzerland*

A-0380 DOES BELIEF IN FREE WILL INFLUENCE BIOLOGICAL MOTION PERCEPTION?

Wei Peng[1], Emiel Cracco[1], Nikolaus F. Troje[2], Marcel Brass[1] | *[1]Ghent University, Gent, Belgium; [2]York University, Toronto, Canada*

A-0381 YOUR BEHAVIOUR MAY HELP ME, BUT I DON'T TRUST YOU: THE INFLUENCE OF GAZE-CUE VALIDITY ON IMPRESSION FORMATION

Rachel Newey[1], Paul Rauwolf[1], Richard Ramsey[2], Kami Koldewyn[1] | *[1]Bangor University, North Wales, United Kingdom; [2]Macquarie University, Sydney, Australia*

A-0390 REWARD-CONTEXT EFFECTS ON WORKING MEMORY: INSIGHT FROM AN EEG-PUPILLOMETRY STUDY

Intan K. Wardhani, Nico Boehler | *Ghent University, Ghent, Belgium*

A-0391 MOTIVATION AND CHOICE OF STRATEGY IN EXTRINSIC EMOTION REGULATION

Atheer Odah Massarwe[1], Reout Arbel[3], Petra Zagami[1], Amit Admoni[1], Noga Cohen[1,2] | *[1]Department of Special Education, Faculty of Education, University of Haifa; [2]The Edmond J. Safra Brain Research Center for the Study of Learning Disabilities, University of Haifa; [3]Department of Counseling and Human Development, Faculty of Education, University of Haifa*

A-0392 EFFECTS OF SOCIAL DISTANCING ON THE STRENGTH HALO EFFECT: DOES ATTACHMENT STYLE MATTER?

Giulio Gabrieli[1], Yun Yee Lim[1], Gianluca Esposito[1,2,3] | *[1]Psychology Program, School of Social Sciences, Nanyang Technological University, Singapore, Singapore; [2]Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore; [3]Department of Psychology and Cognitive Science, University of Trento, Rovereto, Italy*

A-0393 THE MINIMAL EXPOSURE DURATION REQUIRED FOR NEURAL PROCESSING OF FACES AND EMOTIONAL EXPRESSIONS

Renzo Lanfranco[1,2], Andres Canales-Johnson[3,4], Axel Cleeremans[5], Hugh Rabagliati[2], David Carmel[2,6] | *[1]Department of Neuroscience, Karolinska Institute, Stockholm, Sweden; [2]Department of Psychology, University of Edinburgh, Edinburgh, UK; [3]Department of Psychology, University of Cambridge, Cambridge, UK; [4]Vicerrectoría de Investigación y Posgrado, Universidad Católica del Maule, Talca, Chile; [5]Center for Research in Cognition and Neurosciences, Université Libre de Bruxelles, Brussels, Belgium; [6]School of Psychology, Victoria University, Wellington, New Zealand*

A-0394 MEASURING THE NEURAL CORRELATES OF THE VIOLATION OF SOCIAL EXPECTATIONS: A COMPARISON OF TWO EXPERIMENTAL TASKS

Christel M. Portengen, Anneloes L. van Baar, Joyce J. Endendijk | *Utrecht University, Faculty of Social Sciences, Department of Clinical Child and Family Studies*

A-0395 PERSONALITY TRAITS AND SOCIAL PRESENCE MODULATIONS OF SYNTACTIC PROCESSING

Laura Jiménez-Ortega[1,2*], Clara Hinchcliffe[1], Francisco Muñoz[1,2], David Hernández-Gutiérrez[1], Pilar Casado[1,2], José Sánchez-García[1], Manuel Martín-Loeches[1,2] | *[1]Cognitive Neuroscience Section, UCM-ISCIII Center for Human Evolution and Behavior, Madrid, Spain; [2]Department of Psychobiology & Behavioral Sciences Methods, Complutense University of Madrid, Madrid, Spain*

A-0396 THE NATURE OF SYNTAX: AUTOMATIC AND CONTEXT-DEPENDENT.

Laura Jiménez-Ortega[1,2], Esperanza Badaya[3], Pilar Casado[1,2], Sabela Fondevila[1,2], David Hernández-Gutiérrez[1], Francisco Muñoz[1,2], José Sánchez-García[1], Manuel Martín-Loeches[1,2] | *[1]Cognitive Neuroscience Section, UCM-ISCIII Center for Human Evolution and Behavior, Madrid, Spain; [2]Department of Psychobiology & Behavioral Sciences Methods, Complutense University of Madrid, Madrid, Spain; [3]Department of Psychology, Psychology and Language Sciences, The University of Edinburgh, Edinburgh, Scotland*

A-0397 ASSOCIATION BETWEEN MATH ANXIETY AND A LESS EFFICIENT SHIFTING BETWEEN ARITHMETICAL TASK-SETS: AN ERP STUDY

Belén González-Gómez[1,2], María Isabel Núñez-Peña[1,2,3], Àngels Colomé[2,4] | *[1]Department of Social Psychology and Quantitative Psychology, Faculty of Psychology, University of Barcelona, SPAIN; [2]Institute of Neurosciences, University of Barcelona, SPAIN; [3]Institut de Recerca Sant Joan de Déu, SPAIN; [4]Department of Cognition, Development and Educational Psychology, Faculty of Psychology, University of Barcelona, SPAIN*

A-0398 PRIDE AND SHAME IN SOCIAL CONTEXT: A NEUROFUNCTIONAL DYNAMIC APPROACH THROUGH EVENT-RELATED BRAIN POTENTIALS

Jose Sánchez-García, Gema Esther Rodríguez, David Hernández-Gutiérrez, Pili Casado, Laura Ortega, Sabela Fondevila, Francisco Muñoz, Miguel Rubianes, Manuel Martín-Loeches | *Center for Human Evolution and Behavior (ISCIII-UCM), Madrid. Spain*

A-0401 KNOWING ONESELF AND OTHERS: METACOGNITIVE SENSITIVITY AND SOURCE ACCURACY JUDGEMENTS

Yagmur Ozbay, Alper Yelimlies, Terry Eskenazi | *Koç University, Istanbul, Turkey*

A-0402 EFFECT OF NMDA RECEPTORS BLOCK VERSUS GABA-A RECEPTORS MODULATION ON AFFECTIVE DISORDERS AND BRAIN ELECTRICAL ACTIVITY IN RATS WITH METABOLIC SYNDROME

Shaimaa Nasr Amin[1,2], Sherif Ahmed Shaltout[1,3], Walaa Bayoumie El Gazzar[1,4], Noha Samir Abdel Latif[5], Shaimaa Abdalaleem Abdalgeleel[6], Dalia Azmy Elberry[2] | *[1]Department of Basic Medical Sciences, Faculty of Medicine, Hashemite University; [2]Department of Medical Physiology, Faculty of Medicine, Cairo, University; [3]Department of Pharmacology, Faculty of Medicine, Benha University; [4]Department of Biochemistry, Faculty of Medicine, Benha University; [5]Department of Medical Pharmacology, Faculty of Medicine, Cairo University; [6]Department of Biostatistics and Epidemiology, Oncology Institute, Cairo University*

A-0403 BLOCKING PRIMARY SOMATOSENSORY CORTEX WITH TMS ATTENUATES SOMATOSENSORY THREAT MEMORY CONSOLIDATION

Karita E. Ojala[1], Matthias Staib[1], Samuel Gerster[1], Christian C. Ruff[2], Dominik R. Bach[1,3] | *[1]Computational Psychiatry Research, Department of Psychiatry, Psychotherapy and Psychosomatics, Psychiatric Hospital, University of Zurich, Switzerland; [2]Zurich Center for Neuroeconomics; (ZNE), Department of Economics, University of Zurich, Switzerland; [3]Wellcome Centre for Human Neuroimaging and Max-Planck UCL Centre for Computational Psychiatry and Ageing Research, University College London, UK*

A-0404 EXPLORING THE INTERACTION BETWEEN HANDEDNESS AND BODY PARTS OWNERSHIP BY MEANS OF THE IMPLICIT ASSOCIATION TEST

Damiano Crivelli[1,2], Valeria Carmen Peviani[1,3], Gerardo Salvato[1,2,4], Gabriella Bottini[1,2,4], | *[1]Department of Brain, Behavioral Sciences, University of Pavia, Pavia, Italy; [2]NeuroMi, Milan Centre for Neuroscience, Milan, Italy; [3]Department of Neuroscience, Max Planck Institute for Empirical Aesthetics, Frankfurt am Main, Germany [4]Cognitive Neuropsychology Centre, ASST Grande Ospedale Metropolitano Niguarda, Milano, Italy*

A-0405 INFLUENCE OF WORKING MEMORY LOAD ON EMOTION REGULATION EFFECTIVENESS - AN ERP INVESTIGATION

Agnieszka Adamczyk[1], Miroslaw Wyczesany[1], Jacobien van Peer[2] | [1]*Institute of Psychology, Jagiellonian University, Krakow, PLrn; [2]Behavioral Science Institute, Radboud University, Nijmegen, NL*

A-0407 THE KEY TO BETTER MEMORY UNDER STRESS: THE EFFECT OF CORTISOL RESPONSE ON INTERFERENCE RESOLUTION AND MNEMONIC DISCRIMINATION

Ágnes Szőllősi[1,2], Szabolcs Kéri[1,3], Mihály Racsmány[1,2] | [1]*Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [3]Department of Psychiatry II, Nyírő Gyula National Institute of Psychiatry and Addictions, Budapest, Hungary*

A-0408 INFLUENCE OF AFFECT ON MOTOR ADAPTATION

Samruddhi Damle, Pratik Mutha | *Indian Institute of Technology Gandhinagar, Gujarat, India*

A-0409 INTERPLAY BETWEEN SYNTACTIC AND MOTOR SYSTEMS IN THE HUMAN BRAIN: AN EVENT-RELATED POTENTIALS STUDY FROM THE EMBODIED COGNITION PERSPECTIVE

Marta Pérez-Verdugo, Pilar Casado, Francisco Muñoz-Muñoz, Laura Jiménez-Ortega, Sabela Fondevila, José Sánchez-García, Óscar Martínez-de-Quel, Manuel Martín-Loeches | *Center UCM-ISCIII for Human Evolution and Behavior, Madrid, Spain*

A-0410 DETECTION OF SPONTANEOUS AND POSED DYNAMIC EMOTIONAL FACIAL EXPRESSIONS USING TIME FREQUENCY ANALYSIS

Alessio Miolla[1], Giulia Melis[1], Giuseppe Sartori[1], Antonio Maffei[2], Cristina Scarpazza[1,3] | [1]*Department of General Psychology, University of Padua, Via Venezia 8, 35131, Padova, Italy; [2]Padova Neuroscience Center; (PNC), University of Padova, Padova, Italy; [3]Department of Psychosis Studies, Institute of Psychiatry, Psychosis and Neuroscience, King's College London, De Crespigny Park, London SE5 8AF, UK*

A-0411 A COMPREHENSIVE JUDGMENT OF MORAL CHARACTER: AN EEG STUDY ON THE INFLUENCE OF POLITICAL ORIENTATION ON MORAL JUDGMENT

Ronja Demel[1,2], Michael Waldmann[2,3], Annekathrin Schacht[1,2] |
[1]*Affective Neuroscience and Psychophysiology Laboratory, Institute of Psychology, Georg-August University of Goettingen, Germany; [2]Leibniz ScienceCampus 'Primate Cognition', Goettingen, Germany; [3]Cognitive and Decision Sciences, Institute of Psychology, Georg-August University of Goettingen, Germany*

A-0414 SPATIO-TEMPORAL BRAIN DYNAMICS OF THE EVOLVING SOCIAL SELF

Francisco Muñoz-Muñoz[1,2], Miguel RubianesPilar Casado[1,2], David Hernández-GutiérrezLaura Jiménez-Ortega[1,2], Sabela Fondevila[1,2], José SánchezOscar Martínez-de-Quel[1], Manuel Martín-Loeches[1,2] |
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A-0415 TDCS AS TREATMENT INTERVENTION TO INCREASE EMPATHY AND REDUCE AGGRESSION IN OFFENDERS

Josanne van Dongen[1], Carmen Sergiou[1], Eric Rassin[1], Ingmar Franken[1], Emiliano Santarnecchi[2] | [1]*Erasmus University Rotterdam, the Netherlands; [2]Harvard Medical School, Boston, US*

A-0416 ACTION CO-REPRESENTATION UNDER THREAT: A SOCIAL SIMON STUDY

Morgan Beaurenaut[1], Guillaume Dezecache[2,3], Julie Grèzes[1] |
[1]*Laboratoire de Neurosciences Cognitives et Computationnelles, Département d'études cognitives, ENS, PSL Research University, INSERM, Paris, France; [2]Department of Experimental Psychology, Division of Psychology and Language Sciences, University College London, London, United Kingdom; [3]Université Clermont Auvergne, CNRS, LAPSCO, Clermont-Ferrand, France*

A-0417 DO NEURAL RESPONSES TO HEARTBEATS DISTINGUISH BETWEEN EXPERIENCED AND OBSERVED EMOTIONS?

Tahnée Engelen, Anne Buot, Julie Grèzes, Catherine Tallon-Baudry |
Cognitive and Computational Neuroscience Laboratory (LNC2), Inserm U960, Department of Cogni-tive Studies,Ecole Normale Superieure, PSL University, Paris, France

A-0418 NEURAL ACTIVITY DURING FEAR PROCESSING DEPENDS ON CIRCADIAN VARIATION OF MIGRAINE ATTACK ONSET – AN FMRI STUDY

Daniel Baksa[1,2], Edina Szabo[1,3,4], Natalia Kocsel[1,4], Attila Galambos[1,4], Andrea Edit Edes[1,2], Dorottya Pap[1], Terezia Zsombok[1], Kinga Gecse[1,2], Dora Dobos[1,2], Lajos Rudolf Kozak[5], Gyorgy Bagdy[2,6,7], Gyongyi Kokonyei[1,2,4], Gabriella Juhasz[1,2,6,7] | [1]SE-NAP2 Genetic Brain Imaging Migraine Research Group, Hungarian Brain Research Program, Semmelweis University, Budapest, Hungary; [2]Department of Pharmacodynamics, Faculty of Pharmacy, Semmelweis University, Budapest, Hungary; [3]Center for Pain and the Brain; (PAIN Research Group), Department of Anesthesiology, Critical Care and Pain Medicine, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA; [4]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [5]Department of Neuroradiology, Medical Imaging Centre, Semmelweis University, Budapest, Hungary; [6]NAP-2-SE New Antidepressant Target Research Group, Hungarian Brain Research Program, Semmelweis University, Budapest, Hungary; [7]MTA-SE Neuropsychopharmacology and Neurochemistry Research Group, Hungarian Academy of Sciences, Semmelweis University, Budapest, Hungary

A-0419 SELECTIVE PROGESTERONE RECEPTOR MODULATION TREATMENT DOES NOT IMPACT BRAIN MORPHOLOGY IN WOMEN WITH PREMENSTRUAL DYSPHORIC DISORDER

Elisavet Kaltsouni[1], Manon Dubol[1], Inger Sundström-Poromaa[2], Erika Comasco[1] | [1]Department of Neuroscience, Science for Life Laboratory, Uppsala University, Sweden; [2]Department of Women's and Children's Health, Uppsala University, Sweden

A-0420 TO TRUST OR NOT TO TRUST? FACE MODULATION OF "SOCIAL AVATARS".

Sebastian Siehl[1,2,3], Kornelius Kammler-Sücker[2], Stella Guldner[2], Frauke Nees[1] | [1]Institute of Medical Psychology and Medical Sociology, University Medical Center Schleswig-Holstein, Kiel University, Kiel, Germany; [2]Institute of Cognitive and Clinical Neuroscience, Central Institute of Mental Health, Medical Faculty Mannheim, Ruprecht-Karls-University Heidelberg, Mannheim, Germany; [3]Graduate School of Economic and Social Sciences, University of Mannheim, Mannheim, Germany

A-0554

ALTRUISM UNDER STRESS: CORTISOL PREDICTS LOWER CHARITABLE GIVING AND NEURAL VALUE REPRESENTATIONS IN MENTALIZERS

Stefan Schulreich[1], Anita Tusche[2,3], Philipp Kanske[4], Lars Schwabe[1] | *[1]Department of Cognitive Psychology, Faculty of Psychology and Human Movement Science, Universität Hamburg, 20146 Hamburg, Germany; [2]Queen's Neuroeconomics Laboratory, Departments of Psychology and Economics, Queen's University, ON K7L 3N6 Kingston, Canada; [3]California Institute of Technology, HSS, 200 East California BoulevardPasadena, California 91125; [4]Department of Clinical Psychology and Behavioral Neuroscience, Faculty of Psychology, Technische Universität Dresden, 01187 Dresden, Germany*

CHANNEL 1	
16:30-17:50	WHAT DO YOU DESIRE? MULTIPLE FACETS OF MOTIVATION IN SOCIAL DECISION-MAKING

Session leads: Lei Zhang and Helena Hartmann

One of the main challenges in decision neuroscience originates from the fact that decisions are not made alone, but rather, are embedded in social environments. For example, individuals may incorporate their peer's opinions in order to gain more benefits. In addition to their own benefit, individuals may also consider consequences their decisions bring about for others, especially when others are harmed. Despite the crucial role of motivation in social decision-making, its multiple facets are not fully understood. This symposium will showcase some of the most recent advances in this domain. The presented studies focus on two perspectives — the reinforcement learning perspective and the social value orientation perspective — and aim to uncover the underlying mechanisms that support motivations in social learning and prosocial decision-making using multiple methodological approaches. The first two studies employ reinforcement learning and model-based fMRI: Lei Zhang will characterize the interplay between direct learning and social learning in uncertain environments; Kalliopi Ioumpa and Laura Fornari will discuss the neural correlates of moral learning when self-gain and other-pain are connected. Moving on to prosocial behavior, Helena Hartmann will explore the effects of placebo analgesia on effort-based decision-making to reduce other's pain; Lisa Doppelhofer will present a study examining inequality aversion in an Urbach-Wiethe patient. Daniel Campbell-Meiklejohn will conclude by presenting a novel "News stories" task that identifies biased physiological responses as we learn of lives at risk, lives saved, and lives lost. The symposium brings together speakers ranging from early PhD students to junior Pls in psychology and cognitive neuroscience, to provide new insights into motivation in social decision-making.

A-0305 NEUROCOMPUTATIONAL MECHANISMS OF SOCIAL INFLUENCE IN GOAL-DIRECTED LEARNING

Lei Zhang[1], Jan Gläscher[2] | *[1]Social, Cognitive and Affective Neuroscience; (SCAN) Unit, Department of Cognition, Emotion, and Methods, Faculty of Psychology, University of Vienna, Vienna, Austria; [2]Institute for Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

THURSDAY, 24 JUNE 2021

A-0306   YOUR PAIN VERSUS MY GAIN: NEURAL CORRELATES OF CONFLICTUAL DECISION MAKING

Kalliopi Ioumpa, Laura Fornari, Alessandra D. Nostro, Riccardo Paracampo, Selene Gallo, Lorenzo De Angelis, Alessandro Gentile, Nathan Evans, Michael Spezio, Christian Keysers, Valeria Gazzola | *Netherlands Institute for Neuroscience, Amsterdam, the Netherlands*

A-0307   THE EFFECTS OF PLACEBO ANALGESIA ON PROSOCIAL DECISION-MAKING DURING PAIN AVOIDANCE

Helena Hartmann, Paul Forbes, Markus Rütgen, Claus Lamm | *Social, Cognitive and Affective Neuroscience; (SCAN) Unit, Department of Cognition, Emotion, and Methods, Faculty of Psychology, University of Vienna, Vienna, Austria*

A-0308   SOCIAL MOTIVES IN A PATIENT WITH BILATERAL SELECTIVE AMYGDALA LESIONS

Lisa M. Doppelhofer[1,2], René Hurlemann[3], Dominik R. Bach[4,5], Christoph W. Korn[1,2] | *[1]Institute for Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; [2]Department of General Psychiatry, Center of Psychosocial Medicine, Heidelberg University, Heidelberg, Germany; [3]Department of Psychiatry and Division of Medical Psychology, University of Bonn, Bonn, Germany; [4]Department of Psychiatry, Psychotherapy, and Psychosomatics, University of Zurich, Zurich, Switzerland; [5]Wellcome Centre for Human Neuroimaging, Institute of Neurology, University College London, London, UK*

A-0309   NEURAL AND PHYSIOLOGICAL INSIGHTS INTO THE VALUE OF A LIFE

Daniel Campbell-Meiklejohn | *School of Psychology, University of Sussex*

	CHANNEL 2
16:30-17:50	'BETTER SAFE THAN SORRY'. AN OVERVIEW ON SAFETY LEARNING AND ITS CONSEQUENCES WHEN IMPAIRED.

Session lead: Marta Andreatta

It is only after having localized threat that organisms can feel safe. However, not every individual is able to promptly distinguish safety from threat and impaired safety learning has been proposed as marker for anxiety disorders. Thus, anxiety patients tend to over-generalize fear responses and to keep avoiding cues previously associated with threat. In our symposium, we will focus on the underlying mechanisms involved in impaired safety learning and how inter-individual differences can help the understanding of such pathological processes. The first speaker (Baas) will present a data-driven characterization of individual differences in safety learning. The second speaker (Wieser) will then present a series of studies investigating attentional processes related to threat-safety discrimination and fear generalization. The third speaker (Wendt) will focus on the neuronal mechanisms underlying fear inhibition induced by safety signal and the fourth speaker (Andreatta) will extend this investigation by comparing the psychophysiological responses to two kinds of safety, namely threat absence and relief after threat termination. The fifth speaker (Klumpers) will present a study on how safety learning may be boosted to reduce avoidance of threat signals. Together, in this symposium we aim to shed light on altered safety mechanisms by considering a variety of paradigms used to study what has been defined safety.

A-0322 CHARACTERIZATION OF INDIVIDUAL DIFFERENCES IN FEAR LEARNING THROUGH LATENT CLASS GROWTH ANALYSIS

Johanna M.P. Baas[1], Nadia A. Leen[2], Puck Duits[3] | *[1]Department of Experimental Psychology, Helmholtz Institute, Utrecht University, Utrecht, The Netherlands; [2]Brain Research and Innovation Centre, Central Military Hospital, Utrecht, The Netherlands; [3]Altrecht Academic Anxiety Center, Utrecht, the Netherlands*

A-0323 DEFICIENT THREAT-SAFETY DISCRIMINATION IN THE ANXIOUS VISUAL BRAIN

Matthias J. Wieser | *Department of Psychology, Education and Child Studies, Erasmus University Rotterdam, the Netherlands*

A-0324 NEURAL CORRELATES OF DEFICIENT SAFETY LEARNING IN INDIVIDUALS WITH LOW RESTING HEART RATE VARIABILITY

Julia Wendt[1], Miriam C. Hufenbach[1], Jörg König[1], Martin Lotze[2], Alfons Hamm[1] | *[1]Department of Psychology, University of Potsdam, Germany; [2]Functional Imaging Unit, Center of Diagnostic Radiology and Neuroradiology, University of Greifswald, Germany*

A-0325 LOOKING FOR SAFETY: A COMPARISON BETWEEN THREAT ABSENCE AND THREAT TERMINATION

Marta Andreatta[1], Paul Pauli[2] | *[1]Department of Psychology, Educational Sciences, and Child Studies, Erasmus University Rotterdam, Netherlands; [2]Department of Psychology; (Biological Psychology, Clinical Psychology and Psychotherapy), University of Würzburg, Würzburg, Germany*

A-0326 BOOSTING SAFETY LEARNING AND TACKLING FEARFUL AVOIDANCE USING COUNTERCONDITIONING

Klumpers Floris, van de Pavert Iris, Hulsman Anneloes, Roelofs Karin | *Radboud University, Donders and Behavioural Science Instititutes, Nijmegen, The Netherlands*

CHANNEL 1
18:05-18:55	LECTURE BY LEOR ZMIGROD (RECEPIENT OF THE 2020 YOUNG RESEARCHER AWARD OF ESCAN)

Presenter: Leor Zmigrod

A-0553 A NEUROCOGNITIVE MODEL OF IDEOLOGICAL THINKING

Leor Zmigrod | *University of Cambridge*

FRIDAY, 25 JUNE 2021

Hours	CHANNEL 1	CHANNEL 2
10:00-10:50	Keynote lecture by Simone Shamay-Tsoory	
11:00-12:20	**Symposium session 15.** Neural and hormonal mechanisms of social exclusion and social isolation	**Symposium session 16.** When memories become intrusive: How adversity affects context learning, coherence and memory control
12:20-12:50	Break	
12:50-13:55	**Symposium session 17.** The critical role of the right temporo-parietal junction for adaptive social functioning	**Symposium session 18.** Action-related sensory predictions
14:00-14:15	Break	
14:15-16:15	Oral presentations and posters	
16:15-16:30	Break	
16:30-17:35	**Symposium session 19.** When stimulation of the skin reaches the vagus: current evidence for autonomic and noradrenergic biomarkers	**Symposium session 20.** Neurocognitive Perspectives on Political Polarization
17:35-18:00	Break	
18:00-18:50	General Assembly	
19:00-20:00	Social evening	

FRIDAY, 25 JUNE 2021

	CHANNEL 1
10:00–10:50	KEYNOTE LECTURE BY PROF. SIMONE SHAMAY-TSOORY

Keynote speaker: Simone Shamay-Tsoory

A-0552 THE EMPATHY FEEDBACK-LOOP: A TWO-BRAIN APPROACH FOR UNDERSTANDING EMPATHY

Simone Shamay-Tsoory | *University of Haifa*

11:00–12:20	NEURAL AND HORMONAL MECHANISMS OF SOCIAL EXCLUSION AND SOCIAL ISOLATION

Session leads: Ilanit Gordon and Dirk Scheele

Humans have evolved as an essentially social species. Positive social relationships promote physical and mental well-being, whereas loneliness and social isolation increase the risk of premature mortality comparable to established risk factors such as obesity, physical inactivity, and substance abuse. Surprisingly, however, the neural and hormonal effects of social exclusion and loneliness are still not well understood. Accumulating evidence indicates that the hypothalamic peptide oxytocin plays a key role not only in the salubrious effects of social bonding but also in the detrimental effects of social loss and social isolation. In the current symposium, we present recent studies examining the neural correlates of loneliness and social isolation and how they might be modulated by behavioral and hormonal interventions. Jana Lieberz reveals the neural link between loneliness and biased trustworthiness decisions in a pre-stratified sample of healthy lonely and non-lonely individuals. Federica Riva presents the relationship between loneliness and interoception at both behavioral and brain level. Lydia Kogler investigates the effects of a cognitive training of positive self-instruction on subjective and neural correlates of negative social evaluation. Alisa Kanterman examines whether loneliness is associated with altered motivation for inclusion and if this motivation can be modulated by oxytocin. Ilanit Gordon explores the role of oxytocin on microbehaviors that support the very initial social connections made between group members.

FRIDAY, 25 JUNE 2021

A-0273 THE NEURAL UNDERPINNINGS OF ALTERED INTERPERSONAL TRUST IN LONELINESS

Jana Lieberz[1], Dirk Scheele[1], Simone Shamay-Tsoory[2], René Hurlemann[3] | *[1]University of Bonn; [2]University of Haifa; [3]University of Oldenburg*

A-0274 LONELY HEARTS: AN FMRI STUDY ON INTEROCEPTION IN LONELINESS

Federica Riva, Helena Hartmann, Claus Lamm | *University of Vienna*

A-0275 YES, I CAN! EFFECTS OF POSITIVE SELF-INSTRUCTION ON SUBJECTIVE AND NEURAL CORRELATES DURING SOCIAL FEEDBACK

Lydia Kogler[1], Hannah Fandel[1], Mäni Liselotte Kogler[2], Birgit Derntl[1] | *[1]Department for Psychiatry and Psychotherapy, University Tuebingen; [2]Institut für Psychosomatik und Verhaltenstherapie, Graz*

A-0276 WORKING HARD OR HARDLY WORKING: LONELINESS IS ASSOCIATED WITH HEIGHTENED MOTIVATION FOR INCLUSION WHEN IT IS EASILY ACHIEVED

Alisa Kanterman[1], Dirk Scheele[2], René Hurlemann[3], Simone Shamay-Tsoory[1] | *[1]University of Haifa; [2]University of Bonn; [3]University of Oldenburg*

A-0277 CAN OXYTOCIN PROTECT AGAINST SOCIAL ISOLATION: OT EFFECTS ON MICROBEHAVIORS DURING A SHARED GROUP VIEWING TASK

Ilanit Gordon, Yair Berson, Oren Roberts | *Bar Ilan University*

	CHANNEL 2
11:00-12:20	WHEN MEMORIES BECOME INTRUSIVE: HOW ADVERSITY AFFECTS CONTEXT LEARNING, COHERENCE AND MEMORY CONTROL

Session leads: Thomas Meyer and Conny Quaedflieg

Emotional memories guide our behaviour and are critical for our survival. However, they can become dysfunctional and contribute to the development of mental disorders such as post-traumatic stress disorder (PTSD), characterized by distressing intrusive memories. Although it is well-established that emotional experiences can have a memory-enhancing effect, it is not fully understood when and why emotional memories become maladaptive. This symposium addresses the idea that adversity disturbs memory functions critical for healthy adjustment, including cognitive control, contextual learning, and feature binding. To this end, it brings together different research lines and methodologies (behavioural, neuroendocrine, neuroimaging, virtual reality) in healthy and clinical populations. First, Dr. Meyer will discuss the role of allocentric spatial memory, a critical function of the human hippocampus, in the development of traumatic intrusions. Dr. Bisby will then discuss the disruptive effects of negative emotion on episodic memory coherence and its alterations to support intrusive imagery, presenting behavioural and brain imaging data. This will be followed by Mr. Ventura-Bort, who will present neuroimaging data on how emotional contexts and stress modulate item and source memory. Dr. Quaedflieg will then discuss the impact of acute physiological stress responses on the neural correlates of intentional control over intrusive thoughts about future fears. Finally, Dr. van Ast will present neuroimaging data addressing the hypothesis that alterations in hippocampus subfield volumes drive fear generalization across contexts and thereby facilitate traumatic intrusions. Jointly, the insights gathered in this symposium aim to advance cognitive/neuroscientific models of emotional memory and the development of interventions.

A-0372   SPATIAL PROCESSING DURING AVERSIVE VR EXPERIENCES: ARE INTRUSIVE MEMORIES VIEWPOINT-DEPENDENT?

Thomas Meyer[1], John King[1], Pauline Dibbets[2], Richard Benning[2], Jacco Ronner[2], Chris Brewin[1] | *[1]Clinical, Educational and Health Psychology, University College London, UK; [2]Maastricht University, The Netherlands*

A-0373 REDUCED COHERENCE OF EPISODIC MEMORIES FOR NEGATIVE EVENTS IS ASSOCIATED WITH INCREASES IN INTRUSIVE MEMORIES

James Bisby[1], N. Burgess[2] | *[1]Division of Psychiatry, University College London, UK; [2]Institute of Cognitive Neuroscience, University College London, UK*

A-0374 TEMPORO-SPATIAL DYNAMICS OF THE IMPACT OF EMOTIONAL CONTEXT ON OBJECT RECOGNITION MEMORY.

Carlos Ventura-Bort, Mathias Weymar | *Department of Biological Psychology and Affective Science, University of Potsdam, Germany*

A-0375 FORGET ABOUT IT: THE INFLUENCE OF STRESS ON THE ABILITY TO CONTROL INTRUSIVE THOUGHTS

Conny Quaedflieg[1], S.M. Ashton[1], R.G. Benoit[2] | *[1]Maastricht University, The Netherlands; [2]Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany*

A-0376 THE HIPPOCAMPUS AND FEAR GENERALIZATION ACROSS CONTEXTS: IMPLICATIONS FOR POST-TRAUMATIC STRESS

Vanessa van Ast[1], Saskia Koch[2,3], Karin Roelofs[2,3] | *[1]Department of Clinical Psychology, University of Amsterdam, Amsterdam, The Netherlands; [2]Donders Institute, Centre for Cognitive Neuroimaging, Radboud University, The Netherlands; [3]Behavioural Science Institute, Radboud University Nijmegen, The Netherlands*

CHANNEL 1
12:50-13:55 THE CRITICAL ROLE OF THE RIGHT TEMPORO-PARIETAL JUNCTION FOR ADAPTIVE SOCIAL FUNCTIONING

Session lead: Markus Rütgen

Interpersonal social skills such as mentalizing or self-other distinction predetermine our capacity for successful and enjoyable social interactions. The neural processes underlying such socio-cognitive functions are critically supported by a particular brain area: the right temporo-parietal junction (rTPJ). Impaired functioning of this area, along with adverse effects on social skills may be a determinant of the development of clinical disorders, which are conceptualized as disorders of social interaction by some scholars. The aim of this symposium is twofold: first, we want to provide and integrate recent neuroscientific insights regarding the pivotal role of the rTPJ for social functioning, and for establishing and maintaining healthy social interactions. Second, we want to advance knowledge regarding the sub-areas of the rTPJ and their specific functions. To this end, we present evidence from functional magnetic resonance imaging studies, ranging from healthy populations to clinical and neurodevelopmental disorders. Clare Eddy will provide an overview of how different neuropsychiatric disorders seem to threaten rTPJ integrity, and how deviant activity of this region is further linked to atypical self-other distinction and clinical symptoms. Annabel Nijhof will then specifically focus on the role of the rTPJ in belief formation in autism spectrum disorder. Markus Rütgen will present evidence for elevated rTPJ activity during empathy in remitted depression, representing a potential vulnerability factor for the development of depression. Lastly, Matthias Schurz will show that the individual mapping of socio-cognitive functions to specific sub-areas of the rTPJ appears to account for the quality of social relationships.

A-0318 SELF-OTHER DISTINCTION AND THE RIGHT TEMPORO-PARIETAL JUNCTION IN NEUROPSYCHIATRY

Clare M. Eddy[1,2] | [1]*Birmingham and Solihull Mental Health NHS Foundation Trust;* [2]*University of Birmingham*

A-0319 AN FMRI STUDY ON SPONTANEOUS AND EXPLICIT MENTALIZING IN AUTISTIC ADULTS

Annabel Nijhof | *King's College London*

A-0320 ELEVATED SELF-OTHER DISTINCTION AND ABERRANT PROCESSING OF EMPATHIC EMOTIONS IN REMITTED DEPRESSION

Markus Rütgen | *Social, Cognitive and Affective Neuroscience Unit, Department of Cognition, Emotion, and Methods, Faculty of Psychology, University of Vienna*

A-0321 DO DIFFERENT THEORY OF MIND TASKS ENGAGE DISTINCT PROCESSES IN THE TPJ?

Matthias Schurz[1,2], Sara Fernández-Cabello[3], Martin Kronbichler[3], Rogier B. Mars[1,2,4], Jerome Sallet[1] | *[1]Wellcome Centre for Integrative Neuroimaging, Department of Experimental Psychology, University of Oxford; [2]Donders Institute for Brain, Cognition, & Behaviour, Radboud University Nijmegen; [3]Centre for Cognitive Neuroscience, University of Salzburg, Salzburg, Austria; [4]Wellcome Centre for Integrative Neuroimaging, Centre for Functional MRI of the Brain; (FMRIB), Nuffield Department of Clinical Neurosciences, John Radcliffe Hospital, Oxford*

CHANNEL 2
12:50-13:55 ACTION-RELATED SENSORY PREDICTIONS

Session lead: Janos Horvath

Interactions between motor- and sensory processing are manifold. We model and predict the consequences of our actions in various ways, which leads to enhancement or suppression of their sensory processing. Conversely, feedback from action-effects allows us to form and update such action-effect models. The complexity of the interactions gives rise to fundamental human experiences, like self-other distinction or sense of agency, and allows abilities like tool-use. The goal of the present symposium is to explore whether, and how action-related predictions influence sensory processing through a set of empirical studies using fMRI, EEG and behavioral measures. In an fMRI study, brain areas related to volition-related comparison processes were identified in a paradigm utilizing a device allowing continuous registration of voluntary as well as passive hand movements, and a delayed view of the movements (B. van Kemenade). General and content-specific effects of speech preparation on auditory processing were separated in a delayed articulation paradigm using EEG (X. Tian). Differences in preparation for manual actions resulting in tones or speech sounds were identified by the analysis of the Readiness Potential (RP) preceding the actions, while showing similar RP patterns for audible and imagined sound consequences (A. Pinheiro). Finally, an ERP study showed how a recent challenge to the predictive modeling account of manual action-related auditory attenuation can be reconciled with the literature (J. Horváth).

A-0301 PREDICTIVE ACTION-FEEDBACK MONITORING: THE EFFECT OF DISCRETE VS CONTINUOUS ACTION FEEDBACK

Bianca van Kemenade[1], Christina Schmitter[2], Olaf Steinsträter[2], Tilo Kircher[2], Benjamin Straube[2] | *[1]University of Glasgow; [2]Philipps University of Marburg*

A-0302 DISTINCT MOTOR SIGNALS IN SPEECH PREPARATION DIFFERENTIALLY MODULATE AUDITORY RESPONSES

Xing Tian[1], Siqi Li[2], Hao Zhu[1] | *[1]New York University Shanghai; [2]East China Normal University*

A-0303 REAL AND IMAGINED SENSORY FEEDBACK HAVE COMPARABLE EFFECTS ON ACTION ANTICIPATION

Ana P. Pinheiro[1], Michael Schwartze[2], Sonja A. Kotz[2] | *[1]Faculty of Psychology – University of Lisbon; [2]Faculty of Psychology and Neuroscience, University of Maastricht*

FRIDAY, 25 JUNE 2021

A-0304 SURPRISE AND PRIOR ENTRY: THE ROLE OF PREDICTION IN ACTION-RELATED AUDITORY ERP ATTENUATION

János Horváth[1], Iria SanMiguel[2] | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]University of Barcelona, Spain*

	CHANNEL 1
14:15-16:15	ORAL PRESENTATIONS AND POSTERS

A-0421 COGNITIVE CONTROL PROMOTES EITHER HONESTY OR DISHONESTY, DEPENDING ON ONE'S MORAL DEFAULT

Sebastian P.H. Speer, Ale Smidts, Maarten A.S. Boksem | *Erasmus University Rotterdam*

A-0422 ACTION-REACTION BINDING: VISUAL AND MENTALIZING AREAS ENCODE REACTIONS IN FUNCTION OF THEIR PRECEDING ACTION PROMPTS

Emiel Cracco[1], Ana Pesquita[2], Carlos González-García[1], David Wisniewski[1], Ole Jensen[2], Marcel Brass[1,3] | *[1]Department of Experimental Psychology, Ghent University, Belgium; [2]University of Birmingham, Centre for Human Brain Health, Birmingham, United Kingdom; [3]School of Mind and Brain and Department of Psychology, Humboldt Universität zu Berlin, Germany*

A-0423 VICARIOUS NEURAL REACTIVITY TO PLEASANT AND UNPLEASANT TOUCH: A COMBINED IVR-EEG STUDY

Manuel Mello[1,2], Valentina Nicolardi[1,2], Martina Fusaro[1,2], Matteo P. Lisi[1,2], Gaetano Tieri[2,3] | *[1]Sapienza, Università degli Studi di Roma & CLNS@Sapienza, Istituto Italiano di Tecnologia, Rome, Italy; [2]SCNLab, Fondazione Santa Lucia, IRCCS, Rome, Italy; [3]Virtual Reality Lab, University of Rome Unitelma Sapienza, Rome, Italy*

A-0424 HYPERSCANNING: A VALID METHOD TO STUDY NEURAL INTER-BRAIN UNDERPINNINGS OF SOCIAL INTERACTION

Artur Czeszumski[1], Sara Eustergerling[1], Anne Lang[1], David Menrath[1], Michael Gerstenberger[1], Susanne Schuberth[1], Felix Schreiber[1], Zadkiel Zuluaga Rendon[1], Peter König[1,2] | *[1]Institute of Cognitive Science, Universität Osnabrück, Osnabrück, Germany; [2]Institut für Neurophysiologie und Pathophysiologie, Universitätsklinikum Hamburg-Eppendorf, Hamburg, Germany*

A-0425 CAN ATTENTIONAL BIAS TOWARDS THREAT BE MODIFIED BY REWARD CONTINGENCIES?

Susan Kang, Roman Osinsky | *University of Osnabrück, Osnabrück, Germany*

A-0426 OSCILLATORY SYNCHRONIZATION MECHANISMS UNDERLYING HUMAN COOPERATIVE DECISION-MAKING

Unai Vicente[1,3], Alberto Ara[2,3], Josep Marco-Pallarés[2,3] | *[1]Department of Social and Quantitative Psychology, University of Barcelona, Spain; [2]Department of Cognition, Development and Educational Psychology, University of Barcelona, Spain; [3]Cognition and Brain Plasticity Unit, Bellvitge Biomedical Research Institute, Spain*

A-0427 ACTION SOUNDS INFORMING OWN BODY PERCEPTION INFLUENCE GENDER IDENTITY AND SOCIAL COGNITION

Sünje Clausen[1,2,3,4], Ana Tajadura-Jiménez[1,2], Christian P. Janssen[3], Nadia Bianchi-Berthouze[1] | *[1]UCL Interaction Centre; (UCLIC), University College London, London, UK; [2]DEI Interactive Systems Group, Department of Computer Science and Engineering, Universidad Carlos III de Madrid; (UC3M), Madrid, Spain; [3]Experimental Psychology and Helmholtz Institute, Utrecht University, Utrecht, The Netherlands; [4]Department of Computer Science and Cognitive Science, University Duisburg-Essen, Duisburg, Germany*

A-0429 THE SOUNDTRACK OF MY BODY: IMPLICIT BODY WEIGHT DISTORTIONS IN AUDITORY-DRIVEN BODY ILLUSION IN SUBCLINICAL AND CLINICAL EATING DISORDERS

Ana Tajadura-Jimenez[1,2*], Laura Crucianelli[3,4*], Rebecca Zheng[2], Chloe Cheng[2], Judith Ley-Flores[1], Mercedes Borda-Más[5], Nadia Bianchi-Berthouze[2], Aikaterini Fotopoulou[4**] *First authorship shared, ** Senior authorship shared |** *[1]DEI Interactive Systems Group, Department of Computer Science, Universidad Carlos III de Madrid, Madrid, Spain; [2]UCL Interaction Centre; (UCLIC), University College London, London, United Kingdom; [3]Department of Neuroscience, Karolinska Institutet, Stockholm, Sweden; [4]Department of Clinical, Educational and Health Psychology, University College London, London, UK; [5]Departamento de Personalidad, Evaluación y Tratamiento Psicológico, Universidad de Sevilla, Seville, Spain*

A-0430

USE OF A REAL-LIFE PRACTICAL CONTEXT CHANGES THE LINK BETWEEN IMPLICIT BODY REPRESENTATIONS AND REAL BODY MEASUREMENTS

Lize De Coster[1], Pablo Sánchez-Herrero[2], Jorge López-Moreno[2,3], Ana Tajadura-Jiménez[1] | *[1]Universidad Carlos III de Madrid, Madrid, Spain; [2]Seddi Labs, Madrid, Spain; [3]Universidad Rey Juan Carlos, Madrid, Spain*

A-0431

PRIDE AND EMBARRASSMENT IN CHILDREN AND ADULTS: DOES AUDIENCE PRESENCE MATTER?

Christopher D. Riddell[1], Milica Nikolic[1,2], Mariska E. Kret[1] | *[1]Comparative Psychology and Affective Neuroscience Lab, Psychology Institute, Leiden University; [2]Research Institute of Child Development and Education, University of Amsterdam*

A-0432

EARLY CROSS-FORMAT INTEGRATION OF NUMBER WORDS AND DIGITS IN ADULTS, BUT NOT IN CHILDREN

Sabrina Finke[1], Ferenc Kemény[1], Karin Landerl[1,2,3] | *[1]Institute of Psychology, University of Graz, Graz, Austria; [2]BioTechMed-Graz, Graz, Austria; [3]Department of Cognitive Science, Macquarie University, Sydney, NSW*

A-0433

NEUROANATOMICAL EVIDENCE OF THE FACTORIAL STRUCTURE OF EXECUTIVE FUNCTIONS

Raúl González-Gómez[1], Odir Antonio Rodríguez-Villagra[2,3], Michael Schulte[4], Teresa Torralva[5], Agustín Ibáñez[1,4,6,7,8,9], David Huepe[1], Sol Fittipaldi[4,6,10] | *[1]Center for Social and Cognitive Neuroscience, School of Psychology, Universidad Adolfo Ibáñez, Santiago de Chile, Chile; [2]Institute for Psychological Research, University of Costa Rica, San Pedro, Costa Rica; [3]Neuroscience Research Center, University of Costa Rica, San Pedro, Costa Rica; [4]Cognitive Neuroscience Center; (CNC), Universidad de San Andrés, Buenos Aires, Argentina; [5]Institute of Cognitive and Translational Neuroscience; (INCYT), INECO Foundation, Favaloro University, Buenos Aires, Argentina; [6]National Scientific and Technical Research Council; (CONICET), Buenos Aires, Argentina; [7]Global Brain Health Institute, University of California, San Francisco; [8]Universidad Autónoma del Caribe, Barranquilla, Colombia; [9]Centre of Excellence in Cognition and its Disorders, Australian Research Council; (ARC), Sydney, Australia; [10]Facultad de Psicología, Universidad Nacional de Córdoba, Argentina*

A-0434 CAN THE DOUBLE EMPATHY PROBLEM ACCOUNT FOR FALSE BELIEF RESULTS IN AUTISM?

Eliane Deschrijver | *Department of Experimental Psychology, Ghent University, Ghent, Belgium; School of Psychology, University of New South Wales, Sydney, Australia*

A-0435 OBEDIENCE TO AUTHORITY IN THE AFTERMATH OF A GENOCIDE. A SOCIAL NEUROSCIENCE STUDY IN RWANDA

Emilie A. Caspar[1], Darius Gishoma[2],, Pedro Alexandre Magalhaes De Saldanha da Gama[1] | *[1]Consciousness, Cognition and Computation Group; (CO3), Center for Research in Cognition & Neurosciences; (CRCN), ULB Neuroscience Institute; (UNI), Université libre de Bruxelles; (ULB) [2]Mental Health Department, College of Medicine and Health Sciences, University of Rwanda*

A-0436 CORRELATED EFFECTS OF THE DOPAMINE ANTAGONIST HALOPERIDOL ON OWN WALKING SPEED AND EMOTION PERCEPTION FROM OTHERS' WALKS

Bianca A. Schuster, Sophie Sowden, Alicia J. Rybicki, Dagmar S. Fraser, & Jennifer L. Cook | *University of Birmingham, UK*

A-0438 PHYSIOLOGICAL SYNCHRONY AS A BIOLOGICAL CORRELATE OF SHARED AFFECT

Victor Chung[1,2], Morgan Beaurenaut[1], Elisabeth Pacherie[2], Rocco Mennella[1,3], Julie Grèzes[1] | *[1]Cognitive and Computational Neuroscience Laboratory, École Normale Supérieure, Paris, France; [2]Institut Jean Nicod, École Normale Supérieure, EHESS, CNRS, Paris, France; [3]Laboratory of the Interaction between Cognition, Action and Emotion, University Paris Nanterre, France*

A-0440 THE EFFECT OF EMOTIONAL CONTEXTS ON EMOTION PERCEPTION IN DYADS

Katie Daughters[1], Kami Koldewyn[2] | *[1]University of Essex, UK; [2]Bangor University, UK*

A-0442 CORRELATES OF FRUSTRATION IN THE ELECTROENCEPHALOGRAM OF DRIVERS

Marie Klosterkamp, Klas Ihme, Alexandra Bendixen, Esther Bosch | *German Aerospace Center, Bruinswick, Germany*

A-0443 RESPONSE TIME MODELLING REVEALS EVIDENCE FOR MULTIPLE, DISTINCT SOURCES OF MORAL DECISION CAUTION

Milan Andrejević, Joshua P. White, Daniel Feuerriegel, Simon Laham, Stefan Bode | *The University of Melbourne, Australia*

A-0444 MANIPULATION OF COGNITIVE CONTROL DOES NOT INFLUENCE STATISTICAL LEARNING: EVIDENCE FROM A PROBABILISTIC SEQUENCE LEARNING TASK COMBINED WITH THE ERIKSEN FLANKER PARADIGM

Kata Horváth[1,2,3], Zsófia Kardos[4,5], Ádám Takács[6], Karolina Janacsek[2,3,7], Dezso Nemeth[2,3,8], Andrea Kóbor[4] | *[1]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [2]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]Brain, Memory and Language Research Group, Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [4]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [5]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [6]Cognitive Neurophysiology, Department of Child and Adolescent Psychiatry, Faculty of Medicine, TU Dresden, Germany; [7]Centre of Thinking and Learning, Institute for Lifecourse Development, School of Human Sciences, Faculty of Education, Health and Human Sciences, University of Greenwich, London, United Kingdom; [8]Lyon Neuroscience Research Center (CRNL), Université de Lyon, France*

A-0445 AGE-ASSOCIATED VARIABILITY IN EFFECTS OF INTELLIGENCE AND CREATIVITY ON THE SCHOOL LEARNING SUCCESS

Razumnikova O.M., Kagan V.A., Goryacheva M.A. | *Novosibirsk State Technical University, Novosibirsk, Russia*

A-0446 THE COWBOY EFFECT: ROBOT GAZE INFLUENCES HUMAN DECISIONS

Marwen Belkaid, Kyveli Kompatsiari, Davide de Tommaso, Ingrid Zablith, Agnieszka Wykowska | *Italian Institute of Technology, Italy*

A-0448 GAZE FOLLOWING BEHAVIOUR: AN EYE TRACKING STUDY TO RE-EVALUATE THE AUTOMATIC AND GOAL DRIVEN INFLUENCE ON FOLLOWING ANOTHER'S GAZE

Tanaya Chatterjee[1], Cesco Willemse[3], Paola Ricciardelli[1,2], Agnieszka Wykowska[3] | *[1]Department of Psychology, University of Milano-Bicocca, Italy; [2]Milan Centre for Neuroscience, Italy; [3]Department of Social Cognition in Human-Robot Interaction, Istituto Italiano di Tecnologia, IIT, Italy*

A-0449 IRRELEVANT ROBOT SOCIAL SIGNALS

Lorenzo Parenti, Abdulaziz Abubshait, Jairo Perez-Osorio & Agnieszka Wykowska | *Social Cognition in Human-Robot Interaction, Italian Institute of Technology (IIT)*

A-0450 MEETING ANOTHER'S GAZE SHORTENS SUBJECTIVE TIME BY CAPTURING ATTENTION

Nicolas Burra, Dirk Kerzel | *Université de Genève, Faculté de Psychologie et des Sciences de l'Education, Genève, Suisse*

A-0451 THE IMPACT OF SOCIAL CUES ON THE COUPLING BETWEEN BRAIN OSCILLATIONS AND SPEECH RHYTHMS

Rodrigo Pérez-Ordoyo[1], José M. Velasco[2], José I. Hidalgo[2], David Hernández-Gutiérrez[1], Manuel Martín-Loeches[1] | *[1]UCM-ISCIII Center for Human Evolution and Behavior, Madrid, Spain; [2]Departamento de Arquitectura de Computadores y Automática, Universidad Complutense, Madrid, Spain*

A-0452 INVESTIGATING THE EFFECT OF GAZE CUES ON FOOD PREFERENCES: A BEHAVIORAL AND FMRI STUDY

Damiano Terenzi[1,2,3], Apoorva Rajiv Madipakkam[4], Felix Molter[5,6,7], Peter N. C. Mohr[5,6,7], Lu Liu[1,2,3], Soyoung Q Park[1,2,3,4] | *[1]Department of Decision Neuroscience and Nutrition, German Institute of Human Nutrition; (DIfE), Potsdam-Rehbrücke, Germany; [2]Charité-Universitätsmedizin Berlin, Corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Neuroscience Research Center, 10117, Berlin, Germany; [3]Deutsches Zentrum für Diabetes, Neuherberg, Germany; [4]Department of Psychology, University of Lübeck, Lübeck, Germany; [5]School of Business & Economics, Freie Universität Berlin, Berlin, Germany; [6]Center for Cognitive Neuroscience, Freie Universität Berlin, Berlin, Germany; [7]WZB Berlin Social Science Center, Berlin, Germany*

A-0453   MENTAL ATTRIBUTION TO ROBOTS MAY NOT ALWAYS BE BASED ON HUMAN-LIKENESS

Laura Jastrzab[1], Bishakha Chaudhury[2], Sarah Ashley[1], Emily S. Cross[2,3], Kami Koldewyn[1] | [1]Bangor University; [2]University of Glasgow; [3]Macquarie University

A-0454   YOUNG-AGE BIAS IN VALUATION OF FACES

Ayahito Ito[1,2], Kazuki Yoshida[3], Ryuta Aoki[4], Toshikatsu Fujii[5], Iori Kawasaki[6], Akiko Hayashi[7], Aya Ueno[8], Etsuro Mori[9], Shinya Sakai[3], Shunji Mugikura[10](11), Shoki Takahashi[11], Nobuhito Abe[12] | [1]Research Institute for Future Design, Kochi University of Technology, Kochi, Japan; [2]Department of Psychology, University of Southampton, Southampton, UK; [3]Faculty of Health Sciences, Hokkaido University, Sapporo, Japan; [4]Graduate School of Humanities Research, Tokyo Metropolitan University, Tokyo, Japan; [5]Kansei Fukushi Research Institute, Tohoku Fukushi University, Sendai, Japan; [6]Sendai Nishitaga National Hospital, Sendai, Japans; [7]Department of Behavioral Neurology and Cognitive Neuroscience, Tohoku University Graduate School of Medicine, Sendai, Japan; [8]Tohoku Rosai Hospital, Sendai, Japan; [9]Department of Behavioral Neurology and Cognitive Psychiatry, Osaka University United Graduate School of Child Development, Suita, Japan; [10]Division of Image Statistics, Tohoku Medical Megabank organization, Sendai, Japan; [11]Department of Diagnostic Radiology, Tohoku University Graduate School of Medicine, Sendai, Japan; [12]Kokoro Research Center, Kyoto University, Kyoto Japan

A-0457   OLDER ADULTS' SENSITIVITY TO OWN AGE FACES: A VISUAL MISMATCH NEGATIVITY STUDY

Bela Petro, Petra Csizmadia, Petia Kojouharova, Boglárka Nagy, Zsófia Anna Gaál, István Czigler | Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary

A-0458   ASSESSING EXECUTIVE FUNCTIONS IN PRESCHOOL AGE: A SYSTEMATIC REVIEW

Valéria Sousa-Gomes[1,2,3], Cristina Silva[1], Diana DiasMoreira[1,3,4], Susana Oliveira-Lopes[1,3], Marisalva Fávero[1,2] | [1]University Institute of Maia; [2]Justice and Governance Research Center of the Law School, University of Minho; (JusGov/UM) (Portugal); [3]Institute of Psychology and Neuropsychology of Porto – IPNP Health; [4]University of Porto

A-0459 THE ROLE OF EXECUTIVE DYSFUNCTION IN THE DIFFERENTIAL DIAGNOSIS BETWEEN NEUROCOGNITIVE DISORDER AND DEMENTIA

Valéria Sousa-Gomes[1,2,3]**, Ana Monteiro**[1]**, Diana DiasMoreira**[1,3,4]**, SusanaOliveira-Lopes**[1,3]**, Marisalva Fávero**[1,2] **|** *[1]University Institute of Maia; [2]Justice and Governance Research Center of the Law School, University of Minho; (JusGov/UM) (Portugal); [3]Institute of Psychology and Neuropsychology of Porto – IPNP Health; [4]University of Porto*

A-0460 HOW PROSODY HELPS AUDITORY STREAM SEGREGATION AND SELECTIVE ATTENTION IN A MULTI-TALKER SITUATION

Petra Kovács[1]**, Brigitta Tóth**[2]**, Ferenc Honbolygó**[3]**, Orsolya Szalárdy**[2,4]**, István Winkler**[2] **|** *[1]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [3]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [4]Institute of Behavioural Sciences, Faculty of Medicine, Semmelweis University, Budapest, Hungary*

A-0461 AUTOMATICALLY PROCESSED BUT NOT AUTOMATICALLY LEARNED: AN ERP STUDY ON IMPLICIT EMOTIONAL CROSS-MODAL ASSOCIATIONS IN FACE PROCESSING

Annika Carina Ziereis[1,2,3]**, Annekathrin Schacht**[1,2,3] **|** *[1]Affective Neuroscience and Psychophysiology Laboratory, Institute of Psychology, Georg-August University of Goettingen, Goettingen, Germany; [2]Leibniz ScienceCampus "Primate Cognition", Goettingen, Germany; [3]Research Training Group 2070 Understanding Social Relationships, Goettingen, Germany*

A-0462 LONGITUDINAL ASSOCIATIONS BETWEEN MUSICAL ABILITIES AND PRECURSORS OF READING IN FIRST-GRADE CHILDREN

Borbála Lukács[1,2]**, Emese Maróti**[1]**, Kata Asztalos**[3]**, Ferenc Honbolygó**[1,4] **|** *[1]Brain Imaging Centre, Research Centre for Natural Sciences, Eötvös Loránd Research Network, Budapest, Hungary; [2]Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [3]Kodály Institute, Liszt Ferenc Academy of Music, Budapest, Hungary; [4]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary*

A-0463   INVESTIGATING THE IMPACT OF EXECUTIVE DEFICITS ON LANGUAGE PRODUCTION PERFORMANCE IN CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER

Soléane Gander, Lucile Arnaud, Hugo Quémener, Alexandru Dumitrescu, Cécile Colin, Charline Urbain | *Center for Research in Cognition and Neurosciences (CRCN), ULB Neurosciences Institute, Université Libre de Bruxelles (ULB), Brussels, Belgium*

A-0465   UNRAVELLING DIFFERENT FUNCTIONAL STATES IN WM-GUIDED NOVEL ACTION

Silvia Formica[1], Nicholas E. Myers[2,3], Ana F. Palenciano[4], Marcel Brass[1,5], Carlos González-García[1] | *[1]Department of Experimental Psychology, Ghent University, Belgium; [2]Department of Experimental Psychology, University of Oxford, UK; [3]Oxford Centre for Human Brain Activity, University of Oxford, UK; [4]Department of Experimental Clinical and Health Psychology, Ghent University, Belgium; [5]Berlin School of Mind and Brain, Department of Psychology, Humboldt University of Berlin, Germany*

A-0466   IMPLICIT DIFFERENTIATION OF STRUCTURED AND UNSTRUCTURED STATISTICAL REGULARITIES: FMRI EVIDENCE

Andrea Kóbor[1], Karolina Janacsek[2,3,4], Zsófia Zavecz[3,4], Petra Hermann[1], Vera Varga[1,5], Zoltán Vidnyánszky[1], Gyula Kovács[6], Dezso Nemeth[4,3,7] | *[1]Brain Imaging Centre, Research Centre for Natural Sciences, Budapest, Hungary; [2]Centre of Thinking and Learning, Institute for Lifecourse Development, School of Human Sciences, Faculty of Education, Health and Human Sciences, University of Greenwich, London, United Kingdom; [3]Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary; [4]Brain, Memory and Language Research Group, Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [5]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [6]Department of Biological Psychology and Cognitive Neuroscience, Institute of Psychology, Friedrich Schiller University Jena, Jena, Germany; [7]Lyon Neuroscience Research Center; (CRNL), Université de Lyon, Lyon, France*

A-0467 THE ROLE OF THE RIGHT INFERIOR FRONTAL GYRUS IN THE PERCEPTION AND EXPERIENCE OF EMOTIONS: A META-ANALYSIS ON ANGER.

Sara Sorella, Luca Piretti, Remo Job, Alessandro Grecucci | *Clinical and Affective Neuroscience Lab, Department of Psychology and Cognitive Sciences (DiPSCo), University of Trento, Rovereto (TN), Italy*

A-0468 OBSERVATION OF OTHERS' PAINFUL HEAT STIMULATION INVOLVES SPINAL CORD RESPONSES THAT ARE DISTINCT FROM FIRST-HAND PAIN PROCESSING

Jan Haaker[1], Christian Büchel[1,2], Alexandra Tinnermann[1,2] | *[1]Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Martinistr. 52, 20246 Hamburg, Germany; [2]Max Planck School of Cognition, Leipzig, Germany*

A-0469 GRIP AND GOAL PROCESSING INDEPENDENTLY AFFECTS THE ACTIVITY OF THE MOTOR NEURAL NETWORK DURING ACTION RECOGNITION: AN ELECTROPHYSIOLOGICAL STUDY

Jérémy Decroix, Solène Kalénine, Yannick Wamain | *University of Lille, CNRS, UMR 9193 - SCALab, Lille, France*

A-0470 SIMILARITY AND MODULAR ORGANIZATION OF RESTING-STATE EEG NETWORKS

Péter Nagy[1,2], Brigitta Tóth[1], István Winkler[1], Adam Boncz[1] | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary; [2]Department of Measurement and Information Systems, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Budapest, Hungary*

A-0471 THE HUNGARIAN VERSION OF AFFECTIVE NEUROSCIENCE PERSONALITY SCALES (ANPS): A VALID AND RELIABLE SELF-REPORT MEASURE RECOMMENDED TO USE IN AFFECTIVE AND PERSONALITY NEUROSCIENCE

Anita Deak, Regina Balazs | *Institute of Psychology, University of Pecs, Pecs, Hungary*

A-0472 PROACTIVE CONTROL IN INTERNET ADDICTION AND PROBLEMATIC SOCIAL MEDIA USE

Lorenzo Mattioni, Francesca Ferri, Carlo Sestieri | *Gabriele D'Annunzio University of Chieti, Italy*

A-0473 INTENTION RECOGNITION, CONFIDENCE AND COMMITMENT IN SOCIAL COOPERATION

Georgia E. Kapetaniou[1], Ophelia Deroy[2], Alexander Soutschek[1] | *[1]Department of Psychology, Ludwig Maximilian University, Munich, Germany; [2]Faculty of Philosophy, Ludwig Maximilian University, Munich, Germany*

A-0475 REPRESENTATION OF SOCIAL INFORMATION IN DORSOMEDIAL PREFRONTAL CORTEX PREDICTS AGREEABLENESS TRAIT

Sandra Arbula[1], Elisabetta Pisanu[1], Raffaella Ida Rumiati[1,2] | *[1]International School for Advanced Studies; (SISSA), Trieste, Italy; [2]Scuola superiore di studi avanzati Sapienza (SSAS), Rome, Italy*

A-0476 ROLE OF LOW-LEVEL VISUAL FEATURES OF SYMBOLIC STIMULI IN ASSOCIATIVE LEARNING

Francesco Grassi, Julia Ruge, Esther Anna Semmelhack, Annekathrin Schacht | *Affective Neuroscience and Psychophysiology Laboratory, Georg-Elias-Müller Institute for Psychology, Georg-August University of Göttingen, Göttingen, Germany*

A-0477 ENHANCED PROCESSING OF DISTRACTORS AMONG ELDERLY DOES NOT LEAD TO BETTER UTILIZATION OF THIS INFORMATION

Scheiling, K.[1], Petró, B.[1], Kojouharova, P.[1], Czigler, I.[1,2], Nagy, B.[1,3], Gaál, Zs .A.[1] | *[1]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungaryrn; [2]Institute of Psychology, Eötvös Loránd University, Budapest, Hungaryrn; [3]Doctoral School of Psychology; (Cognitive Science), Budapest University of Technology and Economics, Budapest, Hungaryrn*

A-0479 THE MIRROR EFFECT - SYNCHRONY REDUCES DISTRESS IN FACE-TO-FACE INTERACTIONS

Dovrat Atias[1], Simone Shamay-Tsoory[1,2] | *[1]Department of Psychology, University of Haifa, Israel; [2]The Integrated Brain and Behavior Research Center; (IBBRC), University of Haifa, Israel*

A-0480 THE INFLUENCE OF OVARIAN HORMONES ON MULTISENSORY EMOTION RECOGNITION

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A-0481 PREPARATORY INHIBITION IN DYADIC MOTOR INTERACTIONS

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A-0482 EXPLORATION OF THE EFFECT OF VARIOUS PREPROCESSING OPERATIONS ON THE HEARTBEAT-EVOKED POTENTIAL

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A-0483 AUTOMATIC PREDICTION OF EVENTS OF SIMULTANEOUSLY PRESENTED SEQUENCES: A VISUAL MISMATCH RESPONSE* STUDY

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A-0484 SEMANTIC KNOWLEDGE OF SOCIAL INTERACTIONS IS MEDIATED BY THE HEDONIC EVALUATION SYSTEM IN THE BRAIN

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A-0485 NEGATIVE NEWS CONTENTS DOMINATE BRAIN RESPONSES AND SOCIAL JUDGMENTS EVEN AFTER SOURCE CREDIBILITY EVALUATION

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A-0486 ABSTRACT THINKING IMPACT ON THE PROCESSING OF EMOTIONAL INFORMATION

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A-0487 EGOCENTRIC BIASES ARE DETERMINED BY THE PRECISION OF PREDICTIONS REGARDING ONE'S OWN STATE.

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A-0488 MULTIPLE NEURONAL SOURCES GENERATING CONFLICT RELATED MIDFRONTAL THETA?

Leon Lange, Lena Rommerskirchen, Roman Osinsky | *Universität Osnabrück, Germany*

A-0489 MANIPULATIONS OF BODILY AND CONCEPTUAL SELF-REPRESENTATION REDUCE RACIAL BAIS

Harry Farmer[1,2], Tasha Yeung[2], Danae Stanton-Fraser[2] | [1]*University of Greenwich, UK; [2]University of Bath, UK*

A-0490 A NOVEL PARADIGM FOR INVESTIGATING THE SOURCE OF THE 'GENUINE' VISUAL MISMATCH NEGATIVITY (VMMN)

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A-0491 THREE PSYCHOLOGICAL DIMENSIONS OF THE PLACE VALUE AND THEIR NEURAL REPRESENTATIONS

Hirokazu Hatta[1], Nobuhito Abe[2], Ryusuke Nakai[2], Hiroshi Ashida[1], Kuniaki Yanagisawa[3] | [1]*Graduate School of Letters, Kyoto University, Kyoto, Japan; [2]Kokoro Research Center, Kyoto University, Kyoto, Japan; [3]Graduate School of Humanities, Kobe University, Kobe, Japan*

A-0492   THE RELATION BETWEEN COGNITIVE AND EMOTIONAL FLEXIBILITIES

Raissa de Oliveira Negrão; Brigitte Biró; Gyöngyi Kökönyei; Logemann Alexander; Adél Dancsik; Renáta Cserjési | *Eötvös Loránd University, Budapest, Hungary*

A-0493   CHRONOTOPIC ENCODING OF EMOTIONAL DIMENSIONS IN THE HUMAN BRAIN

Giada Lettieri[1], Giacomo Handjaras[1], Francesca Setti[2], Elisa Morgana Cappello[1], Valentina Bruno[3], Matteo Diano[4], Andrea Leo[5], Emiliano Ricciardi[2], Pietro Pietrini[2], Luca Cecchetti[1] | *[1]Social and Affective Neuroscience Group, IMT School for Advanced Studies Lucca, Lucca, Italy; [2]Molecular Mind Laboratory, IMT School for Advanced Studies Lucca, Lucca, Italy; [3]MANIBUS Lab, Psychology Department, University of Turin, Turin, Italy; [4]Department of Psychology, University of Turin, Turin, Italy; [5]Department of Translational Research and Advanced Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy*

A-0494   SOCIAL CONTENT REVERSES THE NEGATIVITY EFFECT WHILE ATTENDING EMOTIONAL SCENES.

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A-0495   IS MOTHERHOOD A MODERATOR OF EMPATHY FOR PAIN? AN FMRI STUDY

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A-0496   THE EFFECT OF 1 HZ TRANSCRANIAL MAGNETIC STIMULATION OVER THE LEFT DLPFC ON THE RETRIEVAL OF IMPLICIT PROBABILISTIC SEQUENCE KNOWLEDGE

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A-0497 THE EFFECT OF INHIBITORY TRANSCRANIAL MAGNETIC STIMULATION OVER THE DORSOLATERAL PREFRONTAL CORTEX ON DECLARATIVE AND PROCEDURAL LEARNING AND CONSOLIDATION

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A-0498 THE COMPLEX INTERPLAY BETWEEN PSYCHOPATHY PHENOTYPES, EMPATHY DOMAINS AND INTEROCEPTION

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A-0499 THE ASSOCIATION BETWEEN BELIEFS IN COVID-19 CONSPIRACY THEORIES, PSYCHOTIC-LIKE EXPERIENCES AND CONFINEMENT-RELATED FACTORS

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A-0500 INSTITUTIONALIZATION IS ASSOCIATED WITH ALTERATIONS OF BRAIN REGIONS INVOLVED IN EMOTIONAL AND REWARD PROCESSING DURING ADOLESCENCE.

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A-0501 HUMANS ARE SENSITIVE TO THE COMMUNICATIVE DIMENSION OF LANGUAGE AT BIRTH

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A-0502 "MIND THE PLEXIGLASS" - AN INVISIBLE BARRIER IS ENOUGH TO REDUCE NEURAL EMPATHIC RESPONSES TO PAIN AND TOUCH

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A-0503 A STRUCTURAL EQUATION MODEL OF SELF-REGULATION AND HEALTHY HABITS AS AN INDIVIDUAL PROTECTIVE TOOL IN THE CONTEXT OF EPIDEMICS - EVIDENCE FROM COVID-19

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A-0504 SOCIAL TOUCH IN TIMES OF SOCIAL DISTANCING

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FRIDAY, 25 JUNE 2021

A-0505

ASSOCIATIONS OF SLEEP PARAMETERS WITH COGNITIVE PERFORMANCE AND BEHAVIORAL PROBLEMS IN A PEDIATRIC SLEEP-DISORDERED POPULATION

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A-0506

IMPACT OF TOTAL SLEEP DEPRIVATION AND RELATED MOOD CHANGES ON APPROACH-AVOIDANCE DECISIONS TO THREAT-RELATED FACIAL DISPLAYS.

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A-0507

COVID-19 AND MORAL JUDGEMENTS IN TURKEY

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A-0508 THE ROLE OF THE RIGHT TEMPOROPARIETAL JUNCTION IN SELF-OTHER CONTROL IN EMPATHY

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A-0509 FACIAL KINEMATIC CHARACTERIZATION OF GENUINE AND SIMULATED EXPRESSIONS

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A-0510 NEURAL CORRELATES OF MORAL SELF-CONCEPT IN ADULTS AND CHILDREN

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A-0511 EEG SPECTRAL POWER AND RECOGNITION MEMORY: EFFECT OF LONG LISTS

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A-0512 INTEGRATION OF PREDICTIONS AND AFFERENT SIGNALS IN BODY OWNERSHIP

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FRIDAY, 25 JUNE 2021

A-0513

FEATURES OF BASELINE FUNCTIONAL CONNECTIVITY RELATED TO MAJOR DEPRESSIVE DISORDER AND REMISSION TO PHARMACOTHERAPY: A CAN-BIND REPORT

Gwen van der Wijk[1], **Jacqueline K. Harris**[2,3], **Stefanie Hassel**[4,5], **Andrew D. Davis**[6,8], **Mojdeh Zamyadi**[6], **Stephen R. Arnott**[6], **Roumen Milev**[9], **Raymond W. Lam**[10], **Benicio N. Frey**[11,12], **Geoffrey B. Hall**[13], **Daniel J. Müller**[14,15,16,17], **Susan Rotzinger**[18,19], **Sidney H. Kennedy**[14,14,18,20,21], **Stephen C. Strother**[6,7], **Glenda M. MacQueen**[4,5], **Andrea B. Protzner**[1,5,22] | *[1]University of Calgary, Department of Psychology, Calgary, Canada; [2]University of Alberta, Department of Computing Science, Edmonton, Canada; [3]Alberta Machine Intelligence Institute, Edmonton, Canada; [4]University of Calgary, Cumming School of Medicine, Department of Psychiatry, Calgary, Canada; [5]Mathison Centre for Mental Health Research and Education, University of Calgary, Calgary, Canada; [6]Rotman Research Institute, Baycrest Health Sciences, Toronto, Canada; [7]University of Toronto, Department of Medical Biophysics, Toronto, Canada; [8]Department of Psychology, Neuroscience & Behaviour, McMaster University, Hamilton, Canada; [9]Queen's University, Departments of Psychiatry and Psychology, and Providence Care Hospital, Kingston, Canada; [10]University of British Columbia, Department of Psychiatry, Vancouver, Canada; [11]Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, Canada; [12]Mood Disorders Program and Women's Health Concerns Clinic, St. Joseph's Healthcare, Hamilton, Canada; [13]Department of Psychology, Neuroscience & Behaviour, McMaster University, and St. Joseph's Healthcare Hamilton, Hamilton, Canada; [14]Department of Psychiatry, University of Toronto, Toronto, Canada; [15]Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health, Toronto, Canada; [16]Department of Pharmacology & Toxicology, University of Toronto, Toronto, Canada; [17]Institute of Medical Sciences, University of Toronto, Toronto, Canada; [18]Centre for Mental Health, University Health Network, Toronto, Canada; [19]Keenan Research Centre for Biomedical Science, Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, Canada; [20]Centre for Depression and Suicide Studies, Unity Health Toronto, Toronto, Canada; [21]Krembil Research Institute, Toronto Western Hospital, Toronto, Canada; [22]Hotchkiss Brain Institute, Calgary, Canada*

A-0514

NEURAL CORRELATES OF AGING-RELATED DIFFERENCES IN DUAL-TASK PREPARATION

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FRIDAY, 25 JUNE 2021

A-0515 LATERALIZED PATTERNS OF NEURAL SYNCHRONIZATION DURING MEDITATION

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A-0516 AFFECTIVE FACE PROCESSING UNDER A PREDICTIVE PROCESSING PERSPECTIVE

Mariana R. Pereira[1,2], Torsten Baldeweg[2], Michelle de Haan[2], Fernando Barbosa[1], Fernando Ferreira-Santos[1] | [1]*Laboratory of Neuropsychophysiology, Porto, Portugal; [2]UCL GOS Institute of Child Health, London, United Kingdom*

A-0517 RUMINATION AND ITS EFFECT ON ATTENTION TO EMOTIONAL STIMULI

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A-0518 INDIVIDUAL DIFFERENCES IN SPATIAL PERSPECTIVE-TAKING: THE ROLE OF PERSONALITY TRAITS AND INTEROCEPTIVE ABILITIES

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A-0519 FEELING IN THE SPOTLIGHT: A NEUROCOMPUTATIONAL INVESTIGATION OF PROBABILISTIC LEARNING IN SOCIAL CONTEXT IN HIGH AND LOW SOCIALLY ANXIOUS INDIVIDUALS

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FRIDAY, 25 JUNE 2021

A-0520 ENHANCING FACE-SENSITIVE N170 RESPONSE THROUGH AN IMMERSION EXPERIENCE IN A DIFFERENT ETHNIC SOCIAL ENVIRONMENT

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A-0521 RELATIONSHIP BETWEEN INTER– INDIVIDUAL VARIABILITY IN EXERCISE AND PERSPECTIVE-TAKING UNDER STRESS.

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A-0522 SOCIAL INTERACTION PERCEPTION IN THE DEVELOPING BRAIN

Jon Walbrin[1,2], Ioana Mihai[2], Julia Landsiedel[2], Kami Koldewyn[2] | *[1]Universidade de Coimbra, Portugal; [2]Bangor University, UK*

A-0523 DEEP BRAIN STIMULATION CHANGES FUNCTIONAL BRAIN NETWORK FEATURES IN PATIENTS WITH TREATMENT RESISTANT DEPRESSION

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A-0524 RELATIONSHIP BETWEEN ATTACHMENT ANXIETY AND SOCIAL PERIPERSONAL SPACE - AN EMPIRICAL APPROACH VIA A MULTISENSORY INTEGRATION TASK

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FRIDAY, 25 JUNE 2021

A-0526 RESPIRATORY- AND CARDIAC INTEROCEPTIVE SENSITIVITY AND ITS RELATION TO EMPATHIC CONCERN IN 9-MONTH OLD INFANTS

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A-0527 HOW TO INCREASE HEART RATE VARIABILITY BASED ON BREATHING EXERCISES? AN EXPLORATORY STUDY OF INDIVIDUAL DIFFERENCES

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A-0528 CARDIOVASCULAR ACTIVITY PROMPTS INHIBITION WITHIN THE PRIMARY MOTOR CORTEX.

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A-0529 ERROR MONITORING IN PERFECTIONISM: AN EVENT-RELATED POTENTIALS STUDY

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A-0530 A STRONG TEST OF CONTENT-SPECIFIC PATTERN SEPARATION VIA DISTINCT MEDIAL TEMPORAL PATHWAYS

Zsuzsanna Nemecz[1,2,3], István Homolya[3,4], Alex Roland Ilyés[1,2,3], Anna Kispál[2], Tianyao Zhu[5], Attila Keresztes[3,2] | *[1]Doctoral School of Psychology, Eötvös Loránd University, Budapest, Hungary; [2]Institute of Psychology, Eötvös Loránd University, Budapest, Hungary; [3]Research Centre for Natural Sciences, Budapest, Hungary; [4]Budapest University of Technology and Economics, Hungary; [5]Queen's University, Ontario, Canada*

A-0531 RESPIRATORY PHASES MODULATE HEARTBEAT-EVOKED CORTICAL RESPONSES

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A-0532 LEFT MEDIODORSAL THALAMIC INFARCT CAUSES RECOLLECTION IMPAIRMENT DUE TO DECREASED CONNECTIVITY IN THE DEFAULT MODE NETWORK: A RESTING STATE FMRI STUDY

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A-0533 THE HEART IS DECEITFUL ABOVE ALL THINGS: ILLUSORY PERCEPTION OF HEARTBEAT INDUCED BY PAIN EXPECTATION.

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A-0537 THE FEATURE OF THE SUBLIME DURING MUSICAL EXPERIENCES

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A-0538   REAPPRAISAL VS ACCEPTANCE: A META-ANALYSIS STUDY TO INVESTIGATE NEURAL DIFFERENCES AND SIMILARITIES BETWEEN EMOTION REGULATION STRATEGIES

Parisa Ahmadi Ghomroudi[1], Bianca Monachesi[1], Irene Messina[2], Alessandro Grecucci[1] | *[1]Clinical and Affective Neuroscience Lab, Department of Psychology and Cognitive Science, University of Trento; [2]Universitas Mercatorum, Rome, Italy*

A-0539   DEFAULT MODE NETWORK ABNORMALITIES IN CURRENTLY INSTITUTIONALIZED CHILDREN

Sónia S. Sousa, Marlene Nogueira, Pedro Moreira, Isabel Soares, Adriana Sampaio & Ana Mesquita | *University of Minho, Braga, Portugal*

A-0541   LATERALIZED PREFRONTAL CORTICAL RESPONSES TO VISUAL STIMULI PROVOKING NEGATIVE EMOTION

Srishti Tripathi[2], Yukiori Goto | *Primate Research Institute, Kyoto University, Inuyama, Aichi 484-8506, Japan*

A-0542   INCREASED EYE CONTACT WITH INGROUP MEMBERS RELATED TO PERCEIVED NATIONALITY

Tomasz Kulczycki, Joanna Pilarczyk, Michał Kuniecki | *Jagiellonian University, Poland*

A-0543   EFFECTS OF INDUCED RUMINATION ON EXECUTIVE FUNCTIONS IN AN EMOTIONAL CONTEXT

Antoine Bergeron[1,2], Jean-Philippe Ferron[1,2], Simon Rigoulot[1,2] | *[1]Université du Québec à Trois-Rivières; (UQTR), Trois-Rivières, Canada; [2]Groupe de recherche CogNAC; (UQTR), Trois-Rivières, Canada*

A-0544   SEMANTIC CONTENT AFFECTS EEG FUNCTIONAL CONNECTIVITY IN NARRATIVE COMPREHENSION

Adam Boncz[1], Brigitta Tóth[1], Péter Nagy[1,2], István Winkler[1] | *[1]Research Centre for Natural Sciences, Hungary; [2]Budapest University of Technology and Economics, Hungary*

A-0545   AUDITORY FIGURE-GROUND SEGREGATION IS IMPAIRED BY AGING AND AGE-RELATED HEARING LOSS

Péter Velősy[1], Ádám Boncz[2], István Winkler[2], Brigitta Tóth[2] | *[1]Department of Cognitive Science, Budapest University of Technology and Economics, Budapest, Hungary; [2]Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Budapest, Hungary*

	CHANNEL 1
16:30-17:50	WHEN STIMULATION OF THE SKIN REACHES THE VAGUS: CURRENT EVIDENCE FOR AUTONOMIC AND NORADRENERGIC BIOMARKERS

Session lead: Martina D'Agostini

Transcutaneous vagus nerve stimulation or tVNS is a non-invasive neurostimulation technique that is being tested and marketed as a potential treatment for a broad range of neurological and psychiatric disorders. However, questions regarding where to stimulate, working mechanisms of tVNS, and optimization of stimulation parameters remain to be answered. Establishing a reliable biological marker of tVNS would greatly facilitate answering these questions, and could inform researchers on potential clinical applications of tVNS. This symposium strives to discuss the current evidence for autonomic and noradrenergic biomarkers. In a first paper, Susan Deuchars will present a series of human and animal studies investigating the underlying pathways implicated in the effect of tVNS on spontaneous cardiac baroreflex sensitivity. In a second paper, Carlos Ventura-Bort will discuss the noradrenergic mechanism underlying the potential influence of tVNS on attention, learning, and episodic memory, focusing on P300 and salivary alpha-amylase. In a third paper, Marius Keute will present one study testing the effect of tVNS on neuro-cardiac coupling, i.e., the coupling between frontal EEG and ECG signals. To conclude, Martina D'Agostini will introduce two studies investigating the effect of tVNS on four indirect indices of noradrenergic activity: P300, pupil size, salivary alpha-amylase and cortisol in the context of a novelty oddball task. The symposium will conclude with a plenary discussion of the challenges and opportunities that arise when researching potential biomarkers of tVNS.

A-0327 CAN STIMULATING THE EAR HELP YOUR HEART? TRANSCUTANEOUS STIMULATION OF THE EAR REBALANCES AUTONOMIC FUNCTION.

Susan Deuchars, Beatrice Bretherton, Jim Deuchars, Kaisan Mahadi | *University of Leeds, UK*

A-0329 FROM ATTENTION TO MEMORY: A POTENTIAL MODULATORY ROLE OF NOREPINEPHRINE BY TRANSCUTANEOUS VAGUS NERVE STIMULATION.

Carlos Ventura-Bort, Mathias Weymar | *University of Potsdam, Germany*

A-0546 BRAIN-HEART INTERACTION AS A POTENTIAL VNS BIOMARKER AND ENDPOINT

Marius Keute, Kathrin Machetanz, Robert Guggenberger, Alireza Gharabaghi | *Eberhard-Karls-University, Tübingen, Germany*

A-0328 THE EFFECT OF TRANSCUTANEOUS VAGUS NERVE STIMULATION (TVNS) ON MARKERS OF NORADRENERGIC ACTIVITY.

Martina D'Agostini, Andreas M. Burger, Ilse Van Diest | *KU Leuven, Belgium*

CHANNEL 2
16:30-17:50   NEUROCOGNITIVE PERSPECTIVES ON POLITICAL POLARIZATION

Session leads: Leor Zmigrod and Marius Vollberg

At a time of heightened ideological divisions and widespread political tribalism, there is an urgency to understanding the origins of political polarization. While the traditional humanities have long theorized about ideological and intergroup processes, this symposium will demonstrate that the scientific study of the brain can also illuminate the roots of political discord. The symposium will draw on cutting-edge research examining how neuroscience and cognitive science can yield crucial insights into the emergence of polarized beliefs. It will feature innovative work from a large-scale longitudinal neuroimaging study which reveals how early neural and cognitive markers in adolescence can predict ideological authoritarianism in adulthood. The symposium will further present state-of-the-art research into overcoming polarization through episodic simulation, revealing the dynamic nature of empathic and affective processes in intergroup settings. Moreover, the symposium will demonstrate that individuals with different political attitudes exhibit divergent neural responses while watching the news. Neural divergence increases with the use of threat and moral-emotional language, and predicts subsequent attitude polarization. Lastly, the symposium will introduce a metacognitive perspective on the formation of polarized beliefs in the context of climate change, informing future research in social and political neuroscience. Consequently, the symposium will synthesize neuroscientific, metacognitive, affective, and computational approaches to questions about intergroup conflict, political polarization, and dogmatic beliefs. It will consist of culturally-diverse participant samples as well as a multitude of theoretical viewpoints and advanced methodological techniques. The discussion will evaluate what the affective and cognitive neurosciences can offer for the design of public solutions to political polarization.

A-0548 NEURAL DIVERGENCE BETWEEN POLITICALLY DISSIMILAR INDIVIDUALS VIEWING REAL-WORLD POLITICAL MESSAGES

Yuan Chang Leong | *University of Berkeley, California*

A-0314 THE PERCEPTUAL ROOTS OF IDEOLOGICAL DOGMATISM

Leor Zmigrod | *University of Cambridge, United Kingdom*

A-0317 BELIEFS ABOUT POLARIZED SCIENCE: A METACOGNITIVE PERSPECTIVE

Helen Fischer | *Max Planck Institute for Human Development, Berlin*

A-0315 EPISODIC SIMULATION SETS THE STAGE FOR EMPATHIC PROCESSING ACROSS POLITICAL GROUPS

Marius Vollberg | *Harvard University, United States*

SATURDAY, 26 JUNE 2021

Hours	CHANNEL 1	CHANNEL 2
10:00-	**Symposium session 21.** Characterizing bodily self-awareness from touch to action (10:00-11:05)	**Symposium session 22.** Integrating multiple sources of information about other people: behavioral, physiological and neural mechanisms (10:00-11:20)
11:35-12:40	**Symposium session 23.** Dynamics of metacontrol: balancing flexibility and persistence	
12:40-12:50	Closing	

SATURDAY, 26 JUNE 2021

	CHANNEL 1
10:00–11:20	CHARACTERIZING BODILY SELF-AWARENESS FROM TOUCH TO ACTION

Session leads: Gerardo Salvato and Laura Zapparoli

The awareness of ourselves as embodied beings plays a crucial role in experiencing a sense of self as both subject and agent of perceptions and actions. Such bodily self-awareness arises from the integration of multiple exteroceptive and interoceptive signals. In this symposium, we will present behavioural, clinical and neurofunctional evidence addressing how these inputs are typically integrated to generate coherent bodily self-awareness. Touch is an important driver of the sense of the self. In particular, skin-mediated interoceptive signalsseem to enhance the subjective experience of body ownership, which represents la fundamental aspect of the bodily self (L. Crucianelli). Internal autonomic signals, such as body temperature, also support bodily self-awareness, varying together with the temporary modulation of the sense of body part ownership in normal and pathological individuals (G. Salvato). Furthermore, brain-damaged patients presenting a pathological embodiment of alien body parts shed new light on the behavioural and neural features of bodily self-awareness (C. Fossataro). The feeling of owning a body is also crucial for voluntary motor control, even if only in the case of target-directed actions and not for movement production per se (A. Reader). Finally, interacting successfully through our own body with the external environment requires a so-called "sense of agency", namely the subjective feeling of voluntary control over our movements and, through them, the events in the outside world (L. Zapparoli). Taken together, this evidence supports the multimodal nature of bodily self-awareness according to a neurocognitive hierarchy: from touch to action.

A-0349   TACTILE INTEROCEPTIVE SIGNALS MODULATE THE SENSE OF BODY OWNERSHIP

Laura Crucianelli | *Department of Neuroscience, Karolinska Institutet, Stockholm Research Department in Clinical, Educational & Health Psychology; University College London, London*

SATURDAY, 26 JUNE 2021

A-0350   IF IT'S HOT IT'S MINE IF IT'S COLD, IT'S YOURS: BODY OWNERSHIP AND BODY TEMPERATURE

Gerardo Salvato, Gabriella Bottini | *Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy*

A-0351   THE SELF-OTHER BODY BOUNDARIES IN BRAIN-DAMAGED PATIENTS WITH PATHOLOGICAL EMBODIMENT

Carlotta Fossataro | *University of Turin*

A-0352   DOES THE MOTOR SYSTEM REALLY CARE ABOUT YOUR (OWN) BODY?

Arran T. Reader[1], H. Henrik Ehrsson[2] | *[1]Department of Psychology, Faculty of Natural Sciences, University of Stirling, UK; [2]Department of Neuroscience, Karolinska Institutet, Stockholm, Sweden*

A-0353   HOW THE EFFECTS OF ACTIONS BECOME OUR OWN

Laura Zapparoli, Eraldo Paulesu | *Department of Psychology, University of Milano-Bicocca, Milano, Italy*

	CHANNEL 2
10:00-11:20	INTEGRATING MULTIPLE SOURCES OF INFORMATION ABOUT OTHER PEOPLE: BEHAVIORAL, PHYSIOLOGICAL AND NEURAL MECHANISMS

Session lead: Anat Perry and Niv Reggev

As social creatures, humans devote much of their time to interacting—or thinking about interacting—with other people. Consequently, humans are preoccupied with mentalizing about others' thoughts, feelings, character or beliefs. In most situations, one's best chance of successfully navigating complex information-laden social scenes derives not from processing specific discrete cues, but rather from integrating all available information. Such information may include cues from the different senses, one's own interoceptive information, expectations based on previous beliefs, and even the presence of other people. In this symposium, we will each tackle different aspects of such integration and their impact on physiological and neural mechanisms. Dr. Perry will demonstrate the unique contribution of different input channels to behavioral and physiological facets of empathy. Mr. Contreras-Huerta will discuss how interoception biases social information and reward processing. Dr. Reggev will exemplify how correspondence with social stereotypes leads to elevated neural and behavioral subjective value. Ms. Petereit will explore the impact of the presence of other individuals on physiological synchrony between individuals. To conclude, we will integrate the four talks and discuss when and how integration of multiple sources of information may be beneficial or hinder our understanding of others.

A-0382 THE CONTRIBUTION OF VISUAL VERSUS AUDITORY INFORMATION TO DIFFERENT FACETS OF EMPATHY

Anat Perry | *Hebrew University of Jerusalem*

A-0383 INTEROCEPTIVE SENSITIVITY IS ASSOCIATED WITH NEURAL REPRESENTATION OF OTHERS' REWARDS

Luis Sebastian Contreras-Huerta[1], Matthew Apps[2] | *[1]University of Oxford; [2]University of Birmingham*

A-0384 CONFIRMATION OF INTERPERSONAL EXPECTATIONS IS INTRINSICALLY REWARDING

Niv Reggev[1], Jason P. Mitchell[2] | *[1]Ben Gurion University of the Negev; [2]Harvard University*

A-0385 HOW DOES SOCIAL PRESENCE CHANGE EMPATHIC ACCURACY FOR PAIN AND ITS PHYSIOLOGICAL AND NEURAL BASIS?

Pauline Petereit, Ulrike M. Krämer | *University of Lübeck*

CHANNEL 1	
11:35-12:40	DYNAMICS OF METACONTROL: BALANCING FLEXIBILITY AND PERSISTENCE

Session leads: Roel Van Dooren and Zsuzsika Sjoerds

Behavioral control involves a trade-off between persistence and flexibility, two seemingly opposing control processes. Persistent, or stable, action tendencies help maintain goal representations and associated actions, to reduce distraction and remain focus. Flexible action control involves considerations of the environment and alternative goals, for easy adjustment in changing environments. Metacontrol, or the balance between persistence or stability and flexibility, is not fixed but shows dynamics that can be influenced by multiple internal and environmental factors. Assessing these dynamics, and pivotal factors of influence will aid in further mapping behavioral and neural mechanisms of metacontrol. In this symposium, we will approach the dynamics of metacontrol from different computational and neural perspectives in order to sketch a comprehensive picture of how and when the trade-off between persistence and flexibility changes.

A-0345 INVESTIGATING ANTICIPATORY PROCESSES DURING SEQUENTIALLY CHANGING REWARD PROSPECT: AN ERP STUDY

Kerstin Fröber, Jonathan Mendl, Vanessa Jurczyk, Gesine Dreisbach | *University of Regensburg*

A-0346 STABILITY-FLEXIBILITY DILEMMA IN COGNITIVE CONTROL: A DYNAMICAL SYSTEM PERSPECTIVE

Sebastian Müsslick[1], Anastasia Bizyaeva[2], Shamay Agaron[3], Naomi Leonard[2]. Jonathan D. Cohen[1] | *[1]Princeton Neuroscience Institute, Princeton University; [2]Department of Mechanical and Aerospace Engineering, Princeton University; [3]Correlation One, New York City*

A-0347 THE MIDBRAIN IN FLEXIBLE AND PERSISTENT COGNITIVE CONTROL – THE USE OF VTA AND SN PROBABILISTIC ATLASE

Anne C. Trutti[1,2] | *[1]University of Amsterdam; [2]Leiden University*

A-0348 DYNAMIC ADJUSTMENTS IN METACONTROL PARAMETERS

Roel van Dooren, Roy de Kleijn, Bernhard Hommel, Zsuzsika Sjoerds | *Institute Psychology, Leiden University*

ABSTRACTS

A-0001 MECHANISMS OF FAR TRANSFER FROM COGNITIVE TRAINING: SHOULD WE TRAIN THE ABILITY TO IGNORE DISTRACTIONS?

Annie Desmarais, Alessandro Pozzi, Lysandre Provost, Hugo Fitzback-Fortin, François Vachon
School of Psychology, Université Laval, Quebec city, Canada

Cognitive training—the repeated practice of mental activities aiming to maintain or enhance one's cognitive abilities—represents an interesting opportunity to improve quality of life for people of every age. The problem is that transfer from improvement of trained abilities to untrained abilities has not been demonstrated yet (i.e. far transfer effect). The mechanisms underlying effectiveness of far transfer are not well known. Greenwood and Parasuraman (2016) proposed that training the ability to ignore distractors is important in order to promote far transfer. The present study sought to test the effectiveness of a training program of attentional control based on the mechanisms of distractors suppression of the load theory (Lavie et al., 2014). Sixty healthy adults from 18 to 40 years old were randomly assigned to one of three adaptive training programs: i) competition response (CR) training, ii) N-back training, or iii) perceptual (control) training. Each training involved performing eight sessions of approximately 30 minutes over 4 to 8 weeks. An assessment of working-memory and attention-control tasks were performed on each group before and after training to assess learning and far transfer. Compared to control training, N-back and CR trainings demonstrated improvement at posttest in the trained task, but CR training was the only program to show improvement at posttest in far transfer (working-memory) tasks. The present findings provide support Greenwood and Parasuraman's hypothesis and suggest that training mechanisms of distractors suppression is crucial in producing far transfer effects.

A-0007 SOCIAL PREFERENCES CORRELATE WITH CORTICAL THICKNESS OF THE ORBITO-FRONTAL CORTEX

Andrea Fariña[1], Michael Rojek-Giffin[1], Jörg Gross[1], Carsten K.W. de Dreu[1,2]
[1]Leiden University, Institute of Psychology; [2]University of Amsterdam, Center for Research in Experimental Economics and political Decision-making

Humans differ in their preferences for personal rewards, fairness, and others' welfare. Such social preferences predict trust, public goods provision, and mutual gains bargaining, and have been linked to neural activity in regions involved in reward computation, cognitive control, empathy, and perspective taking. Although shaped by culture and socialization, social preferences are relatively stable across time, raising the question whether differences in brain anatomy predict social preferences and its key components—concern for personal outcomes and concern for the outcomes of others. Here we examine this possibility by linking social preferences measured with incentivized economic games to 74 different cortical parcellations in N = 194 healthy humans. Neither concerns for personal outcomes nor concerns for the outcomes of others in isolation were related to anatomical differences in areas functionally involved in reward computation or cognitive

control. However, fitting earlier findings, social preferences positively scaled with cortical thickness in the left olfactory sulcus, a structure in the orbital frontal cortex previously shown to be functionally involved in value-based decision making. Compared to selfish preferences, pro-social preferences are computationally more complex. Consistent with work showing that heavier usage corresponds to larger brain volume, findings suggest that pro-social preferences relate to cortical thickness in the left olfactory sulcus because of heavier reliance on the orbital frontal cortex during social decision-making.

A-0008 BEYOND FIXATIONS: ALEXITHYMIA EXPLAINS ATYPICAL SPATIO-TEMPORAL DYNAMICS OF GAZE AND AROUSAL IN AUTISM

Hélio Clemente Cuve[1], Santiago Castiello[1], Brook Shiferaw[2], Caroline Catmur[3], Geoffrey Bird[1,4]
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Recognising emotional facial expressions is thought to be impaired in autism. Whereas theoretical work suggests that this impairment is due to the way emotional facial expressions are visually explored, evidence from eye-tracking studies is equivocal. We propose that, where observed, atypical gaze modulation to emotional expressions in autism is driven by alexithymia, a distinct but frequently co-occurring condition. In Study 1 (29 autistic and 50 matched controls), we tested this hypothesis using a number of methodological innovations. First, gaze metrics were derived on a per-participant basis using a data-driven algorithm that accounts for variance in eye movements. Second, an objective, frame-by-frame discretisation of areas-of-interest, was employed for eye-tracking analysis. Third, the role of top-down predictions (or priors within a Bayesian framework) was investigated by measuring eye gaze behaviour to both cued and unpredictable facial expressions of emotion. These methodological advances were supported by several analytical advances. Most importantly, the temporal dimension inherent in the data was taken into account. Data were not simply collapsed across time to determine average patterns of gaze. Instead, polynomial multilevel modelling was used to describe the evolution of eye gaze. Information-theoretic metrics were also used to investigate the efficiency and complexity of visual scanning behaviour.Across all analyses, results demonstrated that atypical spatiotemporal modulation of eye gaze by task and stimulus-related priors is best explained by alexithymia and not autism. In Study 2 (N = 70), we extended this approach to investigate interoceptive and autonomic signals (heart-rate, skin conductance and pupillometry) for more complex emotional stimuli, and found evidence for alexithymia (but not autism) driven effects on gaze and arousal modulation to emotions. These results question some of the core diagnostic criteria in autism and highlight the need to account for the effects of alexithymia and interoceptive processes on emotion processing and gaze.

A-0009 TESTING THE REINFORCEMENT LEARNING HYPOTHESIS OF SOCIAL CONFORMITY

Marie Levorsen[1], Ayahito Ito[1,2], Shinsuke Suzuki[3], Keise Izuma[1,2]
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Our preferences are influenced by the opinions of others. The past human neuroimaging studies on social conformity have identified a network of brain regions related to social conformity that includes the posterior medial frontal cortex (pMFC), anterior insula, and striatum. Since these brain regions are also known to play important roles in reinforcement learning (i.e., processing prediction error), it was previously hypothesized that social conformity and reinforcement learning have a common neural mechanism. However, although this view is currently widely accepted, these two processes have never been directly compared; therefore, the extent to which they shared a common neural mechanism had remained unclear. This study aimed to formally test the hypothesis. The same group of participants (n = 25) performed social conformity and reinforcement learning tasks inside a functional magnetic resonance imaging (fMRI) scanner. Univariate fMRI data analyses revealed activation overlaps in the pMFC and bilateral insula between social conflict and unsigned prediction error and in the striatum between social conflict and signed prediction error. We further conducted multivoxel pattern analysis (MVPA) for more direct evidence of a shared neural mechanism. MVPA did not reveal any evidence to support the hypothesis in any of these regions but found that activation patterns between social conflict and prediction error in these regions were largely distinct. Taken together, the present study provides no clear evidence of a common neural mechanism between social conformity and reinforcement learning.

A-0010 TASK/MODALITY-SPECIFICITY OF PERCEPTUAL BI-/MULTISTABILITY

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The phenomenon, when a single physical stimulus produces alternations between different subjective percepts, is termed perceptual bi-/multistability. There are well-known examples of perceptual bistability in vision (e.g., Rubin's face-vase illusion) and audition (e.g., auditory streaming). Common to the various bi-/multistable phenomena is the reduced information available in the external stimulus (line drawings, sequences of pure tones without a context, etc.) and the possibility of two or more ways for organizing the sensory input. While these stimuli do not optimally represent ecologically valid situations, the way we perceive them reveals much about the mechanisms and algorithms of human information processing, similar to the various demonstrations of the Gestalt principles of perception. Close similarities across various bi-/multistable phenomena in different stimulus modalities regarding the dynamics of perceptual alternation, such as exclusivity

of the percepts and inevitability and stochasticity of switching, led to the notion of a central cognitive/neural agency being responsible for perceptual switching. We tested this hypothesis by comparing the statistical properties of switching dynamics between a visual (ambiguous structure-from-motion) and an auditory (auditory streaming) bistable stimulus. Despite the observed high cross-modal correlations in the number of switches during the 3-minute long stimuli and the common log-normal type of distribution of the perceptual phase durations (i.e., periods while the same percept holds), differences in the parameters of these distributions and lack of correlation with the modality-independent central factors tested (ego-resiliency, creativity, and executive functions) point towards perceptual switching arising from a distributed system of similar but independent processes. In accordance with this suggestion, the log-normal distributions are suggestive of a combined set of independent processes causing perceptual switching. A three-alternative version of the two tasks provided corroborating evidence.

A-0011 THE HEARTBEAT EVOKED POTENTIAL: A META-ANALYSIS

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There is increasing interest in the role of interoception, the perception of the body's internal state, for mental and physical health. Such interest, however, has been paralleled by discussion regarding the measurement and conceptualisation of interoception. Whilst most research into interoception has utilised behavioural tasks of cardiac interoceptive accuracy, an increasing body of evidence has focused on 'implicit' measures of interoception such as the heartbeat evoked potential (HEP). The HEP is a scalp-recorded Event Related Potential, time-locked to the participants' heartbeat, thought to reflect the cortical processing of the heartbeat related activity. However, questions remain as to the exact processes indexed by the HEP and the measurement of this component. The present meta-analysis sought to establish the processes indexed by the HEP. Specifically, we consider the relationship between the HEP and cardiac interoceptive accuracy, whether the HEP is modulated by attention, arousal or emotional processing demands, and whether differences in interoceptive accuracy (as a function of interoceptive training or the clinical group examined) are reflected in the HEP. Methodological considerations for the measurement of the HEP will be outlined.

A-0015 SHORT-TERM FATIGUE IN THE SPATIAL TEMPORAL ORDER JUDGMENT TASK

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Understanding sustained cognitive performance requires paradigms highly sensitive to changes in mental states and processes. Fatigue studies are typically characterized by long experimental sessions, because short lapses in attention or gradual changes in motivation can usually be compensated. Therefore, our initial finding of decreasing performance in the spatial Temporal Order Judgment Task (TOJ) within 5-10 minutes of testing was surprising. Here we summarize the results of an experiment with 40 participants replicating and extending this finding in which subjective fatigue as well as the general positive and negative affectivity was measured before and after six TOJ measurements (TOJ block). Further, another stimulus block was also delivered in which the ISI was fixed at 150 ms (EasyTOJ; no need for subtle temporal discrimination). The almost linear performance deterioration appeared in the TOJ measurements irrespective of the order between TOJ and EasyTOJ. Performance deterioration was observed also in the EasyTOJ. However, the effect was not significant when controlling for the TOJ threshold, suggesting that it was only present in the performance of participants having high TOJ thresholds, and thus it is not different from the effect found for the normal TOJ. No correlation was found between the subjective feeling of fatigue and the performance trend. However, the best TOJ threshold correlated with subjective fatigue. Other predictors of subjective fatigue were perceived effort required by the task, fatigue at the beginning of the experiment, and decrease in positive affectivity. These results demonstrate the multifaceted nature of fatigue phenomena. They are in line with the assumption that rather than a signal of depletion, fatigue indicates a cost/benefit evaluation of the current task or goals.

A-0016 ATTENTION TO INTENTION: PUPILLOMETRY AS TEMPORAL MEASURE FOR INTENTIONAL COMPONENT DURING EMOTIONAL IMAGERY

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In the present study we examined changes in pupil dilation and other behavioral measures (RT, error rate) to investigate the relationship between valence and intentionality during emotional imagery. Two groups of participants were asked to read different 9-word scripts describing positive, negative and neutral events. Scripts were presented word by word using rapid serial visual presentation (RSVP). The intentional imagery group was asked to

intentionally imagine themselves in the situations described by the scripts. The control group was required to silently read the scripts without intentional imagining. In both groups, the reading interval was followed by a blank interval that was followed by a shape identification task. Our results indicated similarity between the intentional imagery and non-intentional (control) groups during most of the reading phase. For both groups, pupil dilation reflected differences between emotional and neutral conditions and no difference between positive and negative conditions. In contrast, from the last word in the script, the imagery group (but not the control group) revealed a dissociation between the positive and the negative conditions. In addition, differences between the intentional and control groups were found in pupil dilation in neutral trials and RTs in the shape identification task as well. This pattern of results suggests that intentional imagery requires attention. Moreover, it suggests that attention is a prerequisite to processing positive and negative emotions as different.

A-0017 SHARING MAKES THE DIFFERENCE: HOW SHARED ATTENTION MECHANISM AMPLIFIES THE PROCESSING OF EMOTIONAL FACES

Arianna Schiano Lomoriello[2], Paola Sessa[1], Mattia Doro[1], Ivana Konvalinka[2]
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Previous studies have shown that sharing an experience, without communicating, affects people's subjective perception of the experience, often by intensifying it. However, the effect of shared experience on the underlying neural processing of information is not well understood. In this study, we aimed to investigate the neural mechanisms underlying shared attention by implementing a dual- EEG study where participants were required to attend to and judge the intensity of neutral, angry and happy faces, simultaneously or independently. In order to study whether the presence of another individual modulates an individual's perception and processing of facial expressions, we implemented three experimental conditions: 1) participants performed the task alone, in the absence of a social context (unshared condition), 2) participants performed the task simultaneously next to each other in pairs, without receiving feedback about the other participant's responses (shared no feedback) and 3) participants performed the task simultaneously while receiving the feedback (shared with feedback). We focused on two face-sensitive ERP components: the N170 and the Early Posterior Negativity (EPN). We found that the amplitude of the N170 was greater in the shared with feedback condition compared to the other conditions, reflecting a top-down effect of shared attention on the structural encoding of faces, irrespective of valence. In addition, the EPN was significantly greater in both shared context conditions compared to the unshared condition, reflecting an enhanced attention allocation in the processing of emotional content of faces, modulated by the social context. Behaviourally, we found a modulation on the perceived intensity of the neutral faces only when participants received the feedback of the other person's ratings, by amplifying the perceived neutrality of faces. Taken together, these results suggest that shared attention amplifies the neural processing of faces, regardless of the valence of facial expressions.

A-0018 FOLLOWING THE HERD: REDUCED GROUP SYNCHRONY IN ASD

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Herding is ubiquitous throughout all social life forms, providing beneficial outcomes to the individual. Here, we examine whether herding emerges spontaneously in human groups and whether it adheres the core principle of movement directional synchrony, observed in the animal kingdom. Using a computerized paradigm, we tested the emergence of spontaneous and intentional movement directional synchrony of 136 participants assigned into groups of four participants. We found that human groups tend to spontaneously synchronize, supporting the notion of a human herding instinct. We further asked whether individuals with high traits of Autism Spectrum Disorder (ASD) exhibit differences in their herding tendencies. Results indicated diminished spontaneous synchrony, but intact instructed synchrony in the high vs. the low ASD traits group, suggesting individuals with high ASD traits have a reduced tendency to spontaneously synchronize with others. In a follow-up experiment, we measured the brain activity of two interacting partners simultaneously, using a dual-fNIRS set-up. Preliminary analysis of the fNIRS data shows interbrain synchrony in the inferior frontal gyrus during behavioral synchronization. These results offer novel insights into the mechanisms underlying the profound behavioral and neural disturbances observed in ASD.

A-0019 THE ROLE OF HYPNOTICALLY MODULATED EMPATHY IN VICARIOUS FEAR LEARNING

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Study aim was to assess the causal role of state empathy in vicarious fear learning, i.e. learning about threats by observing aversive experiences of others. Hypnotic suggestions were employed to specifically and experimentally up- or downregulate the affect sharing aspect of empathy, without manipulating related cognitive aspects (mentalizing, perspective taking, emotion recognition), and effects on fear learning were assessed based on skin conductance response (SCR). N=39 healthy student volunteers (30 female) pre-screened for hypnotizability participated in the experiment, using a counterbalanced within-subjects design.Participants completed an observational Pavlovian fear conditioning paradigm, in which they watched videos of another person (the model), who received electric shocks paired with a predictive conditioned stimulus (CS). In a subsequent test stage, vicarious fear learning was assessed by means of SCR to the CS in the absence of the model (conditioned response; CR). In the learning stage, subjects

showed higher self-reported unpleasantness, stronger SCR and a higher incidence of vicarious tactile sensations (24 versus 3 subjects), in response to the model in pain during the high versus low empathy condition, indicating that the empathy manipulation was successful. Eye tracking data demonstrated that participants spent more time watching the model's face, and less the CS, in the high versus low empathy condition. In the test stage, participants showed greater fear learning (stronger CR) in the high versus low empathy condition. In contrast, declarative memory of the CS-shock contingency was not affected, suggesting that the observed changes in fear conditioning cannot be attributed to a lack of attention. Across participants, the magnitude of the suggestions' effect on the CR was correlated between learning and test stage (r=.45; p<.01). Based on a causal experimental manipulation, and excluding alternative explanations, such as mentalizing or attention, these findings demonstrate a direct role of state empathy in facilitating vicarious fear learning.

A-0021 ACTION INTENTION DRIVES SPECIFIC TOP-DOWN PREDICTIONS REFLECTED IN THE EARLY AUDITORY PROCESSING: EVIDENCE FROM TWO ERP STUDIES

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It is well described by the ideomotor theory that once associations between different action types and their sensory consequences are established, we select our actions in order to produce desired outcomes. In the auditory system, action-related brain predictions have been extensively studied; typically, action-effect couplings are found to attenuate the early sensory event-related potentials (ERPs). However, little is yet known about the genuine top-down effect of action intention when controlling for other possible top-down sources, such as those driven by regularities in the sensory stimulation. We addressed this issue in two studies, where participants produced sounds by randomly pressing one of two buttons. In the first study, in a condition with hand-specific action-effect associations where each button frequently produced one of two tones, rare unexpected tones violating the action intention elicited mismatch negativity (a component widely reported in relationship to regularity and rule violation), even in the absence of a global regularity pattern. In a second study, we rarely omitted the expected sounds in the hand-specific condition where each button produced one of two tones, and additionally, in a hand-unspecific condition where each button produced any of the two tones; presumably, studying the omission (by contrast to mismatch) of expected action-effects allows uncovering the endogenous neural signature of prediction. Importantly, rare omissions of the expected tones reliably elicited omission N1 responses only when the tone identity was predictable based on the specific (by contrast to unspecific) action-effect associations. Taken together, these two sets of results indicate that the top-down effects of action intention can reliably drive predictions at the early sensory levels, where an overall regularity pattern in the sensory stimulation is not a mandatory condition.

A-0023 MIND THE OVERLAP: ELUCIDATING TWO INTERACTING CONTRIBUTORS TO EMOTION RECOGNITION ACCURACY

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Although there are considerable individual differences in the accuracy of emotion recognition from dynamic face stimuli, the way in which emotion recognition accuracy is related to internal representations of expressions is unclear. Here we tested the hypothesis that individuals with highly variable and overlapping internal representations of emotion would have low scores on an emotion recognition task. In the current study, 25 autistic and 25 non-autistic participants were recruited to obtain variability in emotion recognition from motion cues. Participants completed two tasks which employed point light faces (PLFs) displaying angry, happy and sad expressions. In the first task, participants viewed emotional PLFs and rated how angry, happy and sad the expressions appeared. Emotion recognition accuracy was calculated by subtracting the mean of the two incorrect emotion ratings from the correct emotion rating. In the second task, on each trial, participants moved a slider to manipulate the speed of a PLF until it moved at the speed of a typical angry, happy or sad expression. 'Variability' was calculated as the standard deviation, across all trials, of the speed attributed to the PLFs. 'Distance' was calculated by subtracting the mean percentage speed attributed to one emotion (e.g., sad) from the mean percentage speed attributed to another (e.g., happy). We constructed a linear mixed effects model of accuracy as a function of mean variability, mean distance and the interaction between variability and distance, with subject, age, gender and non-verbal reasoning as random intercepts. Higher variability [$t(74.21) = -3.04$, $p<.01$] and smaller distances [$t(82.76) = 2.17$, $p<.05$] predicted lower emotion recognition accuracy. Importantly, however, these main effects were qualified by a variability x distance interaction [$t(61.44)= 2.29$, $p<.05$]: only when variability was high was a smaller distance detrimental to accuracy [high: $R = .31$, $p < .05$, low: $R = 0.02$, $p = 0.9$]. These data highlight factors (variability and distance) which may help explain emotion recognition difficulties in various clinical groups.

A-0026 MIND OVER CHOCOLATE? AN ERP STUDY ON THE EFFECTS OF IMAGINED CONSUMPTION OF CHOCOLATE ON VISUAL FOOD CUE REACTIVITY

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Previous research has demonstrated that the imagined consumption of a specific type of food helps individuals to consume less of that food. The present study aimed at investigating the underlying neural correlates of this appetite-reducing strategy with the use of event-related potentials (ERPs). Eighty-six women, with a mean age of 23.65 years were randomly assigned to one of three imagination conditions in which they listened to a guided imagery script that either described (1) the eating of 30 colorful button-

shaped chocolates (M&Ms), (2) the sorting of 30 M&Ms by color, or (3) the sorting of 30 marbles by color. Subsequently to the imagery task, the participants were presented with images of M&Ms and marbles (spherical toys resembling M&M candy) while their electroencephalogram and craving ratings were recorded. The results showed that imaginary eating did not reduce the appetitive value of M&M pictures. The M&M sorting group reported enhanced craving and showed increased late positivity toward M&M pictures (300–600 ms after picture onset) compared to the two other groups. The present findings indicate that the imagined handling of food increases food cue reactivity and that imaginary eating is not a reliable method to reduce appetite.

A-0027 BINDING WITH ROBOTS: OBSERVED ROBOTIC ACTIONS INDUCE AN IMPLICIT SENSE OF AGENCY

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Humans generally experience a sense of agency over the outcomes caused by actions produced by their motor systems. A renowned method to measure an implicit dimension of the sense of agency is the temporal binding paradigm. According to this paradigm, we are likely to underestimate the amount of time elapsed between an action we performed and the effect caused. Interestingly, previous research has provided evidence for a temporal binding effect to occur not only when executing an action ourselves, but also when observing other humans doing it. The current research investigates whether observing actions performed by a mechanical entity (i.e., a social robot) can elicit an implicit sense of agency over outcomes. In Experiment 1, we show that observing a robot-generated action induced an underestimation of the temporal gap between action and outcome, featuring a lower effect size compared to self- and human-generated actions. Strikingly, participants' distribution over the observed robot-generated action revealed to be bimodal. In Experiment 2, participants' social perception of the robot was manipulated using a between-subjects design. Participants were primed with either a mentalistic interaction (i.e., played a social game with the robot) or a mechanistic interaction (i.e., the same activity with the experimenter controlling the robot). Temporal binding for robot-generated actions occurred only in the mentalistic group, with time reproductions in the mechanistic group not differing from the control condition. Moreover, participants in the mentalistic group were more likely to adopt an intentional stance towards the robot and to anthropomorphise it, as well as scoring higher in Theory of Mind questionnaires. Together, these findings suggest that observing robot-generated actions can induce an implicit sense of agency, depending on the social perception of the agent. This is important to understand how humans can efficiently interact with robotic agents, and which features can provide a smoother interaction.

A-0029 DO YOU SEE WHAT I SEE? INDIVIDUAL DIFFERENCES IN CONTEXTUALIZED EMOTION RECOGNITION

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Recent evidence suggests that real life facial expressions are often more ambiguous than previously assumed. Accordingly, context plays an indispensable role in communicating emotion. In fact, even the recognition of stereotypical, exaggerated facial expressions can be shifted by context. For example, previous reports suggest that the body context in which a face is presented can bring to a categorical shift in recognition from the face. This effect has been studied extensively at the group level but are we all effected in a similar way? Our results suggest the answer is no. Using a multiple-choice categorization task, 101 participants were presented with still presentations of incongruent facial and bodily emotional expressions. We asked whether individuals differ in their susceptibility to the bodily context when categorizing the face and if so whether effects are consistent over time. Striking differences were found, these were stable over two sessions ($r = 0.84$, $p<0.001$). Our second study suggests that this phenomenon is not bound to the method used and holds also when using an open question paradigm. Testing 83 participants we show a robust correlation between the methods ($r = 0.63$, $p<0.01$). Our third study shows that individual differences in the susceptibility to context hold even across modalities, presenting participants with dynamic audio-visual expressions (43 participants, $r = 0.7$, $p < 0.001$). We conclude that different people exposed to identical affective stimuli may perceive strikingly different emotions as a function of highly stable individual differences.

A-0030 CAN EYE GIVE YOU A HAND? THE ROLE OF EYE GAZE DURING DYADIC HAND COORDINATED JOINT ATTENTION.

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Joint attention is the process of two people aligning their attention, as one person initiates a shared experience by looking at or signalling towards an object, and the other responds by attending to the same thing. The current study developed a novel virtual reality paradigm to investigate the extent to which initiator gaze information is used by responders to guide joint attention responsivity in the presence of more visually salient and spatially precise manual pointing gestures. Twenty-one participant dyads used pointing gestures to complete a cooperative joint attention task in a virtual environment. Eye movement and motion tracking enabled real-time interaction and provided objective measures of gaze and pointing behaviours. Initiators displayed gaze behaviours that were spatially congruent with the subsequent pointing gestures. Responders overtly attended

to the initiator's gaze during the joint attention episode. However, both these initiator and responder behaviours were highly variable across individuals. Critically, when responders did attend to their partner's face, they were faster to respond when the initiator's gaze was congruent with their pointing gesture, and thus predictive of the joint attention location. These results indicate that humans attend to and process gaze information to facilitate joint attention responsivity, even in contexts where gaze information is implicit to the task and joint attention is explicitly cued by more spatially precise and visually salient pointing gestures. Our findings and new methods have implications for future cognitive neuroscience research on non-verbal interactions, and for testing theories of social communication in autism.

A-0032 IMPLICIT REINFORCEMENT LEARNING BASED ON SOCIO-EMOTIONAL CONSEQUENCES OF ACTION

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Emotional expressions convey crucial social information (e.g., possibility to mate, threat) which influence others' behavior. This influence is commonly thought to reside in innate or overlearned stimulus-response associations, which automatically trigger approach-avoidance tendencies in the receiver. Nonetheless, goal-directed mechanisms, which depend on the expected value of alternative actions, might also contribute to the receiver's approach-avoidance implicit tendencies. To test for the presence of goal-directed processes in the generation of action tendencies, we built an online task where participants had to indicate where they prefer to sit in a scene representing a waiting room. The waiting room had four aligned chairs: two individuals were seated on the central chairs, while the two outer seats were free, leaving to the participant a choice between two possible actions (i.e., sit on the right or on the left available chair). Importantly, at the time of the choice, the two individuals in the scene displayed neutral expressions, preventing any possible stimulus-driven effect of emotion. After the participant indicated the preferred seat, a feedback was provided, with a tick displayed on the chosen chair and one of the two individuals now expressing anger. Depending on subjects' choices, a hidden contingency governed the probability to end up seated close to (approach) or far from (avoidance) the individual that displays anger. Our results based both on mixed model analyses and on reinforcement models of behavior showed that, even when reporting no explicit response strategy, participants developed an implicit preference for executing the action which allowed them to avoid anger in the feedback phase. Overall, our results strongly suggested that approach-avoidance decisions in socio-emotional contexts can at least in principle depend on a value-based, goal-directed, process of implicit arbitration between alternatives.

A-0034 EVIDENCE FOR INDIVIDUAL-SPECIFIC EXPRESSIONS OF FRUSTRATION

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Aim: Emotion theories differ in viewpoints concenerning the extent and reasons of variation in expression of emotion. Previous studies have found evidence for family-specific expressions, individual-specific showing of certain expressions, and personality-typical frequency of showing expressions. However, little research has studied individual-specific ways of expressing an emotion. Therefore, the present study aims to show that a part of variance in emotion expression can be accounted for by individual-specific ways of showing an emotion. Frustration was used as model emotion because of its relevance to motivation and action in human-machine interaction, learning applications, or medical assistance. Mitigating undesired effects caused by frustration can be greatly supported based on robust recognition of frustration, which can only be achieved once the relationship between frustration and its expression is understood. Method: In a driving simulator study (50 participants) and a real-world driving study (20 participants), participants experienced several frustrating situations. Camera recordings were used to capture and classify their facial and bodily expressions. After completion of the study, participants gave a continuous post-hoc frustration rating for every drive. Their facial and bodily expressions were hand-coded by three independent raters. Results: Previously described frustration-typical expressions could be replicated in this study. In addition, we find that every participant shows a per-individual-consistent set of expressions of frustration. Comparison of multilevel models shows that a model that includes expression per person predicts expression frequency significantly better than a model that only includes the expression. We therefore conclude that a part of variance in expression of frustration can be explained by individual-specificity of the same.

A-0036 THE RELATIONSHIP BETWEEN HEARTBEAT COUNTING AND HEARTBEAT DISCRIMINATION: A META-ANALYSIS.

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Despite increasing recognition of the importance of interoception - the perception of the body's internal state - for health and aspects of higher-order cognition, the measurement of interoception remains a challenge. Most studies assessing cardiac interoception employ one of two tasks; the Heartbeat Counting Task or the Heartbeat Discrimination Task, in which measures of interoceptive accuracy, confidence and awareness (a metacognitive measure reflecting the correspondence between accuracy and confidence) can be

obtained. These measures are thought to index a common ability across tasks, an assertion often used to justify the use of a single measure of cardiac interoception. However, mixed findings regarding the relationship between these measures question whether these tasks can be used interchangeably. The present study employed a meta-analytical approach to assess the association between the Heartbeat Counting Task and Heartbeat Discrimination Task with regards to accuracy, confidence ratings and awareness. Pooled findings from 21 studies revealed a small relationship between accuracy scores on the measures (r=.21, p< .001), a result which held when analyses were restricted to correlation coefficients from the general population, studies employing the two-alternative forced choice Heartbeat Discrimination Task, studies employing the auditory Heartbeat Discrimination Task, and separate analyses for the device used to implement the tasks. Despite accuracy scores being significantly correlated, the amount of variance explained in each measure by the other is extremely small, offering little support for the idea that measures are interchangeable. Additional analyses on a subset of papers assessing confidence (N=6) and awareness (N=5) suggested a moderate relationship between the tasks for confidence (r=0.61, p<.001) but no association for interoceptive awareness (r=0.08, p=.486). Overall, these data question the interchangeable use of the two tasks for measures of accuracy and awareness, and suggest that caution is required when generalising findings from studies that have only employed one measure.

A-0037 THE NEUROPHYSIOLOGICAL CORRELATES OF THE TRIARCHIC MODEL OF PSYCHOPATHY

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Introduction: dimensional approaches to the study of psychopathic traits point to two distinct etiological vulnerability factors for the expression of psychopathic related behaviors: trait fearlessness and externalizing vulnerability (Patrick, Fowles, and Krueger, 2009). The present study aims to study the behavioral and neurophysiological correlates (ERPs) of associative learning and inhibitory control in a community sample varying in the expression of psychopathic traits.$Hypothesis: using the Triarchic Model of Psychopathy, we hypothesize that boldness is associated with lower LPP and CNV amplitudes to the cue signaling the occurrence of a noxious stimulus and that disinhibition is associated with reduced ERN amplitudes after error commission in a behavioral inhibition task.$Method: forty-seven healthy participants (24 female) were recruited and completed an threat conditioning task (adapted from Bacigalupo and Luck, 2018) and a Go No-Go task (adapted from Maruo, Sommer and Masaki, 2017) while recording high density EEG.$Results: in the aversive conditioning task, and besides the expected experimental effects (higher LPP and CNV amplitudes for CS+ when compared with CS-), linear regression models showed

that boldness predicted lower amplitudes for LPP difference values. In the Go No-Go task, disinhibition was associated with lower ERN difference amplitude values, suggesting lower error related reactivity.$Discussion: our results support the dual process models of psychopathy and shed light to the understanding of the mechanisms underlying the low-fear dimension typically associated with psychopathy and with amygdala mediated associative learning processes.

A-0038 MEANNESS PSYCHOPATHIC TRAITS PREDICT REDUCED FAIRNESS SENSITIVITY: AN ERP STUDY ON THE ULTIMATUM GAME

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In the present study we examined the influence of distinct psychopathic dimensions of the Triarchic Model of Psychopathy on behavioral and Event-Related Potentials correlates of respondents' role in the Ultimatum Game. Forty-nine participants recruited from the community were assessed for psychopathic traits with the Triarchic Model of Psychopathy (boldness, meanness, and disinhibition) and performed a one-shot computerized version of the Ultimatum Game while recording EEG activity. Neither disinhibition nor boldness predicted the acceptance rates and MFN amplitudes of fair and unfair offers in the Ultimatum Game. As hypothesized, results show that meanness predicts lower acceptance of fair offers and lower MFN amplitude to unfair offers, indicating that high scores on meanness may be related to reduced fairness sensitivity and increased patterns of instrumental competitive aggression. The interpersonal aggressive nature of meanness (reflected by low empathy and patterns of instrumental aggression), along with reduced fairness concerns, emerges therefore as potential correlates of the maladaptive features of psychopathy as conceptualized by the Triarchic Psychopathy Model.

A-0039 MORE THAN MERELY EMOTION PERCEPTION AND PERCEPTUAL SALIENCE: EVIDENCE FOR ANTERIOR INSULA REPRESENTING AFFECT SHARING DURING EMPATHY FOR PAIN

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Previous studies have identified the engagement of anterior insula (AI) during empathy for

pain and stated this activation to represent affect sharing. Recently, Coll and colleagues (2017) argued that the classic measurements of empathic responses actually mixed up two independent processes, emotion identification and affect sharing. Therefore, it remains unclear whether the reported AI activity during empathy for pain was due to affect sharing or emotion identification. In this study, we aimed to clarify the nature of affective representations in AI when perceiving others' painful facial expressions. Forty-three participants were shown videos of painful facial expressions from either a real experiencer (real pain) or an actor (acted pain) while their brains were scanned with fMRI. In the real pain condition, the person in the videos received an (ostensive) painful injection with a surgical syringe in the right cheek; in the acted pain condition, participants watched the same syringe making contact with an actor's right cheek, but with its needle protected by a cap. Yet, the actor was being instructed to show a realistic painful expression, as if they were actually feeling pain. After each video, demonstrator's painful expression, demonstrator's actual pain feeling and participants' own unpleasantness were rated. Behavioral results showed higher ratings in the real pain condition for all three assessments than in the acted pain condition. Neuroimaging results revealed increased neural activations in bilateral AI, anterior mid-cingulate cortex and somatosensory areas when participants were observing real pain compared to acted pain. Importantly, bilateral AI activity only positively correlated with ratings of participants' own unpleasantness, but neither with demonstrator's painful expression nor pain feeling. These findings add to our understanding of the role of AI in affective sharing, highlighting that engagement of this area cannot be attributed to perceiving salient social information, such as the expression of pain.

A-0040 AGEING DISRUPTS REINFORCEMENT LEARNING WHILST LEARNING TO HELP OTHERS IS PRESERVED

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Prosocial behaviours, actions that help others, are vital for maintaining social bonds and can improve health, benefits that may be particularly relevant as we age. A key aspect of prosocial behaviour is the ability to learn associations between our own actions and outcomes for other people. Existing studies suggest reinforcement learning ability declines across the lifespan and self-relevant learning can be computationally separated from learning about rewards for others, yet how older adults learn what rewards others is unknown. Here, using computational modelling of a probabilistic reinforcement learning task, we tested whether young (age 18-36) and older (age 60-80, total n=152) adults can learn to gain rewards for themselves, another person (prosocial), or neither individual (control). We also measured individual differences in psychopathic traits, which are

associated with reduced prosociality and exist on a continuum in healthy adults. Detailed model comparison showed that a computational model with separate learning rates best explained how people learn associations for different recipients. Correlations between learning rates and accuracy, as well as simulations, confirmed that higher learning rates were closer to the optimal learning rate in our task. Young adults were faster to learn when their actions benefitted themselves, compared to when they helped others. Strikingly however, this self-bias was reduced in older adults. Self-relevant learning rates were lower in older, compared to younger, adults but prosocial learning rates did not differ between age groups. Moreover, we find evidence that age group differences are associated with changes in self-reported psychopathic traits. In older adults, psychopathic traits were significantly reduced compared to younger adults and negatively correlated with prosocial learning rates. Older people with the lowest levels of psychopathic traits had the highest prosocial learning rates. We show that learning how our actions help others is preserved across the lifespan, despite age-related impairments in learning for oneself. These results have implications for our understanding of reinforcement learning mechanisms and theoretical accounts of healthy ageing.

A-0041 INDIVIDUAL SCHIZOTYPAL TRAITS INFLUENCE PERIPERSONAL SPACE PLASTICITY

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The region of space immediately surrounding our body is defined as peripersonal space (PPS), a plastic interface between the body and the environment. Indeed, PPS extends by using a tool to reach far objects. Several studies have demonstrated how individual PPS extent is shaped by different individual personality traits, including schizotypal ones. Specifically, narrower PPS boundaries have been reported among high schizotypal individuals and schizophrenia patients. However, no studies have looked at how the plasticity of PPS can be affected not only by interactions with people and objects, but also by personality traits like schizotypy. To this purpose, the present study investigated the individual PPS malleability after two different motor trainings along the schizotypal continuum. Specifically, PPS malleability was tested after using a tool (Experiment 1) and after the mere observation of someone else using the same tool (Experiment 2). Indeed, previous evidence has shown that that tool-use observation influences visual distance judgments, extending the representation of PPS. To date, however, there is no evidence that observing tools action affects also multisensory integration tasks. On one hand, Experiment 1 showed that PPS boundaries extended after using the tool; on the other hand, Experiment 2 revealed an absence of PPS expansion. Moreover, a greater PPS expansion emerged in the relatively low schizotypal group compared to the relatively

high schizotypal one, regardless of the type of motor training performed. The present findings highlight an absence of PPS modulation after observing a tool action that might be due, first, to the lack of a specific goal-directed action in our multisensory integration task; second, to the absence of sensory feedback usually linked to tool-use, which may be crucial to trigger PPS plasticity. Finally, these new results extend previous evidence underlining a potential general functional alteration of PPS with the increase of the schizotypal level.

A-0042 PLENTY MORE FISH IN THE SEA: LEAVING SOCIAL PARTNERS IS SHAPED BY ANIMAL FORAGING PRINCIPLES

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Much of our lives are spent in one-to-one interactions, but sometimes the value of staying with someone declines. While research has focused on how we punish unfair conspecifics, punishment is often not available nor desirable. Instead, we simply choose to leave. What factors define how long we spend in a relationship? Ecological theories of foraging offer predictions of what factors influence how long animals spend collecting rewards in locations. Here, we leverage foraging accounts to explain how people decide to leave interactions in a novel economic game. Participants were connected with partners in a virtual group, deciding when to leave each partner. When they chose to leave, they had to wait to be connected to another player. While connected, they saw the proportion of different pots of money being shared with them by the partner. We manipulated the fairness of partners, such that the proportion shared declined over time at different rates, while keeping the money offered to them equal. Across studies the virtual groups (or environments) differed in (i) the proportion of fair people in the group and (ii) how much effort it took to connect to the next player. We predicted that participants would spend longer interacting with fair partners, but crucially, based on foraging theories, that the duration of interactions would depend on the environment. Across five studies, people's decisions to leave conform to these predictions. People stay with partners longer – even if they are being highly unfair – if the next person is less likely to be fair or will take some effort to connect with. Using fMRI we show how such decisions are processed in the frontal cortex. When faced with a declining interaction, how long we stay is dictated by the environment and who's in it - the other fish in the sea.

A-0045 THE IMPACT OF KINEMATICS & EYE CONTACT ON ACTION PERCEPTION IN A SOCIAL CONTEXT

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As human beings, a considerable proportion of our social behaviour is characterised by

coordinating our movements with others. While a growing corpus of research indicates that engagement in movement synchrony is a hallmark of social and (pro-social) behaviour, how we perceive others interacting or moving together is less well-understood. Two aspects that appear to be critical to the perception of the social connectedness between others is gaze direction and movement synchrony. To explore how movement kinematics and gaze direction influence the perception of a dyad in action, we manipulate these two social cues in behavioural (N=49, 42 females) and neuroimaging experiments (N=20, 10 females). Behavioural data suggest that dyads are perceived as more socially connected (and preferable to watch) when they move synchronously and when they face one another. fMRI results show that parietal and occipitotemporal regions of the brain (the action observation network; AON) are engaged to a greater extent when watching dyads face each other rather than away from each other. Observing aynschronous movements showed greater engagement of the right temporoparietal junction, precuneus, and right posterior superior temporal sulcus (pSTS) – regions commonly associated with perspective taking, theory-of-mind, and visual transformations of the human body. Thus, these results suggest that the general direction of gaze as well as movement kinematics are important cues for establishing social relationship between moving dyads. These findings set stage for further investigation into cues that are important for perceiving a social relationship between two people, and how we might perceive the intentions of others who move together.

A-0046 BABY DON'T CRY. MEASURING THE EMPATHETIC RESPONSE TOWARDS INFANT CRIES IN A SINGAPOREAN CONTEXT.

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Females are considered as the more empathetic gender in societal stereotypes and experimental studies. Empathetic responses can be elicited and measured in multiple aspects, such as sociologically or neurologically. Multiple situations are capable of evoking empathetic responses, including hearing infant cries, which serve as the primary means of communication for infants, and it elicits strong sociological, physiological, and neurological responses.Aim of this study is to (a) examine the empathetic response towards infant cries, (b) investigate gender differences in empathetic responses toward infant cries, and (c) assess whether individuals' empathetic responses are moderated by the gender roles in society that the participants ascribe, with more masculine gender roles being less empathetic than those feminine. Lack of gender differenceIn this study, questionnaires (TEQ, BSRI) and functional near-infrared spectroscopy (fNIRS) are used to measure non-parents with low frequency of interaction with infants (N=38, mean age= 22+2.02, 20 females, 18 males) empathetic responses towards mild (N=3) and intense (N=3) infant cries. Results show that a higher empathetic response was elicited for mild cry intensities in contrast to intense cry intensities, possibly attributed to increased personal

distress in the observer with increase in cry intensity. The lack of observed gender difference in empathy between genders may possibly represent similar empathy levels in the sample, as no significant difference was found in trait empathy scores between genders. More feminine gender roles, feminine and androgynous, were not found to be correlated with empathetic response in the Medial PreFrontal Cortex (MPFC) but positively correlated in Middle Frontal Gyrus (MFG), a neural substrate of empathy. Overall, our results suggest the existence of differing empathetic responses towards mild and intense infant vocalizations, with gender and gender roles moderating the response.

A-0048 RESTING HEART RATE VARIABILITY AND SELF-CONSCIOUS EMOTION RESPONSE

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Resting heart rate variability (rHRV) closely reflects parasympathetic influences on the heart and has been proposed as a biomarker for emotional dysregulation. This view has been supported by theories and growing empirical evidence that rHRV is associated with dysregulation of various kinds of emotions, such as anxiety and depression. Nevertheless, little is known about whether another category of emotions – self-conscious emotions (SCEs) – would also be predicted by rHRV. This study investigated the relationship between rHRV and individual differences in SCE response. Methods: Thirty Chinese young adults were invited to a laboratory to complete a 6-minute resting ECG recording and a questionnaire. Responses of SCEs, including shame-proneness, guilt-proneness, externalization, detachment, alpha pride, and beta pride, were measured by the Test of Self-Conscious Affect. Social desirability was measured by the Marlowe-Crowne Social Desirability Scale. The index of HRV used was the relative power of the high-frequency band (HF). Results: Guilt-proneness was the only SCE significantly correlated with HF. Males tended to have lower guilt-proneness; age was negatively associated with alpha pride. None of the SCEs significantly correlated with social desirability. Multiple regression analysis showed that, controlling for gender, HF significantly predicted guilt-proneness (beta = .419, p = .037); the effect of gender on guilt-proneness was nonsignificant controlling for HF. The overall model fit was R2 = .280. Discussion: This study found that rHRV was associated with guilt-proneness but not shame-proneness or pride in Chinese young adults. The counterintuitive finding that guilt-proneness was positively associated with rHRV may suggest that guilt is a more adaptive emotion than shame even though both are "negative" SCEs. The relationship between rHRV and different SCEs may be influenced by culture. Future cross-cultural psychophysiological research is needed to verify the present findings.

A-0051 TRANSCRANIAL DIRECT CURRENT STIMULATION FOR THE TREATMENT OF MOTOR SEQUENCE LEARNING IN PARKINSON'S PATIENTS WITH MILD COGNITIVE IMPAIRMENT.

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Implicit motor sequence learning (IMSL) is affected in Parkinson's disease (PD). Research in healthy young participants shows the potential for transcranial direct current stimulation (tDCS) over the primary motor cortex (M1) to enhance IMSL. We determined concurrent, short-term and long-term effects of anodal tDCS over M1 on IMSL, as measured by the Serial Reaction Time (SRT) task, in PD patients with mild cognitive impairment. Concurrent (anodal/sham tDCS intervention during the SRT task), short-term (5-minutes post-intervention) and long-term (1-week post-intervention) effects on IMSL were evaluated in idiopathic PD patients (Hoehn & Yahr stage II-III) with mild cognitive impairment. Results of 11 PD patients (8 men, 3 women; M = 77.1 years; M disease duration = 7.7 years) showed significant IMSL in the anodal (p = .016), but not in the sham tDCS condition (p = .937). Post-hoc analyses showed that IMSL was non-significant during intervention (p = .810); tended to become significant at 5-minutes post-intervention (p = .067); and reached statistical significance at 1-week post-intervention (p < 0.001). Anodal tDCS over M1 exerted beneficial effects on IMSL in PD patients with mild cognitive impairment. Our study is the first to report a positive effect of tDCS on IMSL in PD. Possibly, previous studies failed to find a similar effect because they included PD patients with intact or severely impaired IMSL, resulting in ceiling or floor effects, respectively. Further research is needed to confirm the current findings in a larger, cognitively more diverse sample.

A-0053 SHARPENED SELF-OTHER DISTINCTION IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

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Differentiation between self-produced tactile stimuli and touch by others is necessary for social interactions and for a coherent concept of "self". In attention-deficit-hyperactivity-disorder (ADHD), tactile hyperresponsiveness and social cognition problems are part of the symptomatology, but pathophysiological mechanisms are largely unknown. We have recently shown robust self-other-distinction in brain areas related to somatosensory, social cognitive, and interoceptive processing. Here, we compared the neural signatures of affective self- and other-touch between adult humans with ADHD and healthy controls (HC). Twentyeight adult ADHD participants (male and female) and 30 age- and gender-

matched HC performed a self-other-touch-task during functional magnetic resonance imaging: they stroked their own arm, an object, or were stroked by the experimenter. In addition, tactile detection thresholds and rubber hand illusion were measured in a subgroup. ADHD participants had more autistic traits than HC and reported to engage less in interpersonal touch. They also reported to be more sensitive to tactile stimuli. Compared to HC, ADHD participants showed enhanced responses to both the self- and other-touch conditions: stronger deactivation during self-touch in the insula and increased activation during other-touch in primary somatosensory cortex. ADHD participants had intact tactile detection thresholds and were less susceptible to the rubber hand illusion. Adult ADHD-participants show altered processing of social tactile stimuli. Unaltered detection thresholds suggest that peripheral processing is intact, and that hypersensitivity might be driven by central mechanisms. The more pronounced differentiation between self- and other-touch might indicate a clearer self-other-distinction, which could relate to deficits in social cognition and tactile hypersensitivity.

A-0054 RELATING RESTING-STATE EEG DYNAMICS TO THE FEAR AND PERCEPTION OF AVERSIVE BODILY SENSATIONS

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Fear of bodily sensations is known to predict increased perception in chronic bodily diseases, yet the neural correlates of this relationship are still not well understood. The unpredictability of symptom onset has been suggested as an important moderator in this fear-perception relationship. The current study related fear and perception of predictable and unpredictable respiratory and somatosensory sensations to the resting-state EEG measures of frontal theta/beta ratio (TBR) and frontal alpha asymmetry (FAA), both previously shown to relate to anxiety and other disorders of affective and attentional processing. We acquired resting-state EEG (5-min, eyes closed) from 42 healthy participants, using a high-density set-up with a sampling rate of 512Hz. Participants underwent two perceptual tasks, one featuring respiratory and another featuring somatosensory stimuli. In these tasks, participants sporadically experienced either two unpleasant loaded breaths, or 10 seconds of unpleasant sinusoid electrocutaneous stimulation. In the predictable condition, these stimuli were always preceded by an auditory probe, whereas in the unpredictable condition they were not cued. Following each condition, participants rated the intensity and unpleasantness of these bodily stimuli, as well as their level of fear. These ratings were then related to the absolute power extracted from the resting-state recordings. Spectral dynamics were extracted for the theta (4-7Hz), alpha (8-13Hz) and lower beta (13-21Hz) frequency bands at the 5 frontal channels, and used to calculate TBR and FAA.We found significant as well as trend relationships between the rightward FAA and increased fear and perception of predictably cued aversive sensations. We only observed trend relationships for the unpredictable sensations. No significant relationships were found for the TBR. The results suggest that FAA could constitute a biomarker of increased fear/perception of predictable aversive bodily symptoms, which warrants further research.

A-0055 IMPROVED VOCAL EMOTION RECOGNITION IN INDIVIDUALS WITH NATURALLY GOOD MUSICAL ABILITIES

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It is often assumed that music training enhances nonmusical abilities such as speech perception, executive functions, reading, and emotion recognition. Evidence for such transfer effects comes primarily from cross-sectional comparisons between musicians and nonmusicians. It remains unclear, however, whether training itself explains the musician advantages, or whether predispositions and informal musical experience could produce similar advantages. In the current study, we aimed to clarify this issue by examining the association between music training, music perception skills and vocal emotion recognition. The sample (N = 169) comprised musically trained and untrained participants who varied widely in their musical skills, as assessed through self-report and performance-based tasks. The emotion recognition tasks required participants to categorize emotions in speech prosody and in nonverbal vocalizations such as laughter and crying. In line with previous studies, music training was associated positively with vocal emotion recognition, though the effect was small. Crucially, we also found a positive association between music perception abilities and emotion recognition, even with music training held constant. In fact, untrained participants with good musical abilities were as good as musicians at recognizing emotions. Moreover, the association between music training and emotion recognition was fully mediated by auditory and music perception skills. Thus, in the absence of music training, individuals who were 'naturally' musical showed musician-like performance at recognizing vocal emotions. These findings highlight an important role for predispositions and informal musical experience in associations between musical and nonmusical domains. A separate event-related potential (ERP) study is being conducted to determine the stage(s) of vocal emotional processing at which associations with musical abilities are observed.

A-0056 PERCEPTUAL PRIORITISATION OF SELF-ASSOCIATED VOICES

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Information associated with the self is prioritised and processed more quickly and accurately than information associated with others. Across three experiments, we examined whether another's voice could become associated with the self as a new 'self-voice' and thus be prioritised in perception. In the first experiment, participants learned associations between three unfamiliar voices and three identities (self, friend, other). Participants then made speeded judgements of whether voice-identity pairs were correctly matched, or not. A clear self-prioritisation effect was found, with participants showing quicker and more accurate responses to the self-voice relative to either the friend-voice or other-

voice. In two further experiments, we tested whether this prioritisation effect increased if the self-voice was gender-matched to the identity of the participant (Experiment 2) or if the self-voice was chosen by the participant (Experiment 3). Gender-matching did not significantly influence prioritisation; the self-voice was similarly prioritised when it matched the gender identity of the listener as when it did not. However, we observed that choosing the self-voice did interact with prioritisation (Experiment 3); the self-voice became more prominent, via lesser prioritisation of the other identities, when the self-voice was chosen relative to when it was not. Further studies are planned based on this evidence that it is possible to incorporate a new voice into our self-identity that would otherwise have been perceived as belonging to an 'other'. Importantly, forthcoming studies will utilise a more immersive communicative paradigm within which the new self-voice must be used as a primary means of representing self-identity in a social interaction. The current findings, and planned future studies, have implications for the design and selection of synthetic voices used with AAC devices. We suggest that agency in choosing a new vocal identity may modulate the distinctiveness of that voice relative to others.

A-0057 SELF-FACE AND EMOTIONAL FACES – ARE THEY SIMILARLY PROCESSED?

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Humans possess a highly-elaborated representation of their own image. Previous research focused on the extreme familiarity of the self-face as a driving factor of the prioritised processing of this stimulus. However, the self-face differs from other faces not only in respect of its familiarity but also in respect of its emotional significance. Therefore, in this ERP study, we aimed at elucidating the role of the emotional load factor in preferential processing of the self-face. The self-face, emotionally positive, emotionally negative faces as well as neutral faces (control condition) were presented to 30 participants. The inclusion of emotionally positive (i.e. happy) faces was based on the well-documented the self-positivity bias whereas the inclusion of emotionally negative (i.e. fearful) faces was justified by the saliency of these stimuli. Participants' task was the simple detection of faces. Two ERP components (P300, LPP) were analysed. Results clearly indicated that processing of the self-face was associated with significantly increased amplitudes of both P300 and LPP in comparison to all other faces: fearful, happy, and neutral (all Ps < 0.001). Thus, these findings strongly suggest that electrophysiological correlates of the self-face processing do not resemble those of emotional – either positive or negative – faces, implying that self-referential processing is truly reflective of self. This research was funded by the National Science Centre Poland (Grant No. 2018/31/B/HS6/00461).

A-0059 CAN TRAINING MODULATE RESTING-STATE NEURAL NETWORK DYNAMICS? – AN AGE-RELATED MULTISCALE ENTROPY AND SPECTRAL POWER DENSITY STUDY ON TASK-SWITCHING

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Our earlier research using a task-switching paradigm (Gaál & Czigler, 2017) revealed age-related behavioural and electrophysiological (ERP) differences in training effects for young and old adults. The question of the present study was whether training caused general changes in neural network dynamics, mainly in the old age-group where larger task-related benefits of training could be detected. Therefore, we applied multiscale entropy (MSE) on resting-state EEG data for measuring brain signal complexity as well as spectral power density (SPD) for identifying changes in different frequency bands. 39 young (18-25 years) and 40 old (60-75 years) women were divided into control and training groups. In both the pretraining and posttraining sessions, resting-state EEG was recorded before an informatively cued task-switching paradigm. The training groups executed 8 one-hour long training sessions between pre- and posttraining. In order to identify a task-related network, partial least squares (PLS) analysis was applied to task data, to identify those channels where ERP changes associated with training could be detected. After that, we applied PLS analysis to resting-state data, focusing on the task-related network's pre- and posttraining resting-state MSE and SPD data. These analyses revealed increased coarse temporal scale MSE and increased power in delta and theta frequency bands (connected to long-range neural interactions) mostly at right fronto-central areas and slightly increased finer temporal scale MSE (connected to local information processing) at left fronto-central areas in old-training group from pre- to posttraining. These results show increased low frequency power and higher signal complexity in support of enriched cognitive processing potential: at right fronto-central areas we found compensatory effects of training against the local network processing shift with aging in the old-training group. Additionally, we detected slightly increased local neural communication at left fronto-central areas in this group, which assumingly can be connected to better performance in task-switching.

A-0060 HOW DOES ACUTE STRESS AFFECT OUR EFFORT TO GAIN REWARDS FOR OURSELVES AND OTHERS?

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We explored how acute stress impacts the effort we put in to gain rewards for ourselves and others. There are two competing hypotheses for how acute stress impacts social behaviours. The 'fight or flight' hypothesis states that acute stress makes us more self-focused, whereas, the 'tend and befriend' hypothesis states that acute stress makes people more prosocial. Studies which have demonstrated increased prosociality in stressed participants have typically used non-effortful tasks. For example, several studies using the Dictator Game have shown that people share more money with others when stressed. However, in everyday life we rarely have to make a simple decision to be prosocial or not without any subsequent physical or cognitive effort. Instead, we often have to choose whether or not to be prosocial and then energise our actions. We placed participants under acute stress using the Montreal Imaging Stress Test - a social evaluative stressor adapted for an fMRI setting. Then, we used a well-established prosocial effort task to measure how often participants decided to put in effort to gain rewards for themselves compared to others. We found that acute stress had a general impact on participants' motivation – they were less likely to put in effort to gain rewards both for themselves and for others. We used computational modelling to show that these changes in motivation could be linked to activation differences in reward related brain regions and those involved in tracking the subjective value of different choices. We discuss our findings in terms of theories of stress, social cognition, and rewarding processing.

A-0062 UNFOLDING THE NEGATIVE EXPECTANCY BIAS IN SOCIAL ANXIETY: A NEUROCOMPUTATIONAL ASSESSMENT OF SOCIAL FEEDBACK-BASED LEARNING

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Learning from social feedback and using this information to adequately adapt one's expectations about future appraisals from others is crucial for cultivating healthy relationships and mental well-being. Given the attentional biases displayed in socially anxious individuals (e.g., biased negative outcome expectancy) such social learning-processes could play a role in the development and maintenance of social anxiety symptoms and negatively influence self-views. However, the neurocomputational

processes that underlie these (impaired) social learning-processes remain unclear. To this end, we developed the Social Evaluative Learning through Feedback (SELF) – Profile paradigm. In this fictitious peer-evaluation task, our undergraduate participants created their own social media profile, consisting of 60 personal statements and a profile picture. Participants were told that they could interact with a self-selected group of peers (n=4) at a later stage. These peers had allegedly evaluated their profile and indicated for each of the participants' 60 statements whether they liked/disliked the participant based on that statement. In a reinforcement-learning environment, participants then predicted on a trial-to-trial basis whether each peer had indicated to like or dislike them for each statement. Simultaneously, we recorded EEG to examine the frontal midline theta responsivity to social evaluated prediction errors. Unbeknownst to the participants, the peers differed in their probability of giving positive feedback (i.e., 85%, 70%, 30%, 15%). This paradigm allows for examining the neural mechanisms underlying learning from expected/unexpected positive/negative social feedback. Here, we will present results of computational modeling analyses of the trial-to-trial changes in social evaluative feedback predictions to characterize biased feedback-based learning in social anxiety. Furthermore, we will test whether frontal-midline EEG theta power constitutes as a neurocomputational index involved in biased feedback-based learning.

A-0063 NEURO-COMPUTATIOANAL MECHANISMS MOTIVATING EFFORTS TOWARDS LOOMING DEADLINES

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How do people motivate efforts towards a deadline? Recent, research has identified some of the key computational and frontal-striatal mechanisms that guide effort-based decisions: how people weigh the of cost (effort) an action against potential rewards (e.g money). This research shows that when offering people a magnitude of reward, requiring an amount of effort, the benefits are devalued, and people will almost always avoid rewards associated with high efforts. Yet, in the real-world people often exert high efforts for little immediate reward. What are the psychological and neural mechanisms that underpin this "effort paradox"? Longer-term goals with fixed deadlines often cause a feeling of pressure, that leads people to forego highly rewarding activities, in favour of more effortful but less immediately rewarding ones. Here, we developed a novel effort-based decision-making task to examine how people's willingness to put in effort changes when they have to work to a longer-term goal. Subjects made a series of effort-based decisions progressing towards a goal. In order to progress towards the goal, subjects had to exert effort (grip force) and to complete it they needed to exert a certain amount across 8 consecutive trials. On each trial, they made choices between a more effortful (which makes more progress towards the goal) but less rewarding (less money) option, and a more rewarding but low effort (i.e. low progress) option. Using computational modelling we find people use both proactive (exert efforts early and harvest rewards later) and reactive (collect rewards then exert effort when deadline pressure builds) strategies to

guide their effort-based choices and achieve goals. Preliminary fMRI results show frontal-striatal regions signal levels of pressure, and shift effort from being an avoided cost, to a valued benefit. These results show how looming deadlines serve as key-driver of the effort paradox.

A-0067 GENERALIZABILITY OF ACTION-EFFECT RELATED MOTOR ADAPTION TO VISUAL STIMULI

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Simple, repetitive everyday actions (button presses, pinches, taps) differ in applied force depending on the consistent presence or absence of an auditory action-effect. This action-effect related motor adaption can be observed for action-effect delays up to 200 ms with auditory effects. The goal of the present study was to replicate and extend this finding in the visual domain. Participants pinched a force sensitive resistor every 3 seconds. Pinches elicited either a red light-emitting diode (LED) flash with 0 ms delay, an LED flesh with 400 ms delay, a 1000 Hz sinusoid tone with 0 ms delay, or a 1000 Hz sinusoid tone with 400 ms delay in four groups, respectively. To keep participants attention focused on the elicited stimuli, rare, random target stimuli in the same domain were also presented, and participants reported the number of such stimuli at the end of the approximately 9 minutes long blocks. In accord with previous findings, action-effect related motor adaption was found, that is force application was softer for 0-ms than for 400-ms delays in both modalities. These results suggest that action-effect related motor adaption is not restricted only to the auditory domain but also applicable to visual action-effects.

A-0068 THE ROLE OF MOVEMENT KINEMATICS IN FACIAL EMOTION EXPRESSION PRODUCTION AND RECOGNITION

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The kinematics of peoples' body movements provide useful cues about emotional states: angry movements are typically fast and sad movements slow. Unlike the body movement literature, studies of facial expressions have focused on spatial, rather than kinematic, cues. This series of experiments demonstrates that speed comprises an important facial emotion expression cue. In Experiment 1 (N = 42), using a previously validated emotion-induction procedure, we recorded posed and spontaneous facial expressions of happy, angry and sad emotional states. Our novel analysis pipeline quantified the speed of changes in distance between key facial landmarks. We observed that happy expressions

were fastest, sad were slowest and angry expressions were intermediate. In Experiment 2 (N = 67) we replicated our results for posed expressions and introduced a novel paradigm to index communicative emotional expressions. Across Experiments 1-2, we demonstrate differences between posed, spontaneous and communicative expression contexts. Whereas speed of mouth and eyebrow movements reliably distinguished emotions for posed and communicative expressions, only eyebrow movements were reliable for spontaneous expressions. In Experiments 3 and 4 we manipulated facial expression speed and demonstrated a quantifiable change in emotion recognition accuracy. That is, in a discovery (N = 29) and replication sample (N = 41), we showed that speeding-up facial expressions promotes anger and happiness judgements, and slowing-down expressions encourages sad judgements. This influence of kinematics on emotion recognition is dissociable from the influence of spatial cues. These studies demonstrate that the kinematics of facial movements provide added value, and an independent contribution to emotion recognition.

A-0069 BODY MASS INDEX AND EXECUTIVE CONTROL, THE ROLE OF REWARD CONTEXT.

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It has been suggested that high Body Mass Index (BMI) is associated with poor inhibitory control. However, previous studies did not show a consistent relationship between BMI and inhibitory control. Importantly, results from recent studies suggest that poor inhibitory control in relation to high BMI may be specifically apparent in palatable food-contexts. On the other hand, anomalous reward processing in relation to high BMI has been reported. Hence, we studied if the inhibitory deficits extend to other conditions of reward. In total, 47 individuals between the ages of 18 and 50 (M=31, SD=9; 39% male and 61% female) participated. Subsequent to filling out questionnaires, participants performed a go/no-go task (indexing inhibitory control) which included three conditions (neutral, specific-reward, and general-reward). Stimuli in the neutral condition were solid colored squares, in the specific-reward condition these were pictures of palatable food, and in the general-reward condition these were pictures of money. Results showed that BMI higher than the median was associated with poor inhibitory control in the specific-reward condition relative to the neutral condition (p = .043). There was no significant relationship between BMI and inhibitory control in the general-reward condition relative to the neutral condition. This suggests that high BMI is characterized by a specific deficit of inhibitory control in a food-context. However, the lack of effect in the general-reward condition could also be explained by the exact operationalization of general reward.

A-0070 MINDFULNESS AND INHIBITORY CONTROL, THE ROLE OF REWARD CONTEXT

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Studies have shown that mindfulness is associated with inhibitory control. Indeed, mindfulness training has been applied to the (supplementary) treatment of conditions (i.e. obesity, addiction) of which impulsive behaviour is especially apparent in contexts of reward. However, studies have not yet explored the exact role of reward context in the relation between mindfulness state and inhibitory control. This main question was addressed in the current study. Specifically, 18 male and 22 female participants between 18-43 years old (M=25, SD=5.59) performed the Mindful Attention Awareness Scale (MAAS) and a go/no-go task indexing inhibitory control. This task included a neutral condition and a reward-related condition which included pictures of attractive opposite-sex individuals. Results did not support an association between the MAAS score and inhibitory control in the neutral condition. However, there was a negative correlation between the MAAS score and inhibitory control in the reward condition (r = -.273, p = 0.044). Our results imply that higher mindfulness may be related to reduced inhibitory control in reward contexts. However, appropriate nuance should be applied in extrapolating results to other operationalizations of reward context.

A-0071 NOVEL COGNITIVE BIOMARKERS IN OBJECTIVE QUANTIFICATION OF PARKINSONIAN DISORDERS FOR DEEP BRAIN STIMULATION, DIAGNOSTICS, AND DRUG TRIALS

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Currently, the Parkinsonian Disorders (PDs) are assessed by clinical examination – a subjective, investigator-dependent and poorly reproducible standard. Oxford Quantification in Parkinsonism study aimed to use an innovative approach instead, analysing data from body sensors, eye-tracking devices, and tablet-based tasks. By producing a quick, inexpensive and reliable way of testing, we could be able to better identify candidates for Deep Brain Stimulation (DBS) surgery, get a quicker answer in drug trials and achieve a more reliable and timely diagnosis. We invited participants with various forms of PDs for a total of 9 visits, at 3 monthly intervals. The data we collected produced a more comprehensive picture of kinetic and cognitive profiles by using a combination of wearable technology and tablet-based executive function battery. Our tools generated an "early signal" of the disease, i.e. predicted the decline and differentiated subgroups

of patients before the signs were visible to naked eye. The AI-powered cognitive battery showed a very high diagnostic specificity for differentiating PDs (96.07%) with early signal changes: learning effect of -3.05 vs +1.58 and +0.62 for PDs and healthy controls respectively at 3 and 6 months, all too subtle to be picked up by standard clinical metrics, MRI morphometry or CSF studies. Our novel PD quantification model offers a quick, inexpensive and objective way of accurate diagnosis and monitoring of these types of movement disorders.

A-0072 THE INTEROCULAR TRANSFERENCE OF THE EFFECT OF LINEAR PERSPECTIVE CUES AND TEXTURE GRADIENTS IN PERCEPTUAL RESCALING MECHANISMS

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The influence of linear perspective cues and textures in the perceptual rescaling of a stimulus transfers from one eye to another is incompletely understood. In experiment 1, we systematically added/removed linear perspective cues and textures in a background image of the corridor illusion to determine how these manipulations changed the perceived size of 'near' and 'far' ring stimuli under binocular (rings and background presented to both eyes), monocular (rings and background presented to the dominant eye only), and dichoptic (rings and background presented separately to the dominant and nondominant eyes, respectively) viewing conditions. The point of subjective equalities (PSEs) among 4 pictorial depth cue conditions (linear perspective cues + textures, linear perspective cues, textures, no cues) were compared with each other for the near and far rings across three different viewing conditions. Linear perspective cues produced a stronger illusion than textures for the far (p<.001) but not the near (p>.999) ring (Ring × Background: $F_{(3, 45)} = 36.328$, $p < .001$). In addition, there were differences in perceived size for the near ring between viewing conditions when linear perspective but not texture cues were present; specifically linear perspective cues produced a stronger illusion under the binocular (p=.025) and monocular (p=.009) viewing conditions compared to the dichoptic viewing condition (Visual Field × Viewing Condition × Background: ($F_{(3, 46)} = 4.305$, p=.009, Greenhouse-Geisser corrected). Hence, there was no interocular transfer from the linear perspective cues. In experiment 2, we repeated similar procedures with a Ponzo illusion background and, contrary to findings from experiment 1, there was an interocular transfer with the presence of the converging lines (i.e., the dichoptic and monocular viewing conditions did not differ, p>.999). We conclude that that the underlying mechanisms of perceptual rescaling driven by linear perspective differs between the corridor and Ponzo illusions.

A-0073 HOW DO MONETARY REWARD AND CURIOSITY INFLUENCE INCIDENTAL MEMORY ENCODING OF DYNAMIC STIMULI IN THE BRAIN?

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Dopaminergic modulation of hippocampal activity triggered by monetary rewards as well as curiosity facilitates memory encoding. However, little is known about how monetary rewards and curiosity jointly influence encoding and its neural processes during encoding and consolidation. In two online (n1 = 78, n2 =79) and one fMRI study (n = 50), we presented magic trick videos to participants. During the fMRI study, pre- and post-learning resting-state data was acquired. In the reward group, participants could earn additional monetary rewards whereas such rewards were not provided in the control group. After one week, participants took a surprise memory test. Across all studies, we consistently observed positive effects of curiosity on encoding. While the online studies further showed reward-related memory enhancements, effects were not replicated in the fMRI sample. To account for the dynamic nature of the stimuli, task data was analysed using intersubject representational similarity analysis to identify areas in which similarity in curiosity, memory encoding and curiosity-driven memory benefit (CDMB) predicts similarity in brain response. These analyses revealed distributed cortical clusters: curiosity and memory both independently and positively predicted activations in inferior parietal cortex (PC), middle frontal gyrus (FG) and occipital cortex (OC). Additionally, whereas curiosity was associated with inferior FG and superior PC, memory was associated with precuneus and thalamus. CDMB negatively predicted activations in e.g. inferior PC, superior/inferior FG, nucleus caudate, and medial FC. The predictive effect of CDMB was more positive in superior PC in reward vs control group whereas opposite effects were observed in the lateral OC. Analysing resting-state data, change (pre to post learning) in connectivity between hippocampus and midbrain was correlated with CDMB. CDMB correlated with hippocampus- midbrain connectivity only in the reward group. These findings suggest that, using dynamic stimuli, the effects of curiosity and reward on memory are broadly distributed in cortical areas. Furthermore, they highlight how availability of monetary rewards can influence neural correlates of CDMB during encoding and consolidation.

A-0074 BEHAVIOURAL STUDY OF SENSORIMOTOR SYNCHRONIZATION AND ITS RELATION TO PHONOLOGICAL AWARENESS AND READING

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Sensorimotor synchronization (SMS) and rhythm reproduction skills of 39 typically

developing Hungarian native-speaking children were assessed at the beginning of the first school year. In contrast to most SMS tests, we used complex musical stimuli (MIDI generated instrumental music) in three different tempos (80, 120, and 150 bpm) instead of metronome sounds which seemed more adequate for this age group. Children had to tap along a steady beat and keep their tempo after the music has stopped (continuation phase). We've also included a spontaneous motor tempo (SMT) task with no external reference (free tapping). At the end of the year, children were assessed in two language related domains: phonological awareness (PA) and word reading. Word reading fluency, showed moderate but significant correlation with several indicators of SMS and SMT tasks. Synchronization accuracy and tapping variability were associated with phonological awareness scores. Rhythm reproduction however did not predict PA or reading fluency, nor did the 150 bpm SMS task. Although our moderate sample size does not allow for far-reaching conclusions, our findings are congruent with previous literature, and stress the importance of early rhythmic activities. The use of complex musical stimuli has proven effective in testing the children's synchronization abilities while was also useful for sustaining their motivation. Through further research, this music-based sensorimotor synchronization test could become a useful tool in the early identification of learning difficulties concerning language and reading.

A-0075 SEX DIFFERENCES IN ECONOMIC DECISION-MAKING: ESTRADIOL HAS OPPOSING EFFECTS ON FAIRNESS SENSITIVITY IN WOMEN AND MEN

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Background: Ultimatum bargaining varies substantially between the sexes. Burgeoning evidence indicates that women are more sensitive to the context of an offer and show a stronger propensity to adjust their behavior with changing fairness frames. We propose that the sex hormone estradiol modulates the differences in fairness sensitivity between women and men. Methods: To address this hypothesis, we administered a topical estradiol gel (2 mg) to 115 healthy women and 115 heathy men in a randomized, double-blind, placebo-controlled between-subject study design. Participants played the role of the responder in a modified version of the Ultimatum Game, in which identical offers for the division of a given amount of money were framed as either fair or unfair. Furthermore, participants completed a temporal discounting task to probe possible effects of estradiol on cognitive control. Results: Our results show that fairness frames had a significantly stronger impact on Ultimatum Game acceptance rates in women than men. Intriguingly, however, estradiol reversed this sexual dimorphism by increasing the acceptance rate of proposals with a fair frame in men and reducing it in women. This effect is not driven by changes in the ability to resist economic temptation as estradiol did not alter the

acceptance of unframed offers or temporal discounting. Discussion: Collectively, our findings indicate that estradiol has opposing effects on the sensitivity to fairness frames in women and men. The profound effects of estradiol provide support for the notion that sex differences in ultimatum bargaining are at least partially rooted in biological factors. Keywords: Context, estradiol, fairness frame, sex difference, ultimatum game.

A-0076 OPTIMIZING PSYCHOPHYSIOLOGICAL MEASUREMENTS OF TRACE FEAR CONDITIONING.

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Aversive Pavlovian conditioning is a paradigm widely used to model traumatic memory. It is commonly implemented as delay fear conditioning where a conditioned stimulus (CS) co-terminates with an unconditioned stimulus (US). Often, however, cues that elicit trauma memory were not present during the trauma but shortly before. This situation is modelled in trace fear conditioning, which requires partly different neural structures for memory maintenance during the "trace" (i.e. CS offset – US onset) interval. Crucially, due to the rather different experimental timing, it is not clear how to best measure memory retention in this paradigm. Here, we investigated this question in two experiments with a 2-s CS and a 15-s interval from CS offset to US. We used visual CS and electric shock as US. In an acquisition session on day 0 with 40 trials, we measured pupil size, skin conductance, ECG and respiration amplitude. During a retention session on day +7 under nominal extinction (i.e. no US), we elicited startle eye blink responses and measured orbicularis oculi EMG, together with the same measures as during acquisition. To benchmark different quantifications of threat memory retention, we assessed their effect sizes to differentiate CS+/CS-, i.e. their retrodictive validity (Bach et al. 2020). Replicating previous work on delay fear conditioning, we found that startle eye blink had the highest effect size of all measures. Different from our previous work on delay fear conditioning, where the optimal number of trials to include into the analysis was 3-5 per condition (Khemka et al. 2017), we observed that the CS+/CS- difference was only observable when averaged over all trials. The optimal number of trials to include into the analysis was 15 trial per condition. These findings were replicated in an independent sample. Overall, we identify a suitable measure for trace fear conditioning, which may be used in further intervention studies.

A-0078 THE VOCAL CHAMELEON: PSYCHOLOGICAL AND NEURAL MARKERS FOR SOCIAL VOCAL CONTROL EFFICACY

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In our everyday life we coordinate numerous social interactions using our voice. Such

social vocal control relies on an interplay of functional processing in the vocomotor network and social brain areas. The strategic modulation of the voice to express beneficial social traits (such as likeability) might contribute to the aptitude with which social opportunists engage in social interactions. Yet we understand little about the psychological and neurophysiological mechanisms that make a speaker a more or less successful vocal modulator. Here, we used functional magnetic resonance imaging (fMRI) to investigate the relationship between empathy, psychopathic and Machiavellistic traits with social vocal control and its neural correlates. Twenty-four right-handed, native British English speakers (20 females) modulated their voice to communicate social approach or avoidance behaviours (sounding likeable or hostile) and social hierarchy (intelligence), while undergoing a rapid-sparse fMRI protocol. Lastly, speakers' cognitive and affective empathy levels, as well as psychopathic and Machiavellistic traits were assessed using self-report questionnaires. Naïve listener ratings from an independent group of participants showed that vocal modulations were effective in evoking the targeted social trait ratings. Better performance in vocal modulations was related to higher functional activation in areas related to vocomotor control and social cognitive processing. Only vocally expressed likeability was positively associated with Machiavellistic traits, but not with levels of cognitive or affective empathy, or psychopathy. These findings highlight the psychological and neural mechanisms involved in strategic social navigation. The efficacy and neural basis of socially opportunistic behaviour through the voice is discussed.

A-0080 INFLUENCE OF STRESS AND EARLY LIFE ADVERSITY ON HEART RATE VARIABILITY WAVELET COHERENCE IN GROUPS

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Physiological synchrony, the degree to which two or more organisms adjust their biological systems to match their activity when close to each other, is an interesting phenomenon that is considered to serve a variety of social functions. The extent to which people synchronize is influenced by factors such as relationship quality, and can affect group performance and individual well-being. Synchrony of the autonomic nervous system (ANS) is a frequently employed target measure to gain insights into social processes. So far, the influence of acute stress on ANS synchrony has rarely been the focus of investigations. Acute stress impacts physiological, cognitive, and, importantly, social processes. Therefore, interaction partners might show changes in synchrony after a stressful experience. In the current study, we thus investigated the influence of stress on subsequent physiological synchrony in groups. We collected RR interval data of N = 73 participants (age 18 to 30) who were tested in groups of 5 to 8. Participants had either undergone a laboratory stressor or a non-stressful control task. Afterwards, they completed multiple tasks together. We compared groups in which either all, half, or none of the participants had undergone a stress induction. We used wavelet coherence

as a measure for RR interval synchrony. Employing multi-level models, we found that stress was a statistically significant factor impacting coherence. We conclude that acute stress might change synchronization processes in groups. Further research could help investigating underlying mechanisms, and possible consequences for group cohesion and performance.

A-0082 ASSESSING HUMAN THREAT CONDITIONING BY OVERT BEHAVIORS

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Pavlovian conditioning is widely used to study aversive learning. Assessment of human threat learning often relies on measurement of autonomic responses, or startle reflex modulation. Here, we sought to develop complementary quantification methods based on participants' overt motor behaviors. Our first method exploited the effect of conditioned cues on formally unrelated instrumental behavior, known as Pavlovian-to-instrumental transfer (PIT). An existing human PIT procedure was modified and used (PIT1). Participants first trained an action-(loss of) reward association (whether Go/NoGo to Approach/Withdraw from a target to Win/Lose chocolate) during instrumental phase, then learned a Pavlovian association between full-screen color (CS) and electric shocks (US). In the transfer phase the instrumental task was conducted with Pavlovian CS present. We observed that the CS+, compared to CS-, increased response rate in Go-Withdraw trials (conditioned facilitation). This was confirmed in a second and independent experiment (PIT2) with an increased number of Go-Withdraw trials. Our second method is based on bias of overt attention by threat-conditioned cues. We developed a novel summary statistic of visual search during CS presentation, i.e. scanpath length. During the Pavlovian phase in PIT1, we observed shorter scanpath length, longer fixation duration, and more fixation on the screen center, in CS+ compared to CS- trials. Retrodictive validity, i.e. effect size to distinguish CS+ and CS-, was maximised by summarising scanpath over a 2-s time window before US onset. These findings were replicated in PIT2, and further confirmed in a third experiment with full-screen fractals as CSs. In a fourth experiment with auditory CS and instruction to fixate screen center, no scanpath length difference was found. In conclusion, our study suggests that overt behaviors, i.e. modulation of instrumental action, and spontaneous visual search, can be used to assess human threat learning.

A-0083 INVESTIGATING THE EFFECT OF TRUSTWORTHINESS ON INSTRUCTION-BASED REFLEXIVITY

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Unlike other species, humans are capable of rapidly learning new behavior from a single instruction. While previous research focused on the cognitive processes underlying the rapid, automatic implementation of instructions, the fundamentally social nature of instruction following has remained largely unexplored. For the current poster presentation, we investigated whether instructor trustworthiness modulates instruction implementation using both explicit and reflexive measures. In a first preregistered study, we validate a new paradigm to manipulate the perceived trustworthiness of two different avatars and show that such a manipulation reliably induced implicit associations between avatars and trustworthiness attributes. Moreover, we show that trustworthy instructors are followed more frequently and faster. In two additional preregistered experiments, we tested if trustworthiness towards the instructor influenced the cognitive processes underlying instruction implementation. While we show that verbally conveyed instructions led to automatic instruction implementation, this effect was not modulated by the trustworthiness of the instructor.

A-0084 MUSIC LISTENING AND COGNITIVE PERFORMANCE IN YOUNG AND OLDER ADULTS: DOES A DIFFERENT DURATION OF EXPOSURE TO DIFFERENT MUSIC PIECES AFFECT SUBSEQUENT COGNITIVE PERFORMANCE?

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Harmonic characteristics of a music piece seem to influence affective state, with effects on subsequent cognitive performance. Musical stimuli can in fact modify emotional states which could in turn influence cognitive performance. However, cognitive performance has been rarely measured both before and after the music listening condition. The aim was thus to study the effect of music exposure on cognitive performance in young and older adults by i) presenting cognitive tasks before and after music listening, and ii) manipulating the tempo (fast or slow) and mode (major or minor), which have been shown to influence arousal and mood and thus cognitive performance, as well as the duration of the listening presentation. To this, 132 young adults (20-30 years) and 132 older adults (65-75 years) were randomly assigned to 3 listening conditions (Mozart for fast-major music, Albinoni for slow-minor music and a neutral pre-registered description as control condition) and to 2 listening duration conditions (≈ 3 vs 8 minutes). The same tasks -assessing executive functions, short-term memory, mathematical skills and visual working memory- were presented, in parallel forms, both before –baseline– and after the

listening condition, to assess the music effect on cognitive performance. Results showed that mood increased after listening to Mozart more than after listening to Albinoni music or the control condition; also, arousal decreased after listening to Albinoni more than Mozart or the control condition. Furthermore, listening to the Mozart piece in its longer version had effects on both mood and arousal, especially in older adults. Regarding cognitive performance, participants in the longer music listening condition showed better performance in the executive functions and in the short-term memory tasks, than those presented in the shorter one. The present findings suggest caution when interpreting the effects of music on cognitive performance.

A-0088 DOPAMINERGIC MODULATION OF LEARNING FROM SOCIAL AND INDIVIDUAL INFORMATION

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Whether (social) learning from other people is underpinned by the same, 'domain-general', mechanisms underpinning learning from one's own experience (individual learning) has been the subject of considerable debate. For existing dissociations between social and individual learning, social information often comprises an 'indirect source' that can be used to supplement one's own, 'direct', experience. Thus, learning source (social/non-social) and directness (indirect/direct) are often confounded. We recently argued that social and individual learning can be dissociated at a neurochemical level along the directness, but not the learning source axis (Cook et al, 2019), with effects of dopamine manipulation on adaptation to environmental volatility observed for the direct learning source only. Here we tested this idea further. On two separate days, participants ingested 2.5mg Haloperidol, a dopamine D2 receptor antagonist, or placebo, and completed a probabilistic learning task that demanded learning from two sources (social, individual). The 'direct' condition featured social as the direct (and individual as the indirect) learning source, the 'indirect' condition featured social and the indirect (and individual as the direct) source. A mixed-effects model with fixed factors drug, learning source, volatility (volatile, stable) and group (social-direct, social-indirect), and random intercepts for subject, was employed to test our hypothesis that haloperidol would affect direct-learning irrespective of its social/non-social nature. Results showed an effect of dopamine antagonism along the social but not directness axis, with haloperidol having dissociable effects on learning from social and individual information. Specifically, under haloperidol, subjects showed more adaptation to the current state of environmental volatility for social information and less for individual information. Results provide preliminary evidence for the existence of domain-specific neurochemical signalling mechanisms for social learning. Cook et al, 2019. eLife 2019;8:e51439 DOI: 10.7554/eLife.51439

A-0091 DYNAMIC ACTION-EFFECT RELATED MOTOR ADAPTATION

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Simple, repetitive everyday actions (button presses, pinches, taps) differ in applied force depending on the consistent presence or absence of an auditory action-effect. This has been explained by suggesting that the consistent auditory action-effects enabled motor optimization by providing feedback on the success of the actions. In the present experiment, we investigated whether such motor optimization occurred when tones were elicited unpredictably. Young adult participants produced even paced sequences of pinches, which elicited a 1000 Hz sinusoid tone (50 ms duration and a variable dB intensity depending on the individual's hearing threshold) with 50% probability. We found that the applied force was modulated by the tone-elicitation pattern of preceding actions: pinches preceded by tone-eliciting actions were softer than those preceded by button presses without tone-effects. The effects were more pronounced for pinches preceded by longer and more homogeneous action sequences. These findings indicate that auditory action-effects are used in the dynamic optimization of repetitive actions even if they occur unpredictably.

A-0093 MIRROR MIRROR ON THE WALL, WHO'S THE MOST CONNECTED OF THEM ALL: THE ROLE OF MOVEMENT SYNCHRONIZATION AND COMPLEXITY IN THE EXPERIENCE OF TOGETHERNESS

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Social chemistry is a critical aspect of our lives as human beings. We use our body to share information with others and to understand them. Recently, studies have suggested that being predictable facilitates synchronization during social interaction, which is positively correlated to social bonding. We propose that even though predictability is useful for creating shared understanding and common ground, since avoiding boredom and seeking novelty are basic needs, a certain amount of unpredictability is also necessary for successful social interactions. Such a balance may enable both synchronized and complex social interactions. Accordingly, the current study aimed to understand the interplay between synchronization and complexity of movement of dyads in determining the success of the social interaction. To test this, we recruited 33 individuals who never met each other before, and asked them to play the "Mirror Game", in which they had to move their hands as coordinately as they could for two minutes, without using verbal communication (104 dyads in four round-robin designs). After each game, the participants indicated their subjective experience and their impression of their partner.

The sessions were filmed and preprocessed using motion energy analysis, to extract a time-series representing participants' velocity throughout time. We found that there was a preferred balance between being predictable and therefore easy to sync with, and being unpredictable and therefore more complex and interesting. Moreover, the results show that when there is social bonding, the levels of synchronization (mutual information) and the complexity (Shannon entropy) are maintained over time, whereas in the absence of social bonding, both the synchronization and the entropy deteriorate over time, in a strikingly similar manner. Our findings suggest that the interplay between movement synchronization and complexity is important for successful non-verbal social interaction, which is an important aspect of our daily lives.

A-0095 JOINT ACTION WITH ARTIFICIAL AGENTS: ON THE ROLE OF EMBODIMENT IN SENSORIMOTOR SYNCHRONIZATION

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Sensorimotor synchronization is a key mechanism of social cognition. It allows humans to socially attune with their co-agents during joint action. Nowadays, humans interact not only with natural agents but also with artificial agents that may (or not) be embodied. The present study aimed at investigating whether, within an erroneous context, humans differently adapt their performance to a humanoid robot or to a computer as a function of the context. In two experiments, we asked participants to play a melody with the iCub robot (Exp.1) or with a computer (Exp.2), trying to synchronize their tapping with the artificial agent. Across participants, we manipulated the context of the interaction by programming the artificial agent to produce an error in 60% of the trials. For half of the participants, in the erroneous trials, the artificial agent switched one element of the melody by pressing the wrong key (Human-like context), whereas for the other half of participants it interrupted to play the melody and moved back and forth between two keys in an "endless' loop (Mechanical context). We examined variability in the asynchrony as an index of signaling cooperative behavior during correct trials. Results showed that Human-like and Mechanical-like context differently affected signaling cooperation as a function of the artificial agent. When interacting with an embodied robot participants' showed smaller variability in asynchrony (i.e., more cooperative behavior) for Human-like than in the Mechanical context. On the contrary, when the co-agent was a computer the pattern of results was reversed, with smaller variability in asynchrony for the Mechanical context. Our results show that when interacting with an artificial agent, humans adapt their performance differently as a function of the context and that social attunement with artificial agents is mediated by the possibility to represent their action using a similar motor repertoire.

A-0096 INTEROCEPTIVE SENSITIVITY IS ASSOCIATED WITH PROSOCIAL EFFORT-REWARD TRADE-OFFS

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Effort-based decisions are defined by how willing an individual is to exert effort to obtain a benefit such as economic reward. Typically rewards are discounted by effort, with people less willing to work when the effort required is high. It has been suggested that effort perception and reward evaluation are linked to interoception, the perception of the body's internal state. A separate line of research has suggested that variability in interoceptive accuracy is linked to how prosocial people are in economic games. But being prosocial often requires effort. However, it is unknown whether people who rely more on interoception are more averse to effort, more incentivised by rewards, and whether this modulation occurs for both self-benefitting and prosocial behaviours. Here, we aimed to illuminate these associations using a prosocial task where people chose whether to exert physical effort to obtain different magnitudes of rewards. They made these decisions either for themselves or for someone else, allowing us to dissociate sensitivity to effort and reward, for self-benefitting and prosocial acts. We measured interoception using a respiratory task quantifying how much people rely on external or internal bodily signals. Using these tasks we dissected three novel aspects of links between motivation and interoception: (i) People who rely more on interoceptive signals are generally more sensitive to effort when making decisions that benefit self and other, (ii) those who show greater reliance on interoceptive signals are more prosocial, specifically they are more incentivised by others' rewards when choosing whether an effort is worth it, (iii) those that rely more on exteroceptive information exert less force into their actions, especially when they worked to benefit someone else. Thus, although interoception and effort sensitivity are linked, people who rely more on their internal states are more prosocial because they are more incentivised by others rewards.

A-0097 A NOVEL CLINICAL GROUP WITH LOWER OXYTOCIN CONCENTRATIONS AND REDUCED EMPATHY ABILITY

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The ability to accurately identify emotions is a crucial skill that supports adaptive social behaviour and one's sense of well-being. The neuropeptide oxytocin (OT) has been found to play an important role in social cognition, particularly in identifying emotions. Research is currently focusing on the therapeutic potential of OT in a variety of psychological disorders, however, there may be medical disorders that could also benefit from OT intervention. Patients with Central Diabetes Insipidus (CDI) present with a deficiency

in Arginine Vasopressin, a closely related neuropeptide to OT. Both OT and Arginine Vasopressin are synthesised and released through the same pathway. We therefore predicted that patients with CDI would present with lower OT concentrations and would also perform worse on empathy-related tasks, compared to age- and gender-matched clinical control and healthy control groups. Fifty-six participants provided two saliva samples and completed the Reading the Mind in the Eyes task and a facial expression recognition task. Both clinical groups had significantly lower OT concentrations compared to healthy control participants. These patients also performed worse on both empathy tasks compared to healthy control participants. Furthermore, regression analyses revealed that CDI patients' OT concentrations significantly predicted their performance on easy items of the Reading the Mind in the Eyes task. Hypopituitarism may therefore be associated with reduced OT concentrations and impaired empathic ability. While further studies are needed to replicate these findings, our data suggest that OT replacement may offer a therapeutic approach to improve psychological well-being in patients with hypopituitarism.

A-0099 THE COGNITIVE MODULATION OF NOCICEPTIVE HYPERSENSITIVITY: DOES AUTONOMIC AROUSAL PLAY A ROLE?

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Background: Low-frequency stimulation (LFS) of the human skin induces hypersensitivity to mechanical pinprick stimuli. The execution of a high demanding working memory task concomitantly with LFS seems to attenuate the development of mechanical hypersensitivity, in contrast to the execution of a low demanding cognitive task during LFS. However, the underlying mechanisms of the cognitive modulation of nociceptive hypersensitivity are still unclear. Objectives: Besides replicating these findings, the aim of the present study is to examine whether autonomic arousal plays a role in the cognitive modulation of mechanical hypersensitivity. In addition, cortical responses to LFS will be used as indirect index of attentional capture. Finally, gender differences in the development and in the cognitive modulation of mechanical hypersensitivity will be explored. Methods: We will use a between-subjects design with a target sample size of 84 participants, balanced by gender. During LFS, the control group will perform a low demanding cognitive task while the experimental group will engage in a high demanding working memory task (2-back task). Mechanical pinprick sensitivity will be tested before and 20 minutes after LFS. In addition, we will assess autonomic arousal by measuring skin conductance. Brain activity will be recorded using electroencephalography (steady-state evoked potentials, SSEPs). Hypotheses: We expect greater mechanical hypersensitivity to develop after the low demanding cognitive task than after the high demanding working memory task. More importantly, we expect a higher increase in autonomic arousal during the high demanding working memory task than during the low demanding cognitive

task. Furthermore, we expect the control group to show larger SSEPs to LFS than the experimental group. Possible implications: These findings would suggest that autonomic arousal plays a role in the cognitive modulation of mechanical hypersensitivity, which would give us more insight in the underlying mechanisms of cognitive interventions.

A-0100 AN ECOLOGICAL FRAMEWORK FOR PROSOCIAL BEHAVIOUR: FORAGING FOR OTHERS' REWARDS

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The survival of many species, including some modern-day human societies, depends on hunter-gatherers. One conspecific foraging prosocially for rewarding resources for others. Research has suggested that people are generally selfish, and value their own rewards more than others. However, this work has largely failed to consider theories from behavioural ecology that provide rich frameworks to understand how animals make foraging decisions which are shaped by the environment. As a result, we have a poor understanding of how people process rewards for others when faced with crucial hunter-gatherer foraging problems. Here, we leverage ecological theories of how to solve one of most significant foraging problems: patch-leaving. When in a location (patch) as you collect rewards the resource is depleted, meaning that the rate of (foreground) reward accumulation declines over time. When should you leave and spend some time travelling to find another patch? Theoretically, it is optimal to leave when the foreground rate declines to the average rate rewards that can be obtained in the environment (background). We developed a social patch-leaving task where participants decided when to leave patches where rewards were accrued at different foreground rates, in two different environments (background). Crucially, in some blocks participants foraged for themselves but in others rewards would be given to anonymous other. We found that peoples' patch-leaving decisions conformed to foraging theory principles in both self and other conditions. But, people were less sensitive to changes in foreground reward rates for others' compared to self, staying longer when the foreground rate was high when foraging for self. However, people did not show differences in background rate sensitivity for self compared to other. These results highlight that people are not always selfish when it comes to rewards, with the antecedents of prosociality lying in our ability to consider the environment when foraging prosocially.

A-0101 INTENTION AND ACTION: HOW VICARIOUS SENSE OF AGENCY EMERGES IN HUMAN-ROBOT INTERACTION.

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Sense of Agency (SoA) is the experience of feeling in control over one's own actions and their consequences. When engaged in a joint task with another human, people experience a "vicarious" SoA over the co-agent's actions; however, it has been shown that the effect disappears when the co-agent is a computer. At present, it remains unclear whether robots elicit vicarious SoA as human co-agents, or they are rather treated more like computers. In two experiments, we addressed these questions by using an Intentional Binding (IB) paradigm. Additionally, we aimed to determine whether the occurrence of vicarious SoA depends on how the robot's action is represented, and on the ascription of anthropomorphic traits to the robot (a questionnaire before the experiment). Participants performed an IB task alone (Individual Condition) or with a non-humanoid robot (Social Condition). The task was to report the position of the clock-hand when the critical event occurred (a keypress or a tone). In Experiment 1, the robot physically performed the keypress, whereas in Experiment 2 the robot acted by sending a command to the computer (no physical keypress occurred). Results from Experiment 1 showed that, when the critical event was the action, the tendency to attribute anthropomorphic traits predicted the IB magnitude for the Social Condition. This was not true in Experiment 2, where the Social IB effect was reversed, suggesting that the "digital" action of the robot was perceived as not intentional. When the critical event was the tone, the vicarious SoA emerged only when the robot physically performed the action (Experiment 1). Overall, our results suggested that the attribution of anthropomorphic traits and the possibility to represent the robot's physical actions are both fundamental for the vicarious SoA in human-robot interaction.

A-0104 AUDITORY DYADIC INTERACTIONS THROUGH THE 'EYE' OF THE SOCIAL BRAIN: HOW VISUAL IS THE POSTERIOR STS INTERACTION REGION?

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The superior temporal sulcus (STS) is a multi-modal region crucial for social perception, selectively processing both visual and auditory social stimuli in partially overlapping sub-regions. The posterior STS plays a key role in social interaction perception. However, despite its close proximity to regions along the STS which are responsive to auditory stimuli, interaction sensitivity in the pSTS has principally been characterised using visual stimuli. Here, we investigated the response profile of the pSTS to auditorily presented interactions. Using an event-related fMRI design, 23 participants underwent scanning whilst listening to audio recordings of either two speakers (conversations or

scrambled conversations) or one speaker (narrations) in both their native language and an unfamiliar control language. Participants performed an orthogonal response task to limit explicit mentalizing. Additionally, we identified visual-interaction- and voice-selective regions-of-interest (ROIs) using localizer scans. Applying both univariate and multivariate analyses, we explored the effect of number of speakers (two vs. one) in both languages, and of meaningfulness of the interaction in the participants' native language. Univariate ROI analyses revealed significantly greater activation in bilateral pSTS to two speakers compared to one across languages. In the native language, both conditions robustly activated the pSTS. In the control language only the right pSTS showed the effect of number of speakers, however this difference reflected differential deactivation. Furthermore, pSTS activation did not differentiate between coherent and scrambled conversations. Bilateral STS-voice areas showed a similar response pattern as the pSTS but, unsurprisingly, were strongly activated for both languages. Multivariate-pattern-analysis (MVPA) could discriminate two vs. one across languages in both voice regions and right pSTS. Crucially, discrimination between scrambled and intact conversations was significantly above chance only in the right pSTS. Altogether, these results suggest that the right pSTS interaction region previously characterised using visual stimuli also represents information about auditory interactions that goes beyond mere number of speakers. Future research should probe whether pSTS interaction-selective responses can also be elicited using non-semantic prosodic cues.

A-0105 EFFECTS OF LONG-TERM USE OF BENZODIAZEPINES ON THE NEURAL PROCESSING OF FACIAL EXPRESSIONS OF EMOTION

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The relation between benzodiazepine use and processing of emotional information has been a topic of growing interest in the literature. A meta-analysis on the effects of benzodiazepines administration in the identification of facial expressions of emotion (FEE) showed that participants receiving benzodiazepines, on a short-term basis, were less accurate at identifying facial expressions of anger compared to those receiving placebo. Nonetheless, the effects of long-term benzodiazepines use on behavioral and neurophysiological correlates of FEE are still unknown. In the present study, we examined the effects of long-term benzodiazepine use on the accuracy rates and the ERP correlates of the processing of stimuli displaying facial emotion. To this purpose, 12 subjects who had a minimum period of benzodiazepine use of 1 year, and 12 control subjects performed an emotion identification task with simultaneous EEG recording. The results suggest that long-term benzodiazepine users have similar behavioral patterns and neurophysiological correlates (P100, N170 and N250) to controls. It is worth mentioning that the results are based on a small sample and more data are currently being collected. Furthermore,

the long-term use of benzodiazepines is commonly associated with long-term use of antidepressants (8 out of 12 benzodiazepine users intake antidepressants on a daily basis). Thus, more participants are needed to experimentally control the differential effects of benzodiazepines and antidepressants.

A-0106 MEASURING TACTILE INTERACTIONS THROUGH SKIN-TO-SKIN FRICTION-INDUCED VIBRATIONS

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Touch is at the boundary between the body and the environment; and is of great importance for social interactions. However, no empirical method is known to study skin-to-skin touch using direct, objective measures. For skin-to-skin contact, interposing an instrumented surface, no matter how thin and flexible, between the interacting skins is not an option since the entirety of the properties of a particular person's skin, from tribology to cognition, contributes to the interaction. In the present study, we introduce a novel technique which is directly sensitive to the effects of skin-to-skin interaction and which provides a signal containing a wealth of information about the behaviour of the 'toucher' or of the 'touchee'. The method involves the use of a consumer-grade accelerometer chip. It is adapted from previous works highlighting the propagation of mechanical energy in soft tissues far from a region of contact. This method reveals that the measurement of skin oscillations at a single location of the touching finger contains critical information regarding the behaviour of the toucher. In particular, the results from four experiments show that information about i) the tonicity used during tactile interaction, ii) the type of skin that is being touched, iii) the stroking speed, and iv) the type of interaction during unconstrained interaction can be extracted from simple analyses such as the estimation of a total signal energy and the distribution of this energy in specific frequency bands. Our results suggest that this new method can be used for probing behaviour during tactile interactions with others, such as during social touch. We are currently using this method in order to further characterise the factors (e.g., movements, intentions) underlying socio-affective tactile interactions. In addition, the method is easy to implement, cost effective, non-invasive, and robust.

A-0107 START TO STOP: THE ROLE OF TRIGGER FAILURES IN REWARD-MODULATED RESPONSE INHIBITION

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A critical part of adaptive and goal-directed behavior is the ability to suppress contextually inappropriate actions ("response inhibition"). It is typically measured using the Stop-Signal Task, in which participants have to respond to a Go stimulus, unless a Stop-Signal appears.

Response inhibition can then be conceptualized as a race between a go process (running to execute the response) and a stop process (running to inhibit the response), which allows researchers to make inferences about the latency of the stop process ("Stop-Signal Reaction Time", SSRT). It is thereby commonly assumed that the stop process is initiated without fail – disregarding the fact that, on some trials, the stop process is most likely not triggered at all ("trigger failures", e.g., due to attentional lapses). Yet, ignoring such trigger failures leads to dramatic overestimations of SSRTs (Logan, 1994, in Dagenbach, D., & Carr, T.H. (Eds.)). To address this bias in SSRT estimates, Matzke, Love, and Heathcote (2016, Behavior Research Methods) recently developed a method (BEESTS-WTF) that allows trigger failures to be accounted for when estimating SSRTs. We have employed this new method to re-analyze data of previous studies, which had used traditional SSRT-estimation methods to observe that reward availability led to shorter SSRTs. From the re-analyses, however, we observed that the difference in reward conditions mainly relies on a lower trigger failure rate for the reward condition instead. The present study is therefore one of the first to show that within-subject condition differences (such as reward) that manifest themselves as a difference in SSRT in traditional SSRT-estimation methods are in fact driven by a differential rate of trigger failures. This, in turn, likely converges with notions that put more emphasis on processes afferent to ultimate response inhibition.

A-0110 WEARING A VIRTUAL BODY AND BEING TOUCHED ON IT BY DIFFERENT GENDER AND ETHNICITY AVATARS.

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The subjective experience of being touched can be drastically affected not only by bottom-up variables (e.g. stimulus intensity) but also by top-down variables (e.g.toucher's social characteristics). Nevertheless, the neuroscientific investigation regarding the role of these higher-order factors is limited by ethical and practical constraints. Using Immersive Virtual Reality (IVR) we explored the subjective and physiological reactivity of healthy participants who wore a virtual body and observed an avatar caressing different part of it and we found that it was possible to induce vicarious feelings of touch. Here we expand previous knowledge by investigating the possible influence of gender and ethnicity of the touching avatar in modulating the experience of vicarious touch.We used IVR to substitute the participants' real body with a virtual one. Then we collected behavioral (ratings about touch appropriateness, pleasantness, disgust, erogeneity) and physiological (skin conductance responses, heart rate) responses while Caucasian heterosexual men observed touches on different parts of their virtual body delivered by male or female Caucasian and African avatars. At the behavioral level, we found that touches on the intimate areas were rated as the least appropriate compared to the neutral and social ones. Moreover, the touches delivered by a male avatar were judged as less appropriate than those delivered by a female avatar. Furthermore, male touches

in the intimate areas evoked the highest disgust sensations, while female touches in the intimate areas induced highest pleasantness and erogeneity. Interestingly, ethnicity did not induce any modulation. At the physiological level, the African male touches elicited higher reactivity compared to the Caucasian male touches when delivered on the intimate areas. Taken together, these results confirm the preference for the female touch among Caucasian heterosexual men and suggest that the role of toucher's ethnicity may emerge in the rooted automatic responses rather than in the explicit evaluations.

A-0114 DISSOCIATING SOCIAL AND INDIVIDUAL LEARNING

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The last decade has seen a burgeoning interest in studying the neural and computational mechanisms that underpin social learning (learning from others). Nevertheless, there is still considerable debate about whether learning from other people is underpinned by the same, 'domain-general', mechanisms underpinning learning from one's own experience (individual learning). Here we examined whether social and individual learning are underpinned by dissociable mechanisms at a neurochemical level. In existing studies of the neurochemical correlates of social and individual learning it is often the case that social information comprises an 'indirect source' that can be used to supplement one's own, 'direct', experience. Thus, for social and individual learning, social nature (social versus non-social) and directness (indirect versus direct) are confounded. Here we used a catecholaminergic challenge known to modulate learning, combined with the following procedure, to test whether the dissociation between social and individual learning was best explained in terms of social nature or directness: Two groups (N = 50 and N = 52) completed a decision-making task which required direct learning, from own experience, and indirect learning from an additional source. The groups differed in terms of whether the indirect source was social or non-social. The catecholamine transporter blocker, methylphenidate, affected direct learning by improving adaptation to changes in the volatility of the learning schedule but there was no effect of methylphenidate on learning from the social or non-social indirect source. Thus, we report positive evidence for a dissociable effect of methylphenidate on direct and indirect learning, but no evidence for a distinction between social and non-social. These data suggest that although social and individual learning can be dissociated at a neurochemical level, the axis along which they are dissociable concerns the 'directness', not the social (vs non-social) nature of the information source.

A-0117 THE TRAINABILITY OF REAPPRAISAL INVENTIVENESS WITH A SHORT-TERM INTERVENTION: NEURONAL AND BEHAVIORAL EFFECTS

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The emotion regulation strategy of cognitive reappraisal is considered particularly effective in dealing with aversive events. For this reason, encouraging the use of cognitive reappraisal in the daily lives of patients is an integral part of modern psychotherapeutic approaches to improved well-being. However, it remains an open question whether short-term reappraisal trainings may also yield benefits for healthy individuals. Focusing on individuals' capacity to spontaneously generate manifold cognitive reappraisals for aversive events, the present study investigated whether this "reappraisal inventiveness" can be trained with a single reappraisal intervention, and whether potential improvements in reappraisal inventiveness are mirrored in respective changes of cerebral activation patterns. In this regard, previous studies demonstrated that individuals with higher reappraisal inventiveness showed more appropriate brain activation during reappraisal efforts in terms of more left-lateralized activity in the lateral prefrontal cortex (EEG alpha asymmetry). In this study, 73 female students generated cognitive reappraisals for anger-eliciting situations, before and after they completed a short positive reappraisal training. Results showed that on the behavioral level, both the total number of generated reappraisals as well as the relative share of positive reappraisals significantly increased after the reappraisal training. On the neuronal level, this improvement of reappraisal inventiveness post-training was accompanied by a shift of frontal activation to the left, particularly prominent at frontopolar and ventrolateral prefrontal sites. Moreover, this shift to the left was most evident in individuals with more right-lateralized, and thus, less appropriate frontal activation prior to the training. Altogether, these observed behavioral and neuronal changes provide evidence for the trainability of reappraisal inventiveness using a single training unit for positive reappraisal and additionally suggest that certain individuals may benefit more from such short-term interventions than others.

A-0118 RISK-TAKERS DO NOT MODULATE PROACTIVE STRATEGIES AS A FUNCTION OF THEIR REACTIVE CAPACITIES

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According to the dual mechanisms of cognitive control, both reactive and proactive mechanisms are involved in adjusting behaviors when those are no longer appropriate to the environment. It is often considered that these mechanisms follow a computational tradeoff between costs and benefits according to the task demands. Therefore, in a changing environment, the flexible change between reactive and proactive control

modes is crucial to adapt behaviors according to internal goals and external demands and also, to minimize the cognitive cost of control. To our knowledge, few studies have investigated the impact of inter-individual variability on this computational tradeoff. In the current study, 176 healthy participants performed two cognitive control tasks (the Simon and the Stop Signal tasks) and a computerized measure of risk-taking behavior (the Balloon Analog Risk Task, BART). In the Simon task, we measured the post-error slowing (PES), a proactive control index. Using the Stop Signal task, we calculated the Stop Signal Reaction Time (SSRT) to assess reactive control capacities. Finally, we used the mean duration of the button press during the BART as an index of risk-taking propensity. Our results showed that smaller SSRT, revealing better reactive control capacities, were associated with shorter PES, translating less involvement of proactive strategies. Moreover, this modulation of proactive strategies as a function of reactive control capacities was observed in individuals with low risk-taking propensity only. In individuals with high risk-taking propensity, low reactive control capacities were not moderated by greater involvement of proactive control strategies. Overall, this study shows the existence of a computational tradeoff between reactive capacities and proactive strategies across tasks. However, inter-individual differences in impulsive-related personality traits affect this tradeoff, as it is no longer observed in individuals with high risk-taking propensity.

A-0119 SLOWER CONTROL STRATEGY ADAPTATION IN A PROACTIVE TASK IN INDIVIDUALS WITH HIGH IMPULSIVE PERSONALITY TRAITS

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Cognitive control is a set of executive functions that allow adaptation in a constantly changing environment. According to the dual mechanisms of control, this adaptation ability relies on two co-existing and complementary control processes: the proactive and the reactive control mechanisms. In the general population, proactive control strategies are thought to be the default state of cognitive control, but the flexible shift between the two control mechanisms is crucial for adjusted behaviors. Moreover, the default state of cognitive control is known to vary according to several inter-individual differences. In this study, we were interested in impulsiveness, a behavioral tendency associated with little forethought before acting. We hypothesized that proactive control strategies would be less dominant in individuals with high impulsive personality traits. A total of 48 healthy volunteers performed ten blocks of 70 trials of the AX-CPT task. The proactive behavioral index (PBI) was calculated to reveal the preferential control strategy. A positive PBI reveals a dominancy of proactive control whereas a negative PBI refers to a dominancy of reactive control. Participants also fulfilled the UPPS questionnaire to assess their degree of impulsiveness. The median-split method based upon the UPPS scores distribution was used to categorize participants as having high (HI) or low (LI) impulsiveness traits. Results showed that the global PBI negatively correlated with the UPPS scores: higher the impulsiveness, smaller was the global PBI. More interestingly, the analysis of the evolution

of the PBI across the task showed that the PBI increased over blocks. Participants were thus able to shift their control strategies according to the task demands. However, this adaptation was slower in the HI group compared to that observed in the LI group. Overall, the current study demonstrated that (1) impulsiveness was associated with less dominant proactive control and (2) a difficulty in adapting control strategies in a proactive task.

A-0120 PERCEPTUAL SIMILARITY BETWEEN FACIAL EXPRESSIONS: THE ROLES OF FACIAL MOTION, EMOTIONAL INTENSITY AND FACE-BASED SIMILARITY.

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Previous studies of facial expressions have mainly focused on how we perceive and categorize stereotypical, often exaggerated, canonical facial emotions. In contrast, the mechanism underlying the perception of similarities or differences between facial expressions has received far less attention, especially when it comes to the processing of dynamic facial expressions. In the present study, we investigated the perceptual similarity of spontaneous facial expressions and the specific role played by facial motion (e.g. static vs dynamic), emotional categories (e.g., within- vs cross-category facial emotion), and stimuli-based face similarity (e.g., image similarity). In two studies, participants saw two faces depicting either within- or across-category facial emotions. Participants either categorised facial expression (Study 1) or rated emotion intensity (Study 2) before making judgments about their emotion similarity. In both studies, participants performed the task with dynamic (video as stimuli) or static (images as stimuli) faces. While the categorization task showed a dynamic advantage in the categorisation of facial emotion, the perceptual similarity judgments showed the same pattern of response to dynamic and static faces. In both conditions, the perceptual similarity was higher for within- than cross-category facial expressions. Finally, we also found significant correlations between perceived similarity and stimulus similarity for both static and dynamic faces and significant correlations between perpetual similarity and the perceived differences in emotional intensity. These results suggest that both semantic and physical similarity of facial expressions contribute to the perception of emotional similarity.

A-0123 THE INTERFERENCE EFFECT OF DIRECT EYE GAZE IN THE STROOP PARADIGM

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The mere presence of direct eye gaze may automatically call for processing resources and interfere with concurrent cognitive tasks even when individuals are presented with

another extremely powerful distracter, i.e., the incongruent word in the Stroop paradigm. Research has shown that when direct eye gaze – as compared with closed eyes – is displayed above the strings, participants exhibit longer reaction times in the incongruent condition. Yet, findings are inconclusive. Further, while it has been proposed that this effect is due to enhanced self-referential processing, systematic research is lacking. Therefore, in the current study, we investigated the distracting effect of direct eye gaze (vs. closed eyes) in the classical Stroop paradigm in 70 healthy adults. To explore whether this effect is merely due to enhanced self-referential processing or rather because of the ostensive nature of this distracter, participants were presented with either the eyes of another person or of themselves. Notwithstanding the greater statistical power as compared to previous research, we could not replicate the reported interference effect of direct eye gaze, neither when own eyes nor when another person's eyes were presented. We are currently running a follow up study to explore the reasons for our failure to replicate, of which the results will presented at the conference as well.

A-0124 PROCESSING AND REGULATING EMOTIONS IN REMITTED DEPRESSION

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The recurrent character of Major Depressive Disorder (MDD) necessitates a comprehensive understanding of mechanisms facilitating relapse. To investigate neurocognitive factors proposed to underpin relapse, we studied whether remitted MDD (rMDD) is characterized by abnormal frontolimbic activity during processing/regulating emotional information, and how this is related to rumination. As part of the NEWPRIDE study, 46 unmedicated rMDD patients and 24 healthy controls (HC) underwent assessment of rumination (Rumination on Sadness Scale and Responses to Positive Affect Scale), and 3T fMRI scanning during an Emotion Regulation Task, involving conditions of passive attendance to neutral, negative or positive images, downregulation of negative images, and upregulation of positive images. Following standard preprocessing and event-related modeling of fMRI-data (SPM12, MATLAB(R2015a)), contrast images reflecting brain activation during attend (>fixation) and regulate (>attend) conditions were entered in nonparametric permutation-based group comparisons and multiple regression analyses with rumination scores as predictors (FSL Randomise). Effects were considered significant at p<.05, TFCE-corrected. RMDD patients showed higher rumination on sadness, and higher dampening and lower savoring of positive affect than HC. During processing emotional information, rMDD patients showed less activity in the precuneus, posterior cingulate cortex (PCC), inferior frontal gyrus (IFG) and dorsolateral prefrontal cortex than HC. During emotion regulation, rMDD patients showed higher precuneus, amygdala, PCC and frontal pole activity for negative emotions, and less right insula activity for positive emotions, though below corrected threshold. Within patients, during downregulating negative emotions, higher rumination was related to lower PCC activation. During upregulating positive emotions,

higher dampening of positive affect was related to higher insula activation, and lower savoring of positive affect was related to higher IFG activation. Our results suggest that inadequate rumination styles in rMDD patients might relate to aberrant self-related processing during negative emotion regulation, and interoceptive awareness and need for regulatory resources during positive emotion regulation.

A-0128 NEURAL MECHANISMS UNDERLYING OPPOSING INTERPRETATION OF POLITICAL MOVIE-CLIPS

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People frequently interpret the same information differently, based on their prior beliefs and views. I will present an ongoing project that examines neural mechanisms underlying narrative interpretation in a political context. In this functional magnetic resonance imaging (fMRI) study, 20 right- and 20 left-wing participants were scanned before and after April 2019 elections in Israel. In the MRI scanner, participants watched 8 movie clips (4 clips advocating a specific political party, 2 political speeches, 1 poll trying to predict what will happen in the elections and one neutral non-political clip). After each movie clip, participants answered three questions: (i) how much they agreed with the main message of the clip, (ii) how interesting was the clip, and (iii) how much they were emotionally engaged with the clip. Our behavioral results demonstrate a very significant difference between left and right wing participants in how much they agreed with the main message of the political clip, with no difference in how interesting and emotionally engaged they were with the content of the clip. Preliminary fMRI results (using inter subject correlation analysis) suggest that right-wing participants were more aligned in their neural responses than left-wing participants in various brain regions. More so, our results suggest that the response in primary sensory regions differed as a function of the political views. This study may deepen our understanding of differences in subjective construal processes of real-life situations, by mapping their underlying brain mechanisms.

A-0129 INTEROCEPTIVE ACCURACY PREDICTS SPONTANEOUS DECEPTION IN THE 'TEMPTATION TO LIE CARD GAME'

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Corporeal awareness arises from the integration of exteroceptive signals (e.g. visual, tactile) from outside the body and interoceptive signals (e.g. cardiac, respiratory, gastric) originating inside the body. Various studies within the framework of embodied cognition have demonstrated that bodily signals can influence high order psychological and emotional processes, including social decision making. In a sample of 71 healthy participants we examined whether individual differences in the capacity to read interoceptive and exteroceptive signals predicted participants' behaviour in

the 'Temptation to Lie Card Game', in which participants are tempted to lie to another person for financial gain, when reputation is at risk or not. As measures of interoceptive and exteroceptive accuracy, participants completed a heartbeat counting task, in which they counted their perceived heartbeats in a series of four blocks, and a variation of the body-scaled action task, in which they judged whether they could fit through projected doors varying in width and height. Overall participants told more egoistic (to increase their own payoff) than altruistic lies (to increase the other player's payoff). Moreover, when participants believed their reputation was at risk (that their choices were transparent to the other player) they told significantly less egoistic and more altruistic lies then when their choices were secret. This effect was significantly moderated by interoceptive, but not exteroceptive accuracy. Specifically, participants with high interoceptive accuracy did not reduce the number of egoistic lies nor enhance the number of altruistic lies when their reputation was at risk. Finally, our results show a non-significant correlation between interoceptive and exteroceptive measures of accuracy. Together our findings suggest that although integrated, interoceptive and exteroceptive accuracy constitute distinct facets of corporal awareness and that only the interoceptive one shapes the type of honesty-related decisions explored in the present study by making people less concerned about their social reputation.

A-0131 EXAMINING THE PRO-SOCIAL BEHAVIOR OF THE ARCHERFISH

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Humans and fish are both vertebrates, but they separated 450 million years ago; hence any pattern of similar behavior in such distinct species might suggest that such behavior has adaptive value for survival. The current study was designed to examine whether fish present deliberate pro-social behavior and perception of fairness. We chose the Archerfish to be our model since we could exploit their natural ability to shoot down insects by training them to shoot at targets presented on computer screens. We explored whether fish could make social choices –choosing either a target rewarding only the acting fish or a second target rewarding both the acting fish and a neighboring fish. We found that when the outcomes for both fish were equal (1-1) the fish favored the social targets but when the passive fish received more food than the active fish (1-2) this pattern was reversed. Interestingly, in a control experiment, when there was no fish on the other side of the partition, there was no preference in the acting fish's selections. The fish's tendency to choose the social target may suggest an evolutionary origin to many social processes in humans.

A-0137 HOW FAR IN THE FUTURE CAN WE PREDICT OTHERS' AFFECTIVE STATES?

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Human social interactions are largely rooted in the ability to understand and predict others' affective states, as it allows us to adjust our reactions accordingly. By observing regularities in affective experiences, individuals develop accurate mental models of emotion transitions (MMETs; Thornton and Tamir, 2017). Here, we questioned whether these MMETs are stable over time or, instead, specific transitions exist at different timescales. To this aim, we selected thirty-seven emotion categories (Scherer, 2005) and sampled five time intervals on a logarithmic scale ranging from 15 minutes to 4 days. Participants (n=390, 304 F, mean age 309) rated the likelihood of transition between pairs of affective states across time intervals on a scale ranging from 0 (i.e., very unlikely) to 100 (i.e., very likely), where 50 represented uncertainty. Thus, we obtained a matrix reporting the transition likelihood for each pair of emotion category over time. Starting from these ratings, we built an emotion transition network reporting MMETs surviving a Bonferroni correction (i.e., significantly different from 50) and identified communities using the Louvain algorithm. Then, we estimated the significance of the absolute distance from uncertainty of the rated probabilities for each timepoint. Results showed that the emotion transition graph broke down into two clusters reflecting the valence dimension. We observed that at shorter time intervals corresponded more extreme probability values of transitions (e.g., 90% or 10%), with a regression toward uncertainty as the timescale increased. Also, the MMETs rated as unlikely were less stable across time intervals, particularly when the gap was substantial (e.g., 15 minutes vs 4 days). Our study highlights how people retain specific MMETs associating every transition between affective states with a particular temporal trajectory. Individuals show a higher degree of certainty when predicting transitions for shorter time intervals and rely on valence to express their judgments. Future directions will explore how these mental models are represented in the human brain, shedding new light on the neural underpinnings of MMETs.

A-0138 THE VALUE OF YOUR PAIN: HUMANS MAKE MORE OPTIMAL DECISIONS DURING PROSOCIAL COMPARED TO SELF-ORIENTED LEARNING

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Humans can adapt their behavior to avoid harm. However, it remains unclear how we learn to avoid actions that might hurt others, and if such prosocial learning differs from learning for oneself on a neural level. In this study, 96 male participants performed a

task where they learned to avoid harm (i.e., painful stimuli) either for themselves (self-oriented learning) or for another individual (prosocial learning). We combined fMRI with computational modeling to identify the neural mechanisms underpinning self-oriented and prosocial learning during the choice of potentially painful stimuli, and during the processing of outcomes. We found that participants made more optimal choices during prosocial learning compared to self-oriented learning. Computationally, this was reflected in prosocial choices being more consistently based on the information learned about the value of the stimuli. On the neural level, more optimal choices were associated with increased activation in the ventromedial prefrontal cortex (VMPFC), which further exhibited higher connectivity with the right temporoparietal junction (rTPJ). Processing of outcomes, however, appeared computationally similar between prosocial and self-oriented learning. These findings indicate that the tendency for prosocial decision-making can be explained by a greater involvement of valuation processes implemented in the VMPFC. Moreover, the specific involvement of the rTPJ during prosocial decisions suggests that mental representations of the other are integrated into these valuation processes. Intriguingly, our findings contrast with studies showing that humans are biased towards better self-oriented learning in situations where financial rewards can be gained. Moral or prosocial tendencies thus may counteract this self-bias in situations where another person's physical integrity is at stake.

A-0140 FOCUSED AND DISTRACTED: ERP EVIDENCE FROM AN AUDITORY DISTRACTION STUDY

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Keeping focus on an ongoing task while filter out task-irrelevant sensory dimensions of the environment is crucial during everyday activities. This balance between top-down and bottom-up attentional processes might change with task demand. In visual modality, numerous studies suggest that highly demanding task requiring stronger attentional focus leave less cognitive resources available for processing irrelevant sensory stimuli which leads to reduced distraction. On the other hand, in case of less demanding tasks it is easier to get distracted as more cognitive capacities remain free to process distracters. Contrary to vision, this phenomenon is less explored in hearing. Therefore, we administered a widely used auditory distraction paradigm in which the frequent standard tones were occasionally replaced by a rare pitch deviant. Participants performed a tone duration discrimination task, and perceptual difficulty of the task was manipulated by the duration difference between short and long tones. Short tones were consistently 200 ms long both in easy and difficult conditions while duration of long tones was 400 ms in the easy and 260 ms in the difficult condition. Behavioral performance and deviant-minus-standard difference waveforms showed that distraction effect was present in both conditions and was not impacted by task difficulty. More importantly, ERPs

without subtraction demonstrated enhanced N1 amplitudes to tone onsets in the difficult condition indicating that participants invested enhanced attention to stimuli. Increased difficulty also slowed down processing of tone offsets as reflected in delayed P1 and N1/N2 latencies. Our results demonstrated that increased task difficulty increases voluntary allocation of attention to the ongoing task but does not impact the amount of distraction.

A-0141 USING FNIRS TO STUDY FACE TO FACE SOCIAL INTERACTION

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Some of our most important interactions take place face to face with another person, but the neural mechanisms of this dynamic behaviour are hard to study in isolated participants in an MRI scanner. Here I describe two studies using fNIRS to identify brain systems engaged in dyadic social behaviour. In study 1, pairs of participants (n=70) played a simple card game where one person can chose to lie or not, and their partner must decide if they are lying. Points are awarded for successful deception or successful detection of deception. Activity in prefrontal cortex of both players was recorded with a 22 channel fNIRS system. Results show engagement of anterior prefrontal cortex when participants attempt to deceive their partner and when they successful detect a lie. This goes beyond previous fMRI studies which found mostly lateral PFC for lying without a social context. In study 2, pairs of participants (n=60) were assigned roles of 'Leader' or 'Follower'; leaders then demonstrated an action sequence for followers to implement. Motion tracking data shows that followers spontaneously copy the even the irrational actions of the leader, and do so more when the leader is watching them. Surprisingly, this behavioural effect is linked to decreased fNIRS signals in right parietal cortex, and is the first demonstration of the neural mechanisms of spontaneous overimitation. Together, these studies show how fNIRS allows us to go beyond fMRI and track the neural mechanisms of spontaneous social behaviours in interacting pairs of participants.

A-0143 SURVIVAL PROCESSING EFFECT AND METACOGNITION

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Previous studies showed that encoding information in a survival context increases retrieval of this information, termed the survival processing effect. Here we explored whether survival processing effect is also seen in human metacognitive system. Error Management Theory (EMT) states that in cases of uncertainty, people tend to make decisions in a way that possible costs would be less than possible benefits. Based on EMT, we propose that the cost of being confident in one's memory even when the memory is wrong would be less than the cost of being non-confident in a survival context. We, therefore, predict that people who encode information in a survival context will produce more metacognitive false alarm s, such that they will rate an incorrect memory with high confidence. We

also predict that people will generally be more confident in their memories when they remember an information learned in a survival context. In Study 1 participants were asked to rate nouns' usefulness in a survival context or a moving context. In a surprise recognition test, they were given old-new word pairs and asked to choose which word they have rated before and state how confident they are in that choice. Surprisingly, the results did not reveal a survival processing effect in the recognition test, which may have been due to a ceiling effect. The results also showed that participants produced more metacognitive false alarm rates in the survival condition, but not higher levels of confidence in their responses. In a second study we increased the level of difficulty in our memory task, by increasing the new word/old word ratio in the surprise memory test. We were able get a robust survival processing effect, but we did not replicate the effect of survival processing on metacognitive false alarm rates. Together, these results suggest that survival processing may not affect metacognitive processes in a reliable fashion.

A-0144 FACE, BODY AND OBJECT REPRESENTATION IN CANINE TEMPORAL AND OCCIPITAL CORTICES

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A large body of research revealed neural representations for faces, bodies, and objects in the human brain over the last years. However, much less is known on how our (social) environment shaped our neural bases of face, body and object processing. The emerging field of canine neuroscience allows us to close this gap non-invasively by studying a longstanding close companion of humans. Past canine neuroimaging studies investigating face processing were inconclusive, and no study so far investigated the neural correlates of body processing. Here, we test and compare the neural underpinnings of face, object and body processing in pet dogs (Canis familiaris). Eleven dogs underwent MRI scanning (7 females, age range 4-11 years). All dogs were awake, unrestrained and received extensive training in order to habituate to the scanner environment. Dogs viewed luminance-controlled images of faces and bodies of dogs and humans, everyday objects, and a visual control condition (scrambled images). Data acquisition and analyses are currently being finalized, but preliminary univariate results indicate activation in temporal and occipital cortices for faces and bodies of both species. Interestingly, human faces elicited the weakest activation, only everyday objects elicited less activation in temporal and occipital cortices. Scrambled images just elicited activation in the occipital cortex. Final results will be presented at the meeting. Analyses will include standard univariate and multivariate approaches, focusing on representational similarity analysis within temporal and occipital cortices. Taken together, our results will provide first insights into categorical object representations of faces, bodies, and objects in dogs and can thus potentially yield an evolutionary perspective on how such neural representations are shaped by the environment.

A-0145 EFFECTIVE CONNECTIVITY WITHIN CEREBELLO-CEREBRAL SOCIAL MENTALIZING NETWORK: DYNAMIC CAUSAL MODELING OF RESTING-STATE FMRI DATA

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Introduction. Over the last years, increasing evidence has acknowledged the cerebellar role in social mentalizing. A cerebello-cerebral mentalizing network has been identified by a multi-study analysis (Van Overwalle et al., 2016) thus suggesting functional dependence between the mentalizing regions in the cerebellum and the mentalizing regions in the cerebrum. However, these findings failed to specify the directionality of the connections and infer the causality on the underlying mechanism. Recently, a task-related fMRI study has used the Dynamic Causal Modeling (DCM, Friston et al., 2016) to model the causal effective connectivity (EC) between cerebellar and cerebral mentalizing regions in healthy subjects (HS) showing a bidirectional cerebello-cerebral closed-loop specifically modulated by social cognition tasks (Van Overwalle et al., 2018). On this basis, we applied DCM to RS-fMRI data to test the EC within cerebello-cerebral mentalizing network in absence of the experimental manipulation induced by the mentalizing tasks. Methods. Twenty HS [mean(SD) age=52.2 (6.13); M/F=7/13] underwent a 3T MRI protocol (Magnetom Allegra, Siemens), including 3D T1-weighted and RS-fMRI scans. RS-fMRI data were pre-processed using SPM8 (http://www.fil.ion.ucl.ac.uk/spm/). By applying DCM, EC was tested between the right cerebellar Crus II, the dorsal and ventral medial prefrontal cortex (dmPFC; vmPFC), bilateral Temporo-parietal junctions (TPJ) and Precuneus (Pcun) (Van Overwalle et al., 2018). Results. Unexpectedly, we only found unidirectional connections from the right cerebellum to contralateral Pcun, TPJ and dmPFC, thus showing no functional closed-loop at rest. Conclusions. The present RS-fMRI data show EC between cerebellar and cerebral mentalizing regions at rest. However, although these results are largely consistent with previous DCM findings (Van Overwalle et al., 2018), they fail to demonstrate bidirectional EC within cerebello-cerebral closed-loop, showing for the first time that unidirectional EC from the cerebellum to cerebral mentalizing regions characterizes this intrinsic network at rest.

A-0148 TRANSLATION OF NEUROBEHAVIORAL RISK PROFILES FOR ADOLESCENTS` ALCOHOL (AB)USE INTO SCREENING/PREVENTION TOOLS

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Introduction: Adolescence is a critical period of high vulnerability to addiction. This emphasizes the importance of early screening and prevention strategies and effective tools that can be applied in adolescents and target bio-psycho-social mechanisms critical to addictive behavior. Based on a mechanistic approach to mental disorders, the processing of reinforcers such as reward, inhibitory control, and the processing and modulation of emotion can be viewed as central processes that contribute to the development of addictive disorders. In the present project, we aim to evaluate the validity and reliability of such critical factors for their use in clinical and preventive practice. Methods: Adolescents (14-16 years; N=60) underwent a Stop Signal Task, a Delay Discounting Task, a Monetary Incentive Delay Task and an Emotion Regulation task during functional magnetic resonance imaging. Different questionnaires, e.g. of stress, emotion regulation, and alcohol consumption were implemented. Moreover, alcohol-related factors like craving, social embedding and daily alcohol use were assessed using ecological momentary assessment (EMA) devices. We map individual neurobehavioral risk profiles with the real-life EMA data, and perform Structural Equation Modelling, and mediation approaches. Results: We see a key interaction of impulsivity, reward processing and social factors for alcohol use, evidenced by individual brain-behavior changes, and with a prominent modulating role of mindfulness, also reflecting sensitivity for individual changes in craving. Emotional modulation may be a critical modulator in this context. Conclusions: These data help to develop evidence-based targeted screening tools, using a selective summary of mechanisms that build upon recent work, and also allows for extensions and cross-validations of existing strategies. Advances in handheld technology allow new ways for clinicians to intervene in the lives of their patients via EMA, or for parents to intervene with their children within social situations.

A-0149 IS THERE AN INTERACTION BETWEEN BULLYING, EMPATHY AND ALCOHOL USE IN ADOLESCENTS?

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Background & Objectives: Adolescence is a particularly sensitive period, where social challenges can contribute to a wide range of risky adolescent behaviors associated with negative health consequences. In this context, rapid escalation of individual drug abuse patterns, in particular of the „social drug" alcohol, into clinical significance has been observed. In this study, we evaluate possible interactions between empathy, bullying and environmental daily life influences and alcohol consumption in adolescents. Methods: Data was taken from the longitudinal study IMAGEN. 2,223 participants (49.6 % female, mean age at baseline: 13.97 years ± .532) filled out questionnaires for empathy, bullying and alcohol use at baseline and two years later. We use interaction modeling with regression and mediator analyses and test for subgroup effects with general linear models. Results: We see main effects of sex and bullying on alcohol use, with empathy moderating these effects. Male bully perpetrators drink more alcohol than male bully victims and male noninvolved adolescents, moderated by personal distress, a subscale of the Interpersonal Reactivity Index. We found no such effects in female bullying roles. Conclusion: The results deliver critical factors in social life, which could lead to higher alcohol use in adolescence and set the course for developing addiction in later life. They could be used for development of more adequate prevention programs for bullying and modules in therapy of alcohol use disorders.

A-0151 TRANSPOSED LETTER EFFECT IN DEAF READERS

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Skilled readers develop an orthographic system that is more efficient in coding letter identity than letter position, resulting in more errors and slower reaction times for transposed-letter compared to substituted-letter misspelled words, the so-called transposed-letter effect. It is assumed that phonological processing plays an important role in letter position encoding. We investigated this assumption by examining the transposed-letter effect in deaf readers who lack fine-grained phonological representations from spoken language. In a proofreading paradigm, 33 deaf and 33 hearing readers read sentences and were required to indicate the misspelling that could be (a) transposition of two letter, (b) substitution of one letter, or (c) substitution of two letters in the word. Although deaf readers read the sentences slower than the hearing control, this difference was equal across the conditions, and the deaf participants clearly showed the transposed-letter effect. The results suggest that basic orthographic processes develop even in the absence of hearing.

A-0152 EFFECTS OF MUSICAL TRAINING ON THE DEVELOPMENT OF MUSIC PERCEPTION ABILITIES INVESTIGATED WITH THE MUSIC MULTIFEATURE ERP PARADIGM

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The present study explores the effect of a primary school education program (Active Music Learning) on the development of music perception abilities of young children. In assessing the impact of music education programs, a crucial question is whether the training will improve the participants' musical abilities. Here, we aimed to study the neural background of these abilities by applying the music multifeature ERP paradigm developed by Putkinen et al. (2014), in which participants hear short melody pieces consisting of a major chord followed by five musical notes. Occasionally, so-called deviant melody sequences can be heard, which contain six different changes: melody, rhythm, tone, timbre, tuning, timing. In the study, we used the music multifeature paradigm to assess the development of participants before the training, at the beginning of the 1st school year, and after 7 months of training, together with a control group not participating in the training. According to the results, the Mismatch Negativity ERP component elicited by the deviant melody sequences were different before and after the training, but the groups did not differ significantly, indicating a non-specific maturation effect. Despite the lack of difference between the groups, the music multifeature paradigm was found to be an effective tool to follow changes in music perception in children.

A-0155 TEMPORO-PARIETAL BRAIN OSCILLATIONS IMPLEMENTING PRO-SOCIAL DECISION-MAKING AND PERSPECTIVE TAKING – A TACS STUDY

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Behavioural experiments show that human behavior in prosocial decision-making is driven by fairness considerations and inequity aversion. Previous neuroimaging literature suggest that the right temporo-parietal junction (rTPJ) could play a crucial role in pro-social choices but the precise neuro-computational function of these brain region remains unclear. Here, we tested the hypothesis that the rTPJ increase inequity aversion for advantageous decision making via strengthening the ability to take the perspective of others. In the present study, we employed noninvasive transcranial alternating current stimulation (tACS) to examine whether stimulating the rTPJ could modulate perspective taking and prosocial decision-making. To test for individual differences in advantageous

and disadvantageous inequity aversion we used the Dictator Game. Thus to examine the level of perspective taking we employed an adapted version of the Director Task. We applied a within-subject design in which participants performed both experimental tasks while undergoing theta, alpha and sham online stimulation. Our results provide insights into the causal neural mechanisms implementing both perspective taking and social decision-making, extending our understanding of the neuronal signature of pro-social decision-making.

A-0156 SPECTRAL CORRELATES OF EMOTION REGULATION IN THE EEG OF TEENAGERS

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Adolescence is a sensitive period of brain maturation and socio-emotional development, with important implications for mental health. In the last decades, studies have suggested that adolescence involves an imbalance between high emotional reactivity and emotion regulation ability. In this context, developing emotion regulation abilities and using effective emotion regulation strategies is of great importance. In the present study twenty 14 to 17 years old teenagers looked at unpleasant (and neutral) pictures or regulated their negative emotions using reappraisal and distraction while high-density EEG data was collected. To better localize brain activity at the sensor level and reduce volume conduction, we computed the local current density in the EEG by applying the surface Laplacian (Hjorth method). We then computed time-resolved measures of spectral power and magnitude-squared coherence in various frequency bands, and referenced these to a baseline period. Results revealed a decrease in low-alpha (8 - 11 Hz) and low-beta (15 - 20 Hz), relative to baseline, for reappraisal compared to look negative but not for distraction compared to look negative. This may indicate that reappraisal but not distraction, facilitate emotion modulation. We also found a greater decrease in low-alpha and low-beta power for reappraisal compared to distraction. Our results may indicate, increased attentional demands (low-alpha decrease) and enhanced top-down control (beta decrease) while using reappraisal compared to distraction. Further, the magnitude-squared coherence analysis revealed greater coherence increase between frontal and parietal sites during distraction compared to look negative, for both low-alpha and low-beta. The present results suggest that spectral analysis methods are valuable tools for the investigation of neural mechanisms involved in emotion regulation.

A-0157 HUMAN OR MACHINE? EXPECTATIONS REGARDING THE TEMPORAL ASPECT OF HUMAN AND HUMAN-MACHINE INTERACTIONS

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Temporal characteristics of human and human-machine interactions can be very different. Such differences might influence temporal predictions about action-effects produced during the interactions. We explored expectations about the duration of human interactions by determining the range of action-effect delays that induces in agents the subjective feeling of interacting with a human partner. Participants executed button presses that were followed by tones with action-effect delays of 0 to 960 ms. Participants received the information that the auditory events were generated in response to their actions either by the computer or by a human partner. (In reality, although the human partner indeed responded to the first participants actions, all auditory effects were initiated by the computer, according to predetermined action-effect delays.) Participants' task was to decide for each trial whether they interacted with the computer or with the human partner. While the average duration of actual human interactions in the current setup was ca. 300 ms, participants only attributed sounds presented with delays longer than 425 ms reliably to the reactions of the human partner. Interestingly, the likelihood of attributing sounds to the computer also increased at long delays (above 700 ms). Although there was a large variability in participants' judgements about the source of the sounds, a large part of the participants did not interpret delays that fell into the range of realistic reaction times as being possibly caused by human interaction. The results indicate that subjective representation of the speed of human reactions differs from the actual temporal parameters of human interaction. Simple interactions that do not involve complex decisions might be faster than expected by the agents who are involved in the task. This finding might be considered when designing devices that aspire to evoke the subjective experience of human interaction.

A-0159 LANGUAGE SPECIFIC WORD STRESS PROCESSING OF GERMAN NATIVE SPEAKERS

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It is already known that the detection and discrimination of the word stress is a pre-attentive and automatic process. Further studies suggested that this process is based on a long-term, pre-lexical and language-specific representation. The language-specific aspect of the representation was previously investigated in the fixed stressed Hungarian language, with stimuli from the native (Hungarian) and a foreign (German) language with

different stress patterns. For Hungarian native speakers, no Mismatch Negativity (MMN) Event-related potential (ERP) was found for the legally stressed (in Hungarian, stress is on the first syllable) native stimuli, while MMN occurred for the native stimuli with illegal (in Hungarian, stress is on the second syllable) stress pattern and for both foreign stimuli. These results demonstrated that the word stress processing of the Hungarian native speakers is language-specific. The present study aimed to examine the language specificity of the suggested word stress representation in a variable stressed (German) language. EEG data were recorded with the help of German native speakers using the same passive oddball paradigm as previously, containing two-syllable long pseudowords spoken by a German and a Hungarian native speaker, with stress either on the first or on the second syllable. Results showed that no MMN was elicited by the German stimuli with stress on the second syllable and by the Hungarian stimuli with stress on the first syllable. The observed discrepancy in the results between the Hungarian and German native speakers implies that native speakers of a variable stressed language may rely on different mechanisms than speakers of a fixed stress language during word stress processing.

A-0160 EYEBROW ANGLE AND GAZE DIRECTION AS MODULATORS OF THE EMOTIONAL VALUE OF SCHEMATIC FACES: A VISUAL MISMATCH NEGATIVITY (VMMN) STUDY

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The aim of the present study was to examine if systematic manipulating with eyebrows and gaze directions expected to change the emotional value of schematic faces has an influence on subjective evaluations and the visual mismatch negativity (vMMN). Participants (33 volunteers, 19-40 years, 17 females) took part in the vMMN experiment (optimal paradigm, non-face object with scrambled face features as a frequent standard and different types of rarely presented deviant stimuli – angry and neutral schematic faces with either modified gaze directions (left, right, direct), or eyebrow angles (0˚, 19˚, 38˚)). Subjective evaluations (valence, arousal and attention catching) to the stimuli showed a clear gradience in the perceived emotional value for the angry and neutral faces based on their eyebrow angles, where a steeper (38˚ degree) angle meant being more negative in valence, more arousing and drawing more attention, suggesting that eyebrows play an important role in detecting emotions and their magnitude. Gaze direction proved to be a less determining feature, although the angry direct gaze grabbed the most attention, supporting previous findings that an angry face is perceived most intense when looking directly at you, since it could imply threat. An averaged ERP difference wave (deviant-standard, i.e., vMMN) was found for each of the deviant stimuli used and compared based on amplitudes to see if the changes in facial features were also detected at the brain level. The vMMN results showed that manipulating with facial features was not as effective on the brain level as it was for subjective evaluations,

suggesting a more general categorization between faces and non-faces, regardless of the changes in low-level features.

A-0163 DANCE EXPERTISE MODULATES EMOTION SENSITIVITY: INSIGHTS FROM FACE PROCESSING AND EMBODIED COGNITION USING SOMATOSENSORY EVOKED POTENTIALS

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Dance expertise modulates neural and physiological responses to dance observation, enhancing visual and emotion sensitivity of familiar movements. This study investigates if the enhanced expert emotion sensitivity is domain-specific (i.e. emotion expressed on familiar dance movements) or general to other forms of emotional expression (i.e. facial expressions). We compare neural responses to facial expression (happy, fearful, neutral) in two groups (professional dancers/experts and non-dancers/controls). To explore activation in cortical regions related to embodied emotion (somatosensory/sensorimotor cortices), we measured Visual Evoked Potentials (VEP) and Somatosensory Evoked Potentials (SEP -by applying an irrelevant touch 105 ms after visual onset over the fingertip) while participants performed a visual emotion or gender task on emotional faces, as described in (Sel, Forster and Calvo-Merino, JoN, 2014). In line with previous work, results show a main effect of emotion over somatosensory cortex (80-100ms) over and above visually-driven carry-over effects and a main effect of emotion over the occipital lobe for the VEPs at P1, N170 and P2. Importantly, we find interactions between group and emotion from 40 to 160 ms in the SEPs, suggesting a differential embodied response to facial expression between experts and non-experts. Taken together, this data suggests an enhanced general emotion sensitivity in experts that is reflected beyond the observation of their motor acquired skill but onto general and everyday emotional expressions. These results point towards new venues for emotional sensitivity training based on engaging motor and artistic knowledge.

A-0167 AGE-RELATED DIFFERENCES IN THE VARIABILITY OF BOLD SIGNAL FOR SPATIAL AND TEMPORAL SOURCE MEMORY INFLUENCE INFORMATION PROCESSING CAPACITY

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Considerable effort has been invested in identifying neuroimaging markers of how brain function is altered with age and how this relates to cognitive decline. Here, we were

interested in the effects of age on spatial and temporal source memory that are dissociable from performance. Previous studies examining age effects on source memory have focused on brain activity. However, computational modelling suggests that brain signal variability conveys important information about brain function. Specifically, variability facilitates the transition between possible network configurations in response to task demands. Brain signal variability has been shown to track maturation, disease, and reflect cognitive capacity. We measured variability with fMRI during encoding and retrieval for spatial and temporal source memory tasks in 130 adults aged 19-76 years. We quantified variability as the standard deviation (SD) of BOLD, and studied the relation between BOLD-SD, age, and accuracy using data-driven multivariate Partial least squares analysis. Our behavioural results showed that across all source memory conditions, accuracy decreased with increasing age. The brain results highlighted age-related differences in variability that were common across all task conditions, such that variability decreased with increasing age in cortex (e.g., lateral prefrontal regions), and increased subcortically (e.g., hippocampus). Generally, these age-related increases/decreases were linked to decreased accuracy, but this effect became less task specific with age; among young adults, different variability patterns were linked to performance for temporal versus spatial source memory conditions; among middle-aged adults, variability patterns were linked to performance only in spatial source memory conditions; among older adults, there was no differentiation among conditions in the link between variability and performance. These results suggest that although age-related differences in variability are fairly constant across encoding and retrieval of spatial and temporal source information throughout the adult lifespan, the manner in which these alterations relate to performance changes with age.

A-0169 LEARNING TO PRESERVE: FOREIGN LANGUAGE TRAINING AS COGNITIVE TRAINING TO PREVENT OLD AGE DISORDERS?

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With the number of older adults reaching record levels, so too does the number of elderly experiencing old-age disorders such as mood- and cognitive disorders. As a function of cognitive decline, older adults typically show weakened cognitive flexibility, which is further weakened in elderly with depression. Learning a new foreign language might help combating these age-associated disorders because using multiple languages is a life experience that has been suggested to boost cognitive flexibility (Kroll & Bialystok, 2013). Previously, foreign language training has been shown to improve self-esteem and well-being in elderly (Pot, Porkert, & Keijzer, 2019). The objective of this study is to determine whether learning a new language affects cognitive flexibility, its neural underpinnings, and improves symptoms of common old-age disorders. We specifically target seniors at risk for Mild Cognitive Impairment (MCI) and depression. The effects of an intensive three-month foreign language training (n=66) are compared to music training (n=66) and a

social intervention (n=66) to control for non-specific cognitive training and social activation effects. We present preliminary results of the first cohort of participants (n=60) regarding the effects on cognition and emotional health. Data shows that over time the depressive symptoms and apathy of participants improved (p = 0.01 and p < 0.00, respectively) but no significant effect of group was found. In addition, cognitive flexibility, as measured with the Trial Making Test part b (TMT-b), improved significantly over time (p = 0.03), but again there was no significant difference between the groups. The results of this study can shed light on the ultimate question whether foreign language training in seniors can improve cognitive flexibility and psychological health and thereby slow down cognitive aging and reduce vulnerability for old age depression and what its role is vis-à-vis other cognitive intervention program, such as musical training.

A-0171 THE ROLE OF STATISTICAL LEARNING IN VOCABULARY ACQUISITION OF DOGS AS EVIDENCED BY AWAKE EEG AND FMRI

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Statistical learning is a commonly described phenomenon in the animal kingdom, however its underlying processes might be diverse. In humans the ability to extract statistical regularities from a continuous speech stream is instrumental for detecting word boundaries. While the ability to segment speech have been demonstrated in other species as well, previous research remains inconclusive with regard to the exact computational abilities and the underlying neural processes in non-human species. Companion dogs provide an exceptional opportunity to obtain comparative data on statistical learning from speech as they live in the same social and linguistic environment as humans and speech is highly relevant for them. Here we conducted EEG and fMRI to examine the neural markers of statistical learning from speech in dogs. In Experiment 1, we compared ERPs for high and low frequency words and partwords created from syllables previously presented as part of a continuous speech stream. We tested the effect of transitional probability, i.e. the predictability of one syllable with respect to the other, and the effect of frequency of co-occurance, i.e. the number of occasions two syllables occur next to each other. We found an effect of transitional probability between 220 and 470 ms after stimulus onset, and a late component (590-790 ms) with a significant effect of both transitional probability and frequency of co-occurance. In Experiment 2, using fMRI we tested dog brains' sensitivity to statistically structured (composed of trisyllabic sequences) and unstructured (composed of randomly ordered syllables) speech streams. We found stronger activity for the statistically unstructured speech stream in the basal nuclei, a region known to be involved in domain-general statistical learning in humans. An additional ROI analysis revealed repetition enhancement in the speech-responsive auditory cortex of dogs, but

only for the structured speech stream. Together, these experiments demonstrate that dog brains discriminate speech streams based on their internal statistics, and make use of complex computations to learn about word boundaries.

A-0172 THE EFFECT OF AMBIGUOUS AND UNAMBIGUOUS STIMULI ON TARGET PROCESSING IN LESS CREATIVE AND CREATIVE GROUPS

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In our experiment, we studied how creative and less creative younger and older adults processed irrelevant stimuli with different levels of ambiguity, and whether this processing would influence operant responding. Younger (18-25 years) and older (60-75 years) adults were separated into less creative and creative groups by the figural subtests of the Hungarian analogue of the Torrance Test of Creative Thinking, being 12 participants in each of the four groups. Our experiment design was based on the Emotional Interrupt Task, in which unambiguous and ambiguous portrait paintings and photos of faces were presented in equal proportions before the target stimuli. We hypothesised that available cognitive resources would decrease if participants attended to distractor stimuli. As older adults cannot inhibit the processing of the task-irrelevant stimuli sufficiently, they are more exposed to this effect. We also hypothesised that creativity begins with the perception of the stimuli of the environment and the engagement of attention would be influenced by the ambiguity of stimuli at different levels in creative and less creative participants. According to our results, aging affected behavioural and event-related potential responses, but there were no interactions between age and either stimulus type or creativity. The reaction time was faster for targets following the faces than for portrait paintings. The N1 component was larger and P2 was smaller for faces than for unambiguous and ambiguous stimuli. The P1 was smaller while the P3 was larger for ambiguous stimuli than unambiguous and face stimuli. Creativity had an effect in the earliest (P1) and the latest stage (CNV): in creative groups the processing of stimuli needed less cognitive capacity, resulting in a higher CNV and faster responses. In summary, stimuli were differentiated in early and late phases of cognitive processes as well; and creativity affected the early perception of stimuli and task preparation.

A-0173 INTEGRATION OF REWARD WITH EFFORT DURING SUBSEQUENT STAGES OF MOTIVATED BEHAVIOR

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Human behavior is assumed to be driven by the pursuit of rewards and the avoidance of associated effort (law of less work; Hull, 1943). Consequently, cognitive or physical effort evokes avoidance behavior, biasing cost-benefit decision making towards reward de-valuation. Yet, recent research pointed out the complexity of the affective value of effort, especially in the cognitive domain, since demanding cognitive tasks (e.g., simple arithmetic operations) can be perceived as a cost, but once exerted, cognitive effort can also add subjective value to its outcome (Ma et al., 2014; Schouppe et al., 2014), or sometimes be valuable even in itself (Inzlicht, Shenhav, & Olivola, 2018). We suggest that this apparent paradox can be understood by i) parsing the role of effort information across subsequent stages of motivated behavior, ii) by considering individual difference in effort disposition, and iii) by considering the contextual variables in which effort is exerted. In a series of empirical studies we confirmed that i) avoiding an anticipated effort is valuable and increases reward processing, as reflected in the Reward Positivity component of event-related potentials. ii) The avoidance of cognitive effort is valuable only for individuals with low tendency to engage and enjoy effortful cognitive endeavors. iii) The receipt of the same monetary reward leads to increased Reward Positivity after high vs low cognitive effort exertion. Finally, we will present preliminary evidence of how effort-related information like a task-difficulty cue, putatively aversive during an initial cost-benefit analysis about effort investment, becomes motivationally relevant for participants during the following effort-allocation stage. During this stage, Frontal-Midline-Theta oscillations are compatible with an optimal-effort signal, and may reflect proactive control processes mediating effort allocation. Hence, this oscillatory activity measure may represent a mechanism by which the cost-benefit decision's outcome is conveyed to the cortical areas required for task implementation.

A-0175 AGE-RELATED EFFECTS ON VARYING CONFLICT IN A FLANKER TASK – AN ERP STUDY

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Cognitive control enables coping with conflict emerging from multiple salient but irrelevant features of the incoming information flow. Although cognitive control is thought to be affected by age, evidence shows that the effect of age on performance measures and on the pattern of electrophysiological responses varies with the level of conflict. In the present event-related brain potential (ERP) study, 26 young and 30 older adults performed an Eriksen flanker task, in which the level of conflict was manipulated through the proportion of congruent and incongruent trials in a blockwise manner. In older adults, the RT congruency effect increased in response to a lower proportion of incongruent stimuli. Meanwhile, in young adults, the accuracy congruency effect increased in response to a higher proportion of incongruent stimuli. ERPs were not sensitive to the proportion of congruent and incongruent stimuli, but different patterns of amplitude modulation were observed in the two groups. In the older adults, the N2 was centrally distributed and showed large amplitudes for both the congruent and incongruent stimuli. In the young adults, the N2 was frontally distributed and its amplitude was sensitive only to the incongruent stimuli. The P3 was parietally distributed with increased amplitudes for congruent stimuli, but this ERP pattern was observed only in the older adults. These results suggest that, regardless of the level of response conflict, neurocognitive processes underlying stimulus evaluation alter with age. In addition, the results also indicate that the increased level of conflict may enhance behavioral performance in the older adults.

A-0176 EFFECTS OF SOCIAL ISOLATION AND FASTING ON STRESS-RESPONSES, AFFECTIVE STATES AND MOTIVATED BEHAVIOR

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Similar to other basic needs, a lack of social contact leads to a physiological stress response and specific reward-seeking behaviours in animals. In humans, research on prolonged perceived social isolation provided comparable results. However, affective and motivational responses to short-term objective social isolation has only started to be addressed. First findings show comparability of motivational responses to short-term social isolation and a more established deprived state of hunger. The aim of this study was

to explore the effects of a 9-hour period of fasting and social isolation on physiological and subjective stress responses, affective states and motivated behaviour. A repeated-measures experimental design is applied, in which participants come to the lab on three separate days: for a social isolation, a fasting and a baseline condition. Conditions are highly comparable, with the only difference being whether food and social contact are provided. Salivary cortisol and alpha-amylase was measured hourly, and heart rate was continuously measured throughout the session. Self-report measures assessing stress, mood, desire for social contact and food were collected every 1-2 hours. Approach behaviour towards social and food images is evaluated at the end of each session. The physiological and psychological effects of social isolation and fasting could be identified with unprecedented precision. On a subjective level, we observed an increased desire for social contact after isolation, an increased desire for food after fasting, and decreased energetic arousal in both deprived conditions, compared to baseline. These subjective experiences were accompanied, on a physiological level, by a less steep decrease of cortisol throughout the day while isolated, an overall decrease of cortisol during fasting, and a steeper decrease of alpha amylase throughout the day during fasting. These preliminary results give the first evidence that social isolation modulates human physiological stress levels, although differently than fasting. The physiological change in both deprived states was followed by a similar feeling of tiredness, which calls for further investigation.

A-0177 EARLY DIAGNOSIS OF EPILEPSY IN CHILDREN WITH DEVELOPMENTAL DELAY

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Described since 2014 the DFNB89 or KARS gene is a rare, neurologically debilitating disorder associated with autosomal-recessive nonsyndromic hearing impairment with other distinct characteristics that may begin in newborn or toddler life. Microcephaly most often accompanies genetically mediated diseases. Purpose: The aim of this study was to determine the significance of 8-hour EEG monitoring in infants without the clinical manifestation of convulsive activity, but with the presence of symptoms of microcephaly, including provoked by transnational damage to the central nervous system. Methods: Medical reports, EEG results, and monitoring of 27 children aged 0 to 12 months who underwent 8-hour video-EEG monitoring from 02/02/2019 to 02/12/2020 at the Medical Center were evaluated. For each patient, a six-month follow-up was performed. Children were divided into four groups: (1) a tendency to microcephaly and without a genetic conclusion and seizure in anamnesis before monitoring, (2) children with microcephaly with signs of convulsive activity before monitoring, (3) children with general developmental delay, (4) children with an uncomplicated history, contacting a neurologist on their own. Results: Epilepsy has first diagnosed in 18 (26.7%) and excluded in 7 (16.2%) cases. Parents of 22 children reported improved quality of life after receiving early diagnosis and setting

up a child observation plan. The frequency of diagnosis of epilepsy was different in all four groups (p <0.001). Epilepsy was more often excluded in children with pathological EEG without spikes compared with children with pathological EEG and spikes (p = 0.037). Conclusion: Monitoring for diagnostic purposes can be recommended not only in groups of children with pathological activity on the EEG but also at an earlier stage in the development of children with a tendency to microcephaly or general developmental delay. This work was supported by the Russian Academy of Science. State registration number of the IHNA topic on which study was published is A17-117092040004-0

A-0180 INVESTIGATING THE DIFFERENTIAL EFFECTS OF AGE AND WORKING MEMORY LOAD ON THE ERROR RELATED NEGATIVITY (ERN) AND EMOTIONAL REACTIVITY FOLLOWING A WORRY INDUCTION. A BEHAVIOURAL AND ERP STUDY.

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The ERN ERP may represent a compensatory cognitive control mechanism mitigating processing inefficiencies due to distracting worrisome thoughts in anxiety (Moser et al 2013). Mental effort research suggests cognitive performance decreases following exertion. It's unknown if individual differences in compensatory effort impact post-task cognitive control and subsequent intrusive thoughts. We hypothesized that working memory load (WML) would increase compensation costs, exaggerating emotional reactivity, leading to impaired control over intrusive negative thoughts. We investigated effects of WML and Age on Delta-ERN (ERN-CRN) amplitudes and emotional reactivity following a worry induction, predicting larger Delta-ERNs commensurate with WML, but age-related differences in magnitude. We also predicted increased Delta-ERNs would drive emotional reactivity, namely increased negative thought intrusion post induction. Continuous EEG was recorded whilst adolescents and adults performed a flanker task under low/high WML. This preceded a breathing focus exercise, with thought intrusions recorded before and after worry induction. Age, but not WML, impacted Delta-ERN amplitudes $F_{(1,32)}$ = 4.57, p=.04, p2 =.125, with adolescents displaying blunted dual-task Delta-ERN relative to baseline, whilst adult Delta-ERNs were similar. This mirrored the relative absence of dual-task post-error slowing amongst adolescents. Although emotional reactivity due to the worry induction was unaffected by Age or WML, baseline Delta-ERN predicted emotional reactivity, but with developmental differences. A larger adult Delta-ERN significantly predicted increases in negative thought intrusions $F_{(1,26)}$ = 4.992, p=.03, R2=.16, beta= -.113, SE=.05, t=2.23, whereas the association's direction was reversed amongst adolescents $F_{(1, 27)}$ = 4.12, p=.05, r2= .132, beta = .18, SE=09, t=2.03. Worry was significantly associated with adult.ERN. These results support the compensatory error monitoring theory of the ERN, and a mechanism explaining the links between the ERN and emotional vulnerability, which may differ across development.

A-0188 TO BE OR NOT TO BE FLEXIBLE: SELECTIVE IMPAIRMENTS IN COGNITIVE FLEXIBILITY AS A MEANS TO DIFFERENTIATE BETWEEN DEPRESSION AND PTSD SYMPTOMS

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During the course of their lives, most individuals experience at least one potentially traumatic event. For some individuals this experience may result in them developing depression and/or post-traumatic stress disorder (PTSD) symptoms. The aim of the present study was to test the interactive effect of traumatic exposure and impaired cognitive flexibility on the tendency to develop either depression or PTSD symptoms. Eighty-two college students (M age = 25.32, SD age = 4.09) were assessed for exposure to traumatic events, depressive and PTSD symptoms. In addition, they completed a performance-based learning paradigm to evaluate the unique patterns of cognitive flexibility, defined as reduced and enhanced updating of prior knowledge in the face of new information. We predicted and found that for individuals with reduced updating, greater exposure to trauma was associated with elevated depressive symptoms. Contrary to our prediction, for individuals with enhanced updating, greater exposure was associated with elevated PTSD symptoms. While cognitive flexibility is traditionally associated with adaptive outcomes, our results illuminate the important role of a delicate updating balance to adaptively cope with aversive life events. The findings highlight the possible different roles of cognitive flexibility in the development of psychopathology and may serve as a first step toward developing tailored prevention and treatment methods.

A-0190 METRIC BODY REPRESENTATIONS IN MIRROR-SENSORY SYNAESTHESIA

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An accurate representation of the size and shape of our body parts is necessary to infer their spatial location and interact with our environment. Explicit knowledge of the metric properties of the body is typically accurate in healthy adults. Implicit representations are generally less accurate, but more malleable, and are improved in highly trained individuals. To date, no research has investigated whether this implicit body model may be modulated vicariously by exposure to other bodies. Individuals with mirror-touch synaesthesia (MTS) experience vicarious tactile sensations on their own body simply from watching another person being touched. These individuals also report feeling that their body changes in size and shape when viewing distorted bodies. These subjective reports indicate a broader tendency towards self-other blurring of body representations in MTS, beyond tactile perception. To examine this, the present study measured objective accuracy of the body model in MTS. Participants with MTS and controls (aged 20-69 years) completed an implicit measure of their own hand representations, in which they were required to point to several landmarks on the hands, with eyes closed. They also

completed an explicit measure, in which they judged the shape of their hands relative to visual exemplars. Implicit body representations were found to be more accurate in older participants. There was no significant difference between MTS and controls in the accuracy of body representations. Results indicate that representations of the body model are improved in older adults, but are not altered in MTS, despite subjective experiences of self-other blurring in this group.

A-0194 NEUROPHYSIOLOGICAL EVIDENCE OF THE INFLUENCE OF EMOTIONAL COMPETENCIES DURING EMOTION AND ATTENTION INTERACTION.

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Studies have reported a link between the emotional competencies (EC) of an individual (i.e., a set of competencies related to identification, regulation, comprehension and utilization of emotions) and the onset of depressive symptoms. Given that clinical and sub-clinical depression are associated with deficits in attentional and emotional processes, the goal of this study was to investigate in a neurotypical population the role of EC and depressive traits in emotion-attention interactions. To do so, we recorded the electro-encephalographic activity of 21 participants while they were involved in a simple attentional task (identify a letter or a number in a pair of stimuli) with visual distracting stimuli, specifically designed to evaluate early (C1), late (P3b) and response-related (Error-related Negativity, ERN) neural processes within a single EEG experimental paradigm (Kappenman and Luck, 2010). Analyses of variance with the emotional content of the distracting stimuli (happy, neutral and fearful expressions) as within-subject factor were run on the behavioral responses (percentage of correct responses, reaction times) and on the amplitude of C1, ERN and P3b components. Pearson's correlations between these measures and scores to Beck Depression Inventory (BDI, Beck et al., 1996) and the Profile of Emotional Competencies (PEC, Brasseur et al., 2013) were also computed to assess the influence of EC and depressive traits on emotion-attention interactions. We found that participants with higher BDI scores made more mistakes than participants with lower BDI scores (p = 0.028). At the brain level, the amplitude of ERN was modulated by the emotional content of the stimuli. Moreover, ERN amplitudes were negatively correlated to PEC score (p = 0.046). Altogether, these results suggest that emotional competencies and depressive traits mediate the influence of emotional information on attentional processes and monitoring functions and open new perspectives in the study of the neurophysiological correlates of these influences.

A-0195 INCREASED MPFC-ACC FUNCTIONAL CONNECTIVITY IS ASSOCIATED WITH INCREASED PAIN PERCEPTION IN MIGRAINE

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Resting state functional connectivity (rsFC) between the default mode network and pain processing network (or the so-called pain matrix) including the anterior cingulate cortex (ACC) is altered in chronic pain. In addition, it is hypothesized that increased rsFC between DMN and ACC contributes to increased pain perception. Since migraine has been proposed to be associated with similar functional neural changes identified in other chronic pain, our aim was to investigate how rsFC of medial prefrontal cortex (mPFC) – as a candidate seed of DMN – related to pain perception in migraine. In the present study, resting state fMRI data along with fMRI data on a fear conditioning paradigm with pain as unconditioned stimulus in participants with episodic migraine without aura (N=23, mean age: 27) were analysed. Participants did not have migraine attacks 48 h prior to the scan, and 24 h after the scan, and refrained from taking any analgesics 48 h before the scan session. None of the participants had psychiatric or other somatic conditions. First, functional connectivity of mPFC with pain matrix was explored. In the second step the strength of mPFC and ACC connectivity was used as a covariate when analysing the neural response to perception of an acute painful stimuli vs. non-painful ones. As expected our pain task activated several parts of the pain processing network including the postcentral gyrus, cingulate cortex, insula, basal ganglia and cerebellum. We also found that increased mPFC-ACC functional connectivity was associated with increased BOLD response in cerebellum to painful stimuli. Cerebellum is involved in pain processing in general, and its involvement in hypersensitivity, a key characteristics of migraine, has been recently proposed. Our results suggest that inter-individual differences in resting state connectivity and pain perception could be tightly interrelated.

A-0196 DEVELOPMENT OF ATTENTION TO SOCIAL INTERACTIONS IN SCENES

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Human attention is easily captured by social information in naturalistic scenes, a "social bias" that is present since infancy. Additionally, recent research suggests that visual attention to interacting dyads is heightened when compared to non-interactors. However, little work has examined how interactive mechanisms influence attention in complex scenes, nor how these effects may change across development. Here, we recorded eye-movements in 99 adults (18-35) and 53 children (6-11) in two free-viewing experiments. In experiment 1, naturalistic scenes contained dyads who were either interacting or not. We explored the influence of the presence (vs. absence) of a social interaction on attentional orienting to social vs. non-social scene elements. In experiment 2, the scenes depicted were ambiguous: dyads could be perceived either as interacting, or not. After the eye-tracking session, participants indicated whether they perceived each scene as interactive or not. Here, we aimed to investigate developmental changes in the way top-down information about social events (e.g., what a social interaction looks like) might influence social attention. Areas of interest (AOIs) were divided between "social" (entire human figures in the scene) and "non-social" (all other elements). Results from experiment 1 confirm a "social bias" in both age groups, indicated by increased attentional engagement and faster capture by AOIs than other scene elements. Importantly, this bias is increased by the presence of a social interaction; an effect that is seen in both groups, but is stronger in adults. Preliminary analyses for experiment 2 show that adults are more prone to see ambiguous scenes as interactive, identifying more scenes as interactive than children do. Linear mixed-effect modelling analyses on the influence of categorization on dwelling time and time to first fixation are in progress. We expect, in line with previous work in our lab, that when the scene is seen as interactive, attention to human information will increase. Implications for social attention and the development of social semantic cognition will be discussed.

A-0198 DOES VERBAL CONTEXT MODULATE ELECTROPHYSIOLOGICAL CORRELATES OF AFFORDANCE COMPETITION DURING OBJECT PERCEPTION?

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Despite accumulating evidence indicating that visual objects activate their motor properties ("affordances"), the impact of affordance evocation on object perception remains to be clarified. Affordance evocation has been shown to be sensitive to several contextual factors. Affordances are mainly activated when objects are perceived within

reach (Wamain et al. 2016), an effect enhanced in presence of a congruent verbal context (Costantini et al. 2011). Moreover, recent findings demonstrated a processing cost for objects associated with conflicting affordances, namely objects evoking distinct grasp-to-use and grasp to-move gestures ("conflictual" objects). When asked to make perceptual judgements on 3D objects presented at different distances, participants were slower for "conflictual" than "non-conflictual" objects, but only when objects were presented within reach (Kalénine et al. 2016). At the neurophysiological level, this selective cost for conflictual objects was reflected by a reduction of µ rhythm desynchronization, suggesting that competition between object affordances alters motor resonance during manipulable object perception (Wamain et al. 2018). The present study aims at evaluating the effect of a verbal context on affordance competition. Using EEG, we tested whether a congruent action verb could help the resolution of the competition between object affordances and induce a release of µ rhythm desynchronization during object perception. Twenty-five participants had to make perceptual judgements on 3D conflictual objects (e.g., calculator, affording both clench and poke) presented at different distances in a virtual environment while EEG was recorded. Objects were preceded by an action verb congruent with their grasp-to-use action (compute) or a neutral verb (observe). Results demonstrate that the competition elicited by the perception of distinct affordances during object processing is sensitive to verbal context. Critically, µ rhythm desynchronization increased in the presence of an action verbal context describing the typical use gestures associated with conflictual objects. These findings provide novel insights into the influence of contextual information on the resolution of the competition between affordances that may help enriching recent theoretical views on affordances.

A-0200 IN SEARCH OF THE MECHANISMS OF EMOTION CONGRUENCE IN EMOTION PERCEPTION

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Emotion congruence in emotion perception is manifested in the increased sensitivity to the emotions corresponding to a perceiver's emotional state. Emotion congruence can emerge from the processes occurring at two different stages of the performance of an emotion recognition task, either at the stage of stimulus perception or at the stage of response generation. At the stage of stimulus perception, attention to particular perceptual features, e.g., certain components of the facial expression, can be guided by a perceiver's emotional state making it easier to process emotionally congruent expressions. At the stage of response generation, a perceiver's emotional state can inform him or her about the most valid response – the process described in the affect-as-information theory. To distinguish between these explanations, we developed an experimental procedure that robustly generated emotion congruence during the perception of ambiguous facial expressions taken from the NimStim Set of Facial Expressions database. In three experiments (N = 69, 58, and 41), we induced the participants into happiness and sadness using emotional videos and autobiographical memories, varied the duration of stimulus

presentation (50, 100, 200, and 1000 ms) and the time allotted to response (speeded vs. non-speeded response). The results showed that the size of emotion congruence effect did not depend on these experimental manipulations. This finding suggests that emotion congruence can be explained by the conceptual processes lying between perceptual and response generation stages.

A-0202 SITUATING THE "ME" IN THE "WE": THE EFFECT OF TEMPORAL COORDINATION ON HOW WE MOVE AND HOW WE FEEL ABOUT OURSELVES AND OTHERS

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Coordinating our actions with others can change how we behave and feel. Previous work employing simple synchronisation tasks in dyads suggests that coordination depends on mutual adaptation where each individual integrates to a varying extent "self" and "other" information. Here we provide further evidence that when interacting with others, a balance between self-other integration and segregation is required. However, with a focus on the individual, situating the "me" in the "we", we not only ask about group affiliation and cohesion, but also probe how the person moved and felt about their body. In a group walking paradigm, the participant was instructed to synchronise with an auditory metronome while listening to the sound of 8 virtual auditory partners. By manipulating how similar and synchronous these partners were to the participant, we investigate contexts in which individuals variably integrate or segregate self and other information. Measuring temporal coordination, movement patterns and subjective reports, we show that, when coordination is optimised, individuals feel more agentive and stronger providing a potential reason for why we interact in groups despite the challenges this poses.

A-0203 SUBJECTIVE FATIGUE AS THE MOST OBJECTIVE FATIGUE MEASURE: COMPARISON OF DIFFERENT FATIGUE MEASURES IN A VISUAL MISMATCH NEGATIVITY EXPERIMENT

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We studied how fatigue induced by a time-on-task procedure lasting up to 90 minutes is related to different subjective and objective fatigue measures. The fatigue-inducing task

consisted of a series of reaction time experiments within the visual mismatch negativity (vMMN) paradigm, where participants had to detect the visual motion of a grating in the central visual field and, depending on condition, either ignore or attend to visual motions in the background (see Kuldkepp, Kreegipuu, Raidvee, Näätänen, & Allik, 2013). Fatigue measures were subjective reports (Borg's Category-Ratio Scale, BCR-10), critical flicker fusion frequency (CFFF), and several eye-blink parameters (count, interval, duration, amplitude). Subjective reports of fatigue, CFFF, and the number and interval of blinks indicated that fatigue was increased during the experiment. Different fatigue measures did not significantly correlate, indicating that they probably represent different aspects of fatigue. Subjective reports of fatigue indicated the biggest effect size related to the dynamics of fatigue (i.e., feeling of tiredness preceding the decline in performance). The results are applicable to improve research practice on state-dependency in information processing.

A-0204 THE IMPACT OF GAME ELEMENTS ON COGNITIVE TRAINING EFFECTIVENESS

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Cognitive training—the repeated practice of mental activities aiming to maintain or enhance one's cognitive abilities—represents an interesting opportunity to improve quality of life for people of every age. Several researchers recognized that game elements could have the power to contribute in some way to the quality of cognitive training, especially because of its potential in increasing engagement (Bisoglio et al. 2014). Game elements are conceptualized as a « set of rules, interaction loops (e.g., goals, challenges or rewards) and feedback that aim to enable an engaging and fun gaming experience » (Romero et al., 2016; p.71). The present study aims to clarify the contribution of game elements in cognitive training and far transfer effect. A total of 100 participants from 18 to 40 years old were randomly assigned to one of the five training programs: i) active control, ii) attentional control (AC), iii) AC with point system, iv) AC with leaderboard, or v) AC with both game elements. Each training involved performing eight sessions of approximately 30 minutes over 4 to 8 weeks. An assessment of working-memory and attention-control tasks was performed on each group before and after training to assess learning and far transfer. Whereas the addition of game elements failed to affect both the level of engagement and cognitive load in the training program, their presence led to the abolition of the far transfer effect obtained in the non-gamified version of the training. Such a negative impact cannot be attributed to an additional cognitive burden induced by the inclusion of game elements, as proposed by some researchers (Katz et al., 2014). This pattern of results is consistent with the hypothesis that the efficiency of game elements to promote transfer effect relies on their power to successfully engage the trainee into the training program.

A-0205 POSSIBLE ASSOCIATION BETWEEN SPINDLE FREQUENCY AND REVERSAL-LEARNING IN AGED FAMILY DOGS

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In both humans and dogs sleep spindle occurrence between acquisition and recall of a specific memory predicts learning performance. However, it is not known whether sleep spindle characteristics can also predict performance beyond the span of a day, except in regard to general mental ability in humans. Such a relationship is likely, as both memory and spindle expression decline with age in both species (in dogs specifically the density and amplitude of slow spindles). We investigated if spindle amplitude, density (spindles/minute) and/or frequency (waves/second) are good predictors of performance on a short-term memory and a reversal-learning task in old dogs (> 7 years), when measurements of behavior and EEG were on average a month apart. Higher frequencies of fast (≥ 13 Hz) spindles on the frontal and central midline electrodes, and of slow spindles (≤ 13 Hz) on the central midline electrode predicted worse performance on a reversal-learning task. The present findings support a role for spindle frequency as a biomarker of cognitive aging across species: Changes in spindle frequency are associated with dementia risk and onset in humans and declining learning performance in the dog.

A-0206 AGE-RELATED POSITIVITY EFFECT ON BEHAVIOURAL RESPONSES OF DOGS TO HUMAN VOCALISATIONS

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Age-related changes in the brain can alter how emotions are processed. In humans, valence specific changes in attention and memory were reported with increasing age, i.e. older people are less attentive toward and experience fewer negative emotions, while processing of positive emotions remains intact. Little is yet known about this "positivity effect" in non-human animals. We tested young (n=21, 1-5 years) and old (n=19, >10 years) family dogs with positive (laugh), negative (cry), and neutral (hiccup, cough) human vocalisations and investigated age-related differences in their behavioural reactions. Only dogs with intact hearing were analysed and the selected sound samples were balanced regarding mean and fundamental frequencies between valence categories. Compared to young dogs, old individuals reacted slower only to the negative sounds and there was no significant difference in the duration of the reactions between groups. The selective response of the aged dogs to the sound stimuli suggests that the results cannot be explained by general cognitive and/or perceptual decline. and supports the presence of an age-related positivity effect in dogs, too. Similarities in emotional processing between humans and dogs may imply analogous changes in subcortical emotional processing in the canine brain during ageing.

A-0207 THE ELECTROPHYSIOLOGY OF SEMANTIC PROCESSING IN MENTALISTIC SOCIAL SITUATIONS

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Multiple groups have reported a so-called social N400 event-related potential (ERP): adults and infants track the semantic comprehension of social partners via their own language systems. The typical N400 response is thought to indicate semantic processes – a semantic memory retrieval effort. The social N400 is evoked when not the participant, but a communicative partner could have experienced a semantic incongruity (e.g., an object being mislabelled). In five electrophysiological experiments we sought to replicate our infant findings with adults and further explore the nature of the social N400. Unlike previous adults studies, we created a misunderstanding using false belief induction: We recorded the ERPs we presented adults with toys that we named in the presence of an Observer. In the adult replication of our previous infant experiments toy labels were congruent or incongruent for both parties, or congruent for the participant but incongruent for the Observer, because of an unseen object change. Adults exhibited a social N400 effect only when we instructed them to follow the comprehension of the Observer, although one reduced in magnitude. In contrast to infants, adults showed no accompanying frontal effect and they showed no social N400 if there were no instructions. To further investigate the functional role of the N400 in communicative situations, we simplified the paradigm and labelled objects correctly or incorrectly either in the presence or absence of an Observer. Intriguingly, we found that the N400 was enhanced by the mere presence of another person, which is indicative of an increased retrieval effort from semantic memory. We interpret these results to show that the range of possible, potential meanings are broadened in accordance with the attributed knowledge and mental state of a communicative partner. The pattern of results suggest an intricate interaction between mentalization and semantic-pragmatic processes. The distinct response pattern of infants and adults hints at an intriguing developmental trajectory of Theory-of-Mind.

A-0208 TEMPORAL CONSTRAINTS OF ACTION-EFFECT RELATED MOTOR ADAPTATION AND SCHIZOTYPY

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Several recent studies show that simple, repetitive everyday actions, like button presses, pinches, or taps are performed differently depending on the presence or absence of a well-defined auditory action consequence. Specifically, immediate auditory feedback

seems to allow one to reduce motor effort while maintaining reliable interaction with the response device (action-effect related motor adaptation). Interestingly, such utilization of auditory feedback depends on the action-effect delay: when the effect is delayed by more than 200 ms, optimization no longer occurs. The remarkably short duration of this window suggests that action-effect related motor adaptation may reflect fundamental processes connecting actions and their effects. One might hypothesize that the size of this window is related to certain personality traits, and it has been suggested that sensory-motor deficits in schizophrenia reflect distortions in the representation of action-effect relations, which may also give rise to impairments in agency monitoring. The present study reports an attempt to relate trait schizotypy (as measured by the O-LIFE questionnaire) and window size in which action-effect related motor adaptation occurs in normal young adult participants. Additionally, an exploration of the relations with the Big Five based factors (Facet5 questionnaire) is reported.

A-0210 THE RELATIONSHIP BETWEEN RECOGNITION OF ONE'S OWN AND OTHERS' NON-EMOTIONAL INTERNAL STATES IN CHILDHOOD AND ADOLESCENCE

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Interoception refers to the perception of and attention to internal bodily signals. Previous research has investigated the ability to detect and attend to these states in the self, but no research thus far has investigated the ability to perceive internal states in others, beyond emotional states. Where emotion is concerned, alexithymia (difficulties identifying and describing one's own emotions) is associated with difficulties recognising emotions in others. This suggests that understanding one's own emotions is critical for understanding and recognising others'. It is therefore likely that the ability to perceive one's own non-emotional internal states also predicts the ability to recognise non-emotional bodily states in others. The current study aimed to investigate the relationship between the ability to recognise others' non-emotional bodily states and self-reported interoceptive accuracy and attention, and how this relationship develops across childhood and adolescence. Children between the ages of 8 and 18 years of age viewed randomly presented novel photographic stimuli created and validated for the purpose of this study, depicting six actors portraying nine internal states. Images were presented for 2000ms and replaced by 10 response options (orthographic words with images and an audio button), describing the internal states and an 'animal' option. Ten photographs of animals were randomly interleaved in order to ensure participants were attending to the images and could complete the basic sorting task. Linear and non-linear regression analyses were used to determine the developmental trajectory of non-emotional state recognition abilities throughout childhood and adolescence. Self-reported interoceptive abilities were found to relate differently to recognition of others' non-emotional internal states at different stages of development. Results are discussed in terms of the potential impact of interoceptive deficits on social abilities.

A-0211 CITIZENSHIP UNDER CONFLICT: NEUROBIOLOGICAL UNDERPINNINGS OF FEAR CONDITIONING

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Social conditioning is the socio-political training in which citizens of a society are trained to respond or behave in a certain manner. Citizens are encouraged to think about any socio-political event within specific frames. Social conditioning underlies a strong biological and cognitive base in individuals. It is achieved by manipulating the evolutionary need of animals to be a part of a herd. Social conditioning is a associative behavioural learning process in which a desired response becomes more frequent in a given environment as a result of reinforcement stimulus or reward. Political communication tools such as Agenda-Setting, Priming & Framing support support associative learning in social conditioning. Earlier we have reported behavioural learning, memory, and cognition are thought to require normal LTP of synaptic strength, which in turn requires plasticity related memory proteins. LTP involves consolidation of weak memory traces into strong memory trace. Strong information or strong stimulation in synaptic connections produce memory proteins so that they can be converted into long-term memory (LTM). In the socio-political context, this is equivalent to stronger emotion eliciting events such as terrorism, violence, happier events in life. But short term memory or weak memory cannot synthesize memory proteins and thus the information cannot be stored for long time. This is equivalent to political informations, religious and racial identities etc. But in social conditioning, when stronger emotion eliciting events are paired with weaker events, weak information also converted into strong by utilizing their memory proteins. Thus, we hypothesize synaptic tagging model as the neuronal base for associative learning process in social conditioning.

A-0212 DIFFERENCES IN EXPRESSION OF BASIC EMOTIONS DEPENDING ON THE VISUAL OR VERBAL MODALITY OF THE TASK

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People receive emotion-related information through different mediums. In vision, emotional content could be presented in either a visual or verbal modality (pictorially or as text). We ask whether the information presentation modality affects how people understand and express emotional content. For that, 108 healthy adults viewed a face or a word representing one of six basic emotions (anger, happiness, sadness, surprise, fear, disgust) or a depiction of neutral. Participants were asked to either mirror the emotion they saw on a picture (visual condition) or express the written emotion (verbal condition), while their EEG was recorded. The results indicated a differentiation in the speed of emotional

processing, with access to emotional content (compared to neutral) emerging earlier for emotive faces than for words. There was a clear distinction of fearful faces emerging in the N170 and LPP components, while the verbal condition produced distinctive differences for the happy stimuli. The valence of the emotions differentiating from others was reversed in the visual and verbal conditions, indicative of an intrinsic difference in processing of verbal and visual content. We propose the reasoning to be the importance of preferential processing of threat stimuli rising from biological (i.e., face) content, whilst the importance of processing positive content emerging from symbolic (i.e., words) emotional signals.

A-0215 PSYCHOPATHY PHENOTYPES AND INTEROCEPTIVE PROCESSING: A STUDY PROTOCOL WITH HEARTBEAT-EVOKED POTENTIALS

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Background: The Triarchic Model proposes that psychopathy encompasses three phenotypic expressions (boldness, meanness, and disinhibition), representing biobehavioural liability factors with distinct etiological pathways. Boldness and meanness theoretically share the low fear pathway, while externalizing vulnerability is mainly associated with disinhibition. Interoception may be a putative candidate to disentangle the underlying mechanisms of psychopathy phenotypes. The insula plays a major role in interoceptive processing and is a key node within the integrated emotion systems associated with psychopathy. Thus, exploring how cortical interoceptive processing is related to psychopathy phenotypes would provide valuable insights into their etiological mechanisms. Interoceptive predictive processing is the ideal framework to explore this link, as recent models postulate several key-points: (a) heartbeat-evoked potentials (HEPs) may be an index of precision-weighted interoceptive prediction errors; (b) heartbeat perception is related to attentional effects on interoceptive inputs (precision-weighted optimization of prediction errors); (c) interoceptive accuracy is the ability to increase the precision of interoceptive inputs by focused attention. Goal: To explore how attentional modulation of HEPs is related to psychopathy phenotypes. Methods: A community-sample (n > 50) will complete EEG and ECG recordings while performing the heartbeat attention task (alternating blocks focusing their attention either on their own heartbeat or a sound stimulus - interoceptive vs. exteroceptive condition). Participants will also complete self-report questionnaires of psychopathy and the heartbeat tracking task to measure interoceptive accuracy (ability to count their own heartbeats without any external information). Expected Results: We postulate that impaired interoceptive processing will be associated with the low fear pathway, hindering the ability to effectively perceive somatic sensations that signal the emotional valence of situations. Thereby, we expect that boldness and meanness will be associated with reduced heartbeat tracking task performance. Attentional modulation of HEPs amplitude (enhancement

in the interoceptive condition) will be positively associated with heartbeat tracking task performance and negatively associated with meanness and boldness.

A-0216 DIFFERENCES IN CORTICAL WORKING MEMORY CODING OF BIOLOGICAL MOTION OF ONESELF AND OTHERS

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Establishing arbitrary associations between the conceptual self and a diverse range of stimuli leads to facilitated processing of these stimuli. However, little is known about how creating such abstract self-associations influences various aspects of the bodily self. In order to test this issue we conducted an fMRI study in which participants were told to hold in working memory a goal-directed full-body movement (displayed by point-light walkers) arbitrarily labelled as either one's own movement, or as movement performed by someone else (one of two stranger-identities). We conducted an assumption-free searchlight multivariate decoding analysis to reveal brain regions that contain specific types of information during the working memory delay phase. We were able to decode whether a memorized movement was associated with the self or a stranger from the left inferior frontal gyrus (pars opercularis), and the left middle frontal gyrus. These two areas are frequently reported as involved in action understanding, and there is evidence suggesting that they form part of the human mirror neurons system. At the same time, activity in these two areas did not differentiate between two stranger-identities. Moreover, in the same task we found that presentation of self-associated abstract cues (colored circles) led to stronger activation in the ventral medial prefrontal cortex than presentation of cues associated with other identities. Our results suggest that arbitrary association of a goal-directed movement with the self (as opposed to some other identity) leads to differential activity in action recognition and action simulation areas, in contrast to abstract stimuli associated with the self, which modulate the activity in medial prefrontal areas.

A-0217 EMOTION PERCEPTION AND ITS PHYSIOLOGICAL SIGNATURE: MODALITY MATTERS!

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Various non-verbal markers of emotional experience, ranging from facial expressions and body postures to indicators of physiological arousal (e.g. pupil dilation), are associated with the communication of affective states in humans. Research on facial mimicry has highlighted automatic alignment with others' expressions as a crucial mechanism in sharing emotions, including corresponding changes in autonomous nervous (ANS)

system activity. However, it is still unclear whether subtle facial cues and bodily displays of emotion elicit changes in an observer's physiological state which may eventually relate to emotion recognition, as has been postulated by the facial feedback hypothesis for facial expressions. The current study aims to create a more holistic picture of emotion perception by (1) using three different sources of emotional information (prototypical facial expressions, bodily expressions and subtle facial cues) and (2) measuring changes in multiple physiological signals (facial electromyography, skin conductance level, skin temperature and pupil size). The results show that emotion-elicited changes in an observer's physiology depend on both the modality of the information source as well as on the type of measure. Hence, gathering more information on the level of the sender as well as the perceiver paves the way to a more fine-grained description of emotional signal transfer.

A-0218 A MMN MULTIFEATURE PARADIGM FOR PROFILING THE CENTRAL AUDITORY PROCESSING OF ADULTS.

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Previous studies have found that multifeature paradigms allow the recording of Mismatch Negativity (MMN) ERP responses under a short period of time as well as examining the central auditory processing. In the current study, we developed a mulitfeature paradigm, which included five types of changes in the parameters of speech: vowel change, consonant change, change in prosody (word stress), frequency and intensity. All changes were made in the initial syllable of a CVCV pseudoword according to Hungarian phonology. Our aim was to investigate whether adults were able to pre-attentively discriminate speech sound features which are altered according to acoustic or phonetic parameters. Native speakers of Hungarian were recruited; none of them had any speech or hearing impairment and were university students. During the experiment, naturally produced pseudowords were presented through to the participants. The stimuli consisted of a standard disyllabic word and five types of deviant. Simultaneously with the auditory pseudowords, participants were asked to watch a film without sound and to focus on it. We found similar results to previous literature: specifically, MMN responses were elicited by all the deviants, however with different amplitudes. The vowel and consonant deviants elicited the largest MMNs, while the intensity and pitch deviants the smallest. Word stress deviants elicited a characteristic double negativity, found in our earlier studies. The results indicate that our multifeature paradigm could be effectively utilized to elicit the MMN, and allows to apply the MMN as a potential biomarker for the assessment of phonological processing of children with possible reading disorders in future studies.

A-0221 REAL-TIME WRITING AND PSYCHOPHYSIOLOGICAL CORRELATES OF EXPRESSIVE WRITING

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Concealing memories and emotions related to a traumatic event seems to have negative effects on physical and mental health. Expressive writing is a particular form of writing trough which a person discloses a personal deeply charged emotional event, typically a major trauma. Expressive writing has been associated with a considerable number of health benefits. These positive benefits might be due to an opportunity for increased emotion regulation during expressive writing. To study this, we recruited 57 first-year university students at the University of Porto. Each participant was randomly assigned to one of two groups to complete a writing task, for 15 minutes. The control group wrote about daily routine, and the expressive writing group about a traumatic event. Real-time writing data (pauses and bursts) and psychophysiological (ECG and EDA) were recorded throughout the writing task, to examine writing and physiological correlates associated with emotion regulation. As expected, both groups showed increased skin conductance (SNS activation) and HF (PNS activation) from baseline to writing. While writing, in comparison to the control group, the expressive group made longer pauses and showed increased sympathovagal balance (LF/HF ratio). After writing LF/HF ratio remained higher in the expressive group. These findings together with textual content analysis seem indicative of emotion regulation happening during expressive writing.

A-0224 INVOLVEMENT OF CENTROMEDIAL AND BASOLATERAL SUBDIVISIONS OF THE HUMAN AMYGDALA IN INSTRUMENTAL LEARNING.

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Several animal studies suggest that the different subdivisions of the amygdala, in particular the centromedial (CMA) and the basolateral (BLA) groups of nuclei, could serve different subsystems that are differentially involved in the appetitive and aversive learning. Majority of animal data point to the crucial role of the CMA and BLA in appetitive and aversive instrumental learning, respectively. However, little is known as to the role of amygdala subdivisions in those types of learning in humans. Our study addressed this issue. We used an fMRI method and probabilistic operant conditioning task consisting of appetitive and aversive runs. A naturalistic reinforcer combined of gustatory (pleasant, unpleasant or neutral liquid) and visual (a video of a person drinking this liquid) stimuli followed a visual cue in a probabilistic manner. Thirty three healthy volunteers had to choose between two

visual cues, one of which was followed by an affective reinforcer (pleasant in appetitive runs and unpleasant in aversive runs) and the other one by a neutral reinforcer. Prediction errors (PEs) that reflect the difference between actual and expected outcomes were used as measures of learning. We used the estimates of prediction errors from Rescorla-Wagner learning model. The activity within the amygdala was localized using an in-house parcellation mask dividing the structure into the CMA and BLA subdivisions. In appetitive runs, the PE was correlated with the BOLD signal in the left CMA (when the outcome was either better or worse than expected), and in the left BLA (only when the outcome was better than expected). In aversive runs, the PE was not correlated with the BOLD signal within the amygdala. The results showed that both the CMA and BLA in humans are involved in appetitive, not aversive, instrumental learning. Interestingly, only the amygdala in the left hemisphere seems to be involved in this type of learning in humans. The work supported by the National Science Centre (Poland), grant no. DEC-2014/15/B/HS6/03658.

A-0225 A REAL-WORD TRIAL OF EMOTION RECOGNITION TRAINING IN INDIVIDUALS TAKING ANTIDEPRESSANTS

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Individuals with depression display negative processing biases when interpreting emotional information, such as ambiguous facial expressions. These biases may play a causal role in the disorder, and there is some evidence that antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), may correct these biases. Therefore, they have been identified as a potential target for intervention and multiple cognitive bias modification (CBM) interventions have been developed. We have conducted a randomised controlled trial of a CBM intervention that targets biased processing of ambiguous facial expressions, through emotion recognition training, in individuals taking SSRIs to treat low mood. Participants (n = 215) completed four online sessions of either active or sham emotion recognition training over 10-days. Mood and cognitive outcomes were assessed at baseline, immediately post-training, and at two-week follow up. The primary outcome of interest was self-reported quality of life enjoyment. Secondary outcomes were self-reported daily stress, anxiety, anhedonia and depressive symptoms. There was strong evidence that training led to more positive interpretations of emotional faces, both immediately post-training (b=2.30, 95% CI= 1.87 to 2.72, p<.001) and at follow-up (b=1.82, 95% CI=1.42 to 2.22, p<.001). There was little evidence that this transferred to quality of life enjoyment immediately post-training (b=0.02, 95% CI=-0.01 to 0.04, p=.243), but weak evidence for an improvement at follow-up (b=0.03, 95% CI=0.00 to 0.66, p=.077). There was no evidence of transfer effects to the secondary mood outcomes. Exploratory analyses showed some evidence for mood improvements in younger participants. This study

provides a test of a CBM intervention in a real-world setting and demonstrates emotion recognition training can be administered remotely and successfully as an adjunct therapy to SSRIs. However, due to little evidence of transfer effects, this form of CBM requires further development before being used to treat low mood.

A-0226 UNDERSTANDING NEUROCOGNITIVE WORKING MECHANISMS OF RELAPSE PREVENTION – THE ROLE OF EMOTION PROCESSING IN REMITTED MAJOR DEPRESSIVE DISORDER

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Major depressive disorder (MDD) is one of the most prevalent psychiatric disorders, characterized by a high relapse rate (Kupfer ea,2012). Preventive Cognitive Therapy (PCT) has been shown to be effective in reducing relapse risk (Bockting ea,2015). We studied whether preventive effects could be explained by therapy-induced changes in prefrontal control during effortful emotion regulation. Fifty medication-free remitted MDD patients (age range=18-55 years) were included for the NEWPRIDE trial (METc-number:2015.284). Twenty-five patients were randomized to eight sessions of PCT versus 25 to a waiting-list. At baseline (T0) and after PCT or waiting-period (T1), all patients underwent 3T-fMRI scanning during an emotion regulation task including the following conditions: positive/negative/neutral attend, positive upregulate, and negative downregulate. Each condition was presented 3 times in blocks of 4 pictures. After each block, participants rated their affect on a VAS-scale (0:very negative to 100:very positive). Following standard pre-processing and event-related modelling of fMRI-data (SPM12), contrast-images for regulate-positive/negative (>positive/negative attend) were entered in a linear mixed-effects model (3dLME/AFNI), with time and valence as within-subject levels and group as between-subject predictor. We tested for effects of Group x Time and considered effects significant at $p<0.05$ (3DClusterSim/AFNI). Following PCT positive pictures were rated more positive and negative pictures less negative, but effects did not reach significance (MANOVA:p=0.056). fMRI-data showed a Time x Valence x Group interaction in the dorsolateral pre-frontal cortex (dlPFC) and anterior cingulate cortex (ACC), resulting from decreased activation over time during positive regulation in the PCT-group only. These findings suggest that prefrontal regulatory control changes following PCT in a valence specific manner: During positive regulation individuals who received PCT showed lower activation in the dlPFC and ACC, key regions for cognitive control of emotion. This suggests that PCT affects positive regulatory capacity, which might buffer against negative affective states and hence prevent relapse.

A-0230 THE NEUROPHYSIOLOGICAL CORRELATES OF ATTACK AND DEFENCE CONFLICTS

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There are no studies exploring the neurophysiological correlates of the Predator-Prey Game, a game theory paradigm designed to operationalize attack and defence conflicts, despite being extensively used to explore decision making processes in economic tasks. In the present study, we explored the relationship between the ERP components associated with feedback, namely feedback-related negativity (FRN) and feedback-related P300 (frP300), and investment in an adapted version of the Predator-Prey Game. Forty-seven (28 female) community-dwelling volunteers without history of neurological disease were recruited, and played the PPG game both as predator and prey, while EEG signal was recorded with a 128 channels sensor net. Behaviour results showed that individuals tend to invest more when playing in defence, rather than in attack. Electrophysiological data showed FRN and P300 to be sensitive to the valence of feedback, with increased amplitudes of FRN and frP300 registered for loss feedbacks. We also found frP300 to be sensitive to the role played, with increased amplitudes when playing in predator role. These findings suggest that brain correlates of outcome may be a promising indicator of investment in attack-defence paradigms.

A-0235 THE DEVELOPMENT OF A TEST BATTERY FOR THE ASSESSMENT OF SOCIAL COGNITIVE DEFICITS IN TRAUMATIC BRAIN INJURY PATIENTS: ISSUES AND CONSIDERATIONS

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Clinicians often encounter patients with traumatic brain injuries (tbi) who exhibit problems in the processing of social information which can lead them to act inappropriately in social situations. However, being able to differentiate what specific social cognitive processes contribute to the deficit is problematic. Although various assessment tools do exist, these are not tbi specific and therefore clinicians are unable to decide what assessment tools and battery tests are most appropriate for their patients. Often this dissuades clinicians from using them, which impacts on the outcomes of their patients. Current academic research based on theoretical accounts of social cognition may help provide the solution to this problem. Although social cognition is one of the six key domains of cognitive function, theoretical accounts and definitions are much less concrete than with other domains, such as learning and memory, complex attention and executive functions. For this reason, assessment tools must be developed accordingly and must be able to

differentiate elements of social cognition and assess the level of deficit in a quantifiable way. However, for this to be possible in a practical setting, further attempts are required to bridge the gap between research and application. The current objective of our research is to investigate these problems in more depth, presenting an explanation for the gap and possible solutions. Our current approach is the development of a test battery that has both quantitative and qualitative elements and is intuitive for clinicians to use. This will increase the potential for a more holistic approach to social cognitive deficits in tbi and inform rehabilitation strategies. There is significant importance in analysing the feasibility of these tests, for achievability and practical usage and our research is focused on providing robust assessments for clinical use.

A-0238 PROCESSING OF OWN AND OTHER-AGE FACES: AN ERP STUDY

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People are typically more accurate at remembering own-age faces, an effect known as own-age bias. According to this perspective, daily routines increase the amount of exposure to people of the same age, leading to improved skills in processing own-age faces. Moreover, these faces may also be more socially relevant as they represent potential partners of interaction. Although the own-age bias has been verified for memory and attention, several studies have explored this effect in emotional identification. The results of these studies have been consistent, surprisingly showing that younger and older adults are more accurate at identifying emotions in younger faces. Such findings may reflect higher ambiguity of older adults' faces due to age-related changes in physical facial features, such as muscle tissue or wrinkles. If this hypothesis is confirmed, we could hypothesize that older adults' faces would elicit higher N170 amplitudes than younger faces. The N170 is a negative waveform peaking approximately 180ms post-stimulus at occipitotemporal sites, being associated with the earliest stage of facial structure encoding. The current study aims to test this hypothesis, comparing the N170 of a sample of young adults elicited by faces of actors of different ages. To this purpose, participants visualized neutral faces of younger, middle-aged, and older actors, during EEG recordings. We have collected neural data from 24 participants (16 females, Mage=29.3; SDage=6.53), whose results showed that faces of younger, middle-aged and older adults elicited similar N170 amplitudes. This lack of differences may unveil that older adults' faces have similar ambiguity to younger faces, or that those features might be affecting other ERP components related to face processing. These results will be further explored and compared with preliminary evidence from older adults, in order to uncover the neurophysiological evidence for the (eventual) own-age bias in face perception.

A-0240 MULTILEVEL ANALYSIS OF FLOW – GENETIC FACTORS AND ELECTRODERMAL CORRELATES

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Flow is a concept of positive psychology, a stat characterized by the complete absorption in what one does. To date, little evidence is available in the literature about the genetic factors and physiological correlates of flow proneness and flow experience. Here, we present two studies using the Swedish Flow Proneness Questionnaire and the Flow State Questionnaire, filled out by Hungarian young adults. DNA samples were obtained for psychogenetic association analyses in one of the studies. Association analyses revealed association between the DRD4 VNTR and flow proneness (N=307). 7-repeat carriers experience flow more often as non-carriers ($p = 0.092$). Females with allele 7 showed significantly higher flow proneness as compared to non-carriers, which was most pronounced in the domain of leisure time ($p = 0.002$). No associations were found in case of males. We also explored electrodermal correlates of flow proneness and flow experience on an independent sample (N=160). Results showed a negative correlation between flow proneness total score and electrodermal activity (EDA) level measured during a 4-minute breathing exercise ($r = -0.244$; $p=0.099$). A similar pattern was observed between the total score of flow proneness and EDA level measured during the first two minutes of a verbal exam ($r = -0,286$ $p=0,085$). In the second experiment, we observed a significant negative correlation between the number of SCRs measured during the Balloon Analogue Risk Task and the Flow state questionnaire ($r = -0,268$ $p=0,028$). These results suggest, that higher flow proneness and flow state might be associated with lower EDA levels (indicating lower arousal). The present studies demonstrate novel findings in the field of genetic and physiological aspects of flow. Exploring sympathetic activity measures and reward related genetic markers could provide further insight into the neural mechanisms underlying this unique mental state.

A-0241 MAPPING JOINT ACTIONS IN FREE PLAY

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Play, and especially free play is the most important activity in childhood, with clear and long-lasting benefits for academic learning. Children develop various skills through play, a voluntary, enjoyable and pleasurable activity, that supports their understanding of the

social world through interaction with the environment, including their peers. According to Prof. Celia A. Brownell joint action takes many forms at multiple levels of complexity. Its broadest definition is "the coordination of behavior in time and space between individuals without benefit of an outside physical connection" (Brownell, 2012 pg. 1). Our study aimed to characterize free play activity of toddlers in a study including various kindergarten age groups. We used wireless sensor technology to portray social interactions during free play activities on 3x5 consecutive days. We defined joint action based on the following criteria using time and space dimensions: two (or more) individuals are in joint action if they are within a 1-meter range of 160° in front of them for at least 5 seconds. Joint activity remains to be considered continuous unless the above time and space criteria discontinues for more than 30 seconds. Subsequent measurements showed high test-retest reliability. Based on findings we propose a new approach for an objective, automated assessment of joint actions during free play in kindergarten groups, providing a range of behavior measures characterizing sociability. By comparing results from repeated measurements, it is possible to monitor development of social skills and group structure formation. Real-time measurement allows instant feedback on most important behavior characteristics and an efficient tool for monitoring change in maladaptive patterns.

A-0242 INCONGRUENCE BETWEEN FACIAL EMOTIONS AND CONTEXTUAL INFORMATION: AN FMRI STUDY

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Numerous studies stressed the importance of the context on emotional information processing. According to the model of Bird and Viding (2014), the situation understanding system together with the affective cue classification system are responsible for coordinating the contextual and emotional information processes. If incongruence arises between emotional and contextual information, the system linked to theory of mind (ToM) is recruited. In our paradigm, the Emotional Shifting Task (developed by Biró and Cserjési), positively and negatively valenced pairs of pictures were used. The firstly presented picture was a detail from the secondly presented whole picture. The valence of the firstly presented picture changed when it was placed into a context that might have resulted in incongruence between the firstly presented detail (facial expression) and the secondly presented whole picture (contextual background). Our aim was to examine the neural response to the incongruence between the facial emotional information and contextual information. In the present study fMRI data of thirty-one (18 females, mean: 24.44; SD: 3.40) healthy volunteers were analysed. When positive facial information was presented in a negative context activation in the middle and superior temporal gyri, the superior, middle and inferior frontal gyri, the inferior parietal gyrus, the PCC and the precuneus

were observed. In contrast, when negative emotional faces were placed into a positive context, activation in orbitofrontal cortices were detected. Our results partly support the theoretical model of Bird and Viding (2014) as the activated brain regions detected to positive emotional expressions are linked to the ToM system of the brain. Key words: emotional faces, context, ToM system, fMRI Bird, G., & Viding, E. (2014). The self to other model of empathy: providing a new framework for understanding empathy impairments in psychopathy, autism, and alexithymia. Neuroscience & Biobehavioral Reviews, 47, 520-532.

A-0244 HIGHER SCORES ON OWNER-RATED ADHD QUESTIONNAIRE ARE ASSOCIATED WITH POORER SLEEP EFFICIENCY IN DOGS' SLEEP EEG

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Behavior disturbances are frequently associated with low sleep quality reflecting a disbalance of certain brain areas in humans with attention-deficit/hyperactivity disorder (ADHD). Recently, dogs have been used in non-invasive cognitive neuroscience due to their trainability without fluid/food restriction and behavior similarities with humans, such as attentional skills and impulsivity assessed by human ADHD questionnaires validated for dogs (d_ADHD). We wanted to know whether dogs' ADHD characteristics would be associated with their electroencephalogram (EEG) parameters during sleep. Thus, we assessed the EEG of 38 family dogs with their owners during a 3-hour long polysomnography and analyzed the association of their brain data and owner-reported d_ADHD data. We found that higher total d_ADHD scores were associated with lower sleep efficiency, longer periods of wakefulness after sleep onset and less sleep cycles. Regarding brain electroactivity, the high ratio of theta/beta bands during sleep was also related to higher total d_ADHD scores, which in humans is a common neural trait in individuals with ADHD. Our results are in line with studies in which the poor quality of sleep in children with ADHD is associated with specific EEG macrostructural and spectrum parameters, validating dogs as models for attentional and affective neuroscience studies.

A-0245 HOW DOES EMOTION CONTRIBUTE TO THE ROLE OF METACOGNITIVE ABILITY IN CONFORMITY?

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Opinions of others influence our behavior causing an adjustment in our decisions. In line with this, we previously provided evidence that people align their metacognitive evaluations (i.e. post decision confidence) as a function to the information provided by social cues, even when these cues were non-informative and were to be ignored. In a

later study we showed that post-decision social feedback led to decision change as a function of how confident participants were before receiving the feedback. Here, our first question is if metacognitive ability mediates this effect. Metacognitive ability is a parameter referring to one's ability to discriminate one's errors from correct responses. We predicted participants with high metacognitive ability to be less susceptible to social feedback in changing their decisions. Our second question is if emotion-related variables, such as anxiety and depression have a role in in this relationship between metacognition and social influence. To address these questions we asked people to perform a 2AFC perceptual decision task, and provided them with randomly presented social feedback (positive, negative or neutral). Participants rated their confidence in their decisions before and after receiving feedback, and lastly were given an opportunity to change their initial decisions. Our results were in line with previous findings that metacognitive evaluation of the given decision influenced how feedback gets integrated and if decision is updated. Importantly, a strong and negative association between metacognitive ability and susceptibility to social feedback was observed. Preliminary analyses with emotion-related variables revealed a positive correlation between metacognitive ability and state anxiety, but not with trait anxiety or depression. Overall, this study provided novel insights into the interplay between metacognitive abilities, emotional states and social influence.

A-0246 AGE-RELATED DIFFERENCES IN A 'REFERENCE-BACK' TASK BOTH WITH AND WITHOUT IRRELEVANT DISTRACTORS

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The 'reference-back paradigm' is designed for isolating the processes of the n-back task by using reference and comparison trials, where the participants have to compare the current target with the stimulus in the last reference trial. The paradigm is suitable for separating the maintenance and updating functions in working memory (WM), in addition to gate opening (the switch cost in reference trials) and gate closing (the switch cost in comparison trials) assumed by the prefrontal-cortex basal-ganglia WM model. We used referenced-back task to assess how age affects these WM processes by examining two age groups, the younger (aged 18-30, N=29) and the older (aged 60-75, N=30). In the second phase of our experiment we used task-irrelevant distractors (faces and scrambled faces) in the background of the reference-back task to examine if the elderly are more likely to process irrelevant stimuli, and if so, then which stage or subprocesses of the WM are affected by these stimuli. Although we failed to find any differences in the gate opening/closing mechanisms and updating cost between the two age groups; however, we observed that older participants needed more time for substitution, this being the facility to update WM with new information, and for matching: comparing of the current and the reference stimuli to each other. The age-related differences decreased when

irrelevant distractors were presented. And despite both aging group not being able to ignore the task-irrelevant stimuli as evidenced by performing better than by chance; in the old-new task, contrary to our expectations, young adults were able to outperform the elderly by identifying more faces. Behavioural data and event-related potentials (P2 and P3) will be discussed in regard to present age-related differences in WM. The research was supported by the Hungarian Research Fund (OTKA K 115457).

A-0248 AUDITORY PERCEPTION AND PUPILLARY RESPONSES UNDER DIFFERENT LUMINANCE LEVELS

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There are a number of factors influencing our perception of emotional auditory contents, such as our experience and immediate surrounding when the stimuli are presented. In the current study, we present negative, neutral, and positive auditory stimuli under low, intermediate, and high luminance. We are interested in looking at the valence rating and pupillary responses to these categories of auditory stimuli in varying luminance levels.

A-0249 EXPLORING THE DIFFERENCES BETWEEN GAZE AND ARROW: IS IT POSSIBLE THAT YOUR GAZE DISTRACTS ME?

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Gaze represents an important medium through which we can communicate socially relevant information, such as our focus of interest, private thoughts, emotions, and intentions. Previous studies have shown that the gaze is processed differently from arrows, eliciting a reverted effect of congruence in the context of a spatial interference paradigm. This seems to confirm that attention to gaze could be a special attentional process. Several possible explanations have been advanced for the reversion of the spatial interference effect observed with gaze stimuli. One of them is the "join distraction hypothesis", according to which on congruent trials, gazes direct attention outside the task, causing a "joint distraction" that consequently make more difficult the processing of the gaze and increase reaction times. To test this hypothesis, in the present study, it was created a context where participants could shift their attention within the task or outside it. Additionally, we also explore eye movements of participants during the task. When we used a covert attention version of this spatial interference task, participants only broke fixation on 6% of the trials. However, it is important to explore what happens when attention is overtly oriented. We hypothesize that the participant should spent more time looking outside the task in gaze trial than in arrow trial. The study of attentional mechanisms underlying gaze processing

could have important clinical and rehabilitation implications in populations with impairment patterns of gaze processing such as in autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD) and psychiatric disorders.

A-0253 THE NEURAL AND BEHAVIORAL CHARACTERISTICS OF TIMING FUNCTIONS IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

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In recent years, studies have suggested that individuals with attention-deficit/ hyperactivity disorder (ADHD) have deficits in timing functions. For instance, they have difficulties in adjusting their behaviour to externally or internally defined timeframes (i.e., motor timing), estimating and discriminating time (i.e., perceptual timing), and considering future outcomes to make their decisions or actions (i.e., temporal foresight). Previous neurocognitive and neuroimaging studies have suggested that these deficits are associated with the frontal and motor areas and that intra-individual variability in timing behaviour could be a potential marker of ADHD. However, there are few studies that have investigated the relationship between neural oscillatory activity measured with electroencephalograph (EEG) and timing functions in ADHD. In this study, we aimed to evaluate the neural and behavioral characteristics of timing functions and their relationships with ADHD. EEG activity was recorded while participants performed a rhythmic tapping task which they consecutively tap a keyboard key for 200 times at their own tempo. The intra-individual variability of timing behaviour was calculated from the difference of the time intervals between taps. ADHD tendencies were assessed using the Adult ADHD Self-Report Scale (ASRS) and participants were divided into two groups based on their scores: high-ADHD and low-ADHD. We found that the frontal beta amplitude was associated with high-ADHD and high-ADHD participants showed a large intra-individual variability in timing behaviour. Our findings suggest that the neural correlates underlying the timing deficits in ADHD are associated with an increase in frontal beta activity and interventions to decrease the activity could be used for ADHD treatment.

A-0254 IDENTIFICATION OF EMOTIONAL EXPRESSIONS AND ITS INTEGRATION WITH GAZE DIRECTION IN INDIVIDUALS WITH HIGH AUTISTIC TRAITS.

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Discriminating gaze direction is a powerful key that not only directs attention in a particular

direction but also provides socially relevant information. In recent years, specific attentional effects linked to gaze have been found using a spatial interference task. Concretely, gaze shows an effect of reversed congruency, i.e., faster responses for incongruent than for congruent location-direction trials, in comparison to other non-social directional stimuli, such as arrows, for which the standard congruent effect is observed. Importantly, this reversed effect is modulated by the emotional expression of the face (Torres-Marín, Carretero-Dios, Acosta, & Lupiáñez, 2017). This study attempts, on the one hand, to replicate the emotional modulation in the reverse congruency effect and, on the other hand, to study the effect in a population with high autistic traits. For this purpose, students with high and low scores in the Autism Spectrum Quotient participated to perform the interference task and an additional emotional identification task. We found that, while both groups showed a reverse congruency effect and were equally accurate in identifying emotions, just in the low AQ group the reverse congruency effect was modulated by the emotional expressions, whereas high AQ participants showed no modulation by emotion. Thus, these results suggest that individuals with more autistic traits may have difficulty integrating multiple communication signals based on their emotional value.

A-0256 AN ERP STUDY ON THE INFLUENCE OF EMOTIONAL SELF-RELEVANT STIMULI ON ATTENTION AND MEMORY

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Self-related information is processed faster and recalled more accurately compared to information not related to the self. Similarly, emotion has a well-studied effect on attention and memory. This is potentially the result of an automatic process which prioritises emotional and self-relevant information. This EEG experiment aimed to explore the neurophysiological mechanisms involved in processing emotional and self-related stimuli. To induce emotion and self-relevance, a novel adaptation of the perceptual matching task was used. The original perceptual matching task links the self and distant-other to an arbitrarily assigned geometric shape. In this experiment, the geometric shapes were replaced with a specific font-colour. The self and a distant-other were linked to an arbitrarily assigned colour via instructions. For example, "You are jade, and a stranger is orange". The trials comprised of positive or neutral trait-words in either jade or orange font-colour. Underneath each word was presented the label 'myself' or 'stranger'. The participants had to decide if the paired font-colour and label matched with the provided instructions. The participants were shown 15 blocks of 28 trials, and after each block a free-recall test followed. The matching task showed a clear effect of self. Participants responded faster and more accurately to the self-related words compared to the other-related words. Further support was found via a more negative N100 and a more positive LPC for self-related words, compared to other-related words. Taken together, the two ERP components potentially reflect an initial automatic capture of attention by self-related information (N100) and the maintenance of the attended information (LPC) into memory. The free-recall data showed that positive self-related words were more often correctly

recalled compared to any other condition. To conclude, this experiment demonstrated a beneficial effect of self during early attentional processing and an effect of emotional self during later recall, using the same stimuli.

A-0257 NEURAL REWARD RESPONSE AND MOTOR INHIBITION ARE RELATED TO IMPULSIVITY IN DOGS

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Impulsivity, a manifestation of disinhibition, is associated with individual differences in reward processing and motor control in humans, including at the neural level. Animal model research may provide additional insight into the specific nature of these relationships. The domestic dog is a viable model for studying several aspects of human behaviour and cognition, including impulsivity, due to similarities in evolutionary processes that shaped the behaviour of the two species. To identify possible associations between dogs' impulsivity, reward processing and motor inhibition, we explored the relationship between their owner-rated hyperactivity-impulsivity scores (reflecting difficulties with behavioural and motor inhibition), their reward-related brain responses and head micromovements during awake auditory fMRI. Unrestrained family dogs (N = 14) were presented with praising (P) and neutral (N, meaningless to the dogs) speech delivered by their owner (O) or a familiar person (F). Findings indicated that in dogs, greater impulsivity scores were associated with (1) greater brain response in a reward region (left caudate nucleus) to their owner's praise compared to a familiar person's praise, (2) greater deactivation in a motor control region (presplenial gyrus) in response to their owner's praise compared to other conditions, and (3) greater micromovements during scanning, independently of condition. These results suggest that for more impulsive dogs, verbal praise may be more rewarding, and that they may need to recruit more motoneural resources for behavioural performance that is comparable to that of less impulsive dogs. Head micromovements are an objective index of hyperactivity-impulsivity, and the dog is a plausible model to investigate the neural underpinnings of this trait. Keywords: reward response, motor inhibition, impulsivity, awake dog fMRI

A-0259 IMPLICIT LEARNING OF HUNGARIAN VOWEL HARMONY

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Implicit learning, occurring without intention or awareness of what is being learnt, is considered an empirical framework to address the process of acquisition. When does

it occur and to what extent is it constrained by prior knowledge? To contribute to our understanding of implicit learning we investigated the following questions: 1) Can Polish native speakers implicitly learn Hungarian palatal-velar vowel harmony (P-VVH)? P-VVH dictates that the suffix matches its vowel type (front or back) to the vowels in a word. Such a rule is not present in Polish. 2) Will they learn it better when the vowels in a word are familiar from Polish? In a self-paced listening task, participants heard 132 Hungarian nouns (twice). In an unexpected test they heard more nouns, and were asked to indicate if they had appeared in the training. Most of the nouns were new, but were formed in one of two ways: they all had a familiar stem and a suffix that hadn't appeared together in training and either respected or violated P-VVH. Evidence for implicit learning was hypothesized as higher erroneous endorsement of new nouns respecting P-VVH (a false memory effect) than nouns violating P-VVH, in combination with reported lack of rule awareness. 44 participants were divided into experimental and control groups (the latter only had the test phase with the question „is it a plausible word in a European language or not?"). No one reported rule awareness. The results showed higher endorsement rate for correct than incorrect items, but contrary to our predictions, only for the items with non-Polish vowels. No such interaction between vowel type and grammaticality was obtained in the control group. The results suggest that Polish participants do implicitly learn Hungarian P-VVH, but only when vowels are different from their native ones. Hence, prior knowledge may have influenced implicit learning, but not in the way we predicted. We discuss possible reasons why this might have been the case.

A-0260 CONNECTING EEG SIGNAL DECOMPOSITION AND RESPONSE SELECTION USING THE THEORY OF EVENT CODING

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The neurophysiological mechanisms underlying the integration of perception and action are important topics of cognitive neuroscience. Nevertheless, links between neurophysiology and cognitive theoretical frameworks have rarely been established. The Theory of Event Coding (TEC) describes how perceptions and actions are bound in the "event files", but the neurophysiological mechanisms underlying these processes are poorly understood. We have used event-related potentials (ERPs), temporal EEG signal decomposition, EEG source localization, EEG network analyses, and multivariate pattern analysis (MVPA) to study the neurophysiology of event file processing. We show that the P3 ERP component and activity modulations in the inferior parietal regions (BA40) reflect event file binding processes. The relevance of this parietal region is confirmed by the source localization of temporally decomposed EEG. Furthermore, signal decomposition

results indicate that event file processes can be dissociated from pure stimulus and response processes in the EEG signal. Importantly, event file binding processes are also reflected by modulations in the network architecture of the theta frequency band. That is, when stimulus-response binding in event files impedes response selection, this was associated with a less efficient theta network organization. A more efficient organization was evident when stimulus-response bindings in event files facilitated response selection. Finally, MVPA results suggests that event files can be decoded from the temporally decomposed EEG data. Altogether, our multimethod approach promotes the idea of a multi-layered, widely distributed network behind event file coding. The results show how cognitive-theoretical assumptions of the TEC can be directly mapped to the neurophysiology of response selection..

A-0261 PERCEPTION-ACTION BINDING IS INCREASED IN TOURETTE SYNDROME

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Gilles de la Tourette's syndrome (GTS) is a complex neurological developmental disorder characterized by multiple motor and vocal tics. There is growing evidence that perceptual and cognitive processes play a crucial role in GTS. In particular, processes that link perception and action may be particularly affected in GTS, with an increased strength of the perception-action binding. However, this has not yet been experimentally investigated. Here we have examined adult Tourette's patients within the framework of the "Theory of Event Coding" and have chosen an experimental approach that allows us to test the strength of the perception-action binding directly in them. Parallel to the behavioral tests, the EEG was recorded and analyzed using methods of temporal signal decomposition and source localization. At the behavioural level, perception-action binding was increased in Tourette's patients. Moreover, a higher tic frequency was associated with a stronger perception-action binding. This suggests that perception-action binding is closely related to the occurrence of tics. The EEG data showed that behavioral changes cannot be explained by simple perceptual or motor processes. Instead, the cognitive processes that link perception to action in the inferior parietal cortex are crucial. Our results suggest that motor or sensory processes alone are less relevant for understanding GTS than cognitive processes involved in linking and restructuring the perception-action associations. A broader cognitive framework encompassing perception and action seems well suited to open up new avenues for understanding GTS.

A-0262 WATCHING THE BRAIN AS IT BINDS: EEG ALPHA/BETA POWER RELATED TO DISTRACTOR-RESPONSE BINDING

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Common-coding theories assume that stimuli and responses to them are integrated into stimulus-response bindings. These bindings are not restricted to target stimuli but generalize to distractor stimuli, too (distractor-response binding; DRB). Behavioral DRB is observed in sequential prime-probe reaction time tasks where repetition of the distractor retrieves the previous response. The present study used EEG to examine the relationship of behavioral DRB to brain oscillatory activity in the prime-probe interval. We found that the behavioral DRB effect was negatively related to alpha/beta power increase over centro-parietal electrodes during the prime-probe interval. Following the view that alpha/beta power increase reflects cortical inhibition, the negative brain-behavior correlation is suggested to reflect enhanced binding of distractors to responses in participants showing a larger behavioral DRB effect. The results support common coding ideas as a central concept in action control.

A-0263 ENCODING AND RETRIEVAL OF EVENT REPRESENTATIONS

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Paradigms investigating the binding of features into event representations commonly suffer from the problem that they are unable to distinguish between effects of/on event encoding and event retrieval. For instance, classical object- and event-file paradigms can only generate measurable binding effects if participants integrate feature codes into more or less coherent event representations and retrieve these representations, or parts thereof, upon presentation of a feature-overlapping event in the next or later trial. If, thus, some experimental manipulation moderates the size of feature-repetition/alternation effects, this might be due to its impact on the encoding of feature combinations, the retrieval of feature combinations, or both. I will provide a brief review of findings that converge on the assumption that typical experimental manipulations or individual characteristics affect the retrieval of event representations but not their encoding.

A-0265 EXTRAORDINARY BODIES: HOW THE ABLE-BODIED BRAIN PERCEIVES PERSONS WITH PHYSICAL DISABILITIES

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Persons with disabilities frequently complain of both unwanted attention and social avoidance by others. In this series of studies, we investigated how ablebodied observers

perceive person with physical disabilities. We used a multimethod approach comprising event-related potentials (ERPs), eye-tracking and behavioural methods to test perceptual processing style and attentional allocation when viewing disabled and able-bodied persons. We linked these with observers' implicit and explicit attitudes towards disabilities, intergroup disgust, trait empathy and social desirability. Bodies with missing limbs in particular were found to attract greater attention, and were more readily associated with negative concepts. Disabled bodies gave rise to enhanced positivities and markedly reduced body inversion effects (BIEs) at several stages of cortical processing (perceptual P1-N1, cognitive P2-P3, and emotional LPP complexes of the visual ERP), as well as in behaviour. Disabled persons are thus perceived differently, and predominantly on the basis of local body features, rather than as a configural whole. These findings appear to be in line with recent claims linking perceptual processing style (configural vs. feature-based) with the objectification and dehumanisation of lower-status groups. However, there was little evidence to support such claims from our attitudinal and personality measures. We propose instead that certain dispositions (high social awareness, empathic concern, expectations of negativity from others) lead to increased local attention toward atypical or missing body parts. This in turn reduces other process such as configural encoding, and enhances the attended body part's emotional salience.

A-0268 SELF-OTHER INTEGRATION AND ITS RELATION TO INTERBRAIN SYNCHRONIZATION

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Interpersonal synchronization is a necessity of many every-day tasks. It is particularly evident in tasks such as joint music making wherein musicians adapt and synchronize movements on a millisecond scale. Previous research has shown that the interpersonal synchronization found in musical performance also results in interbrain synchronization. However, in low-level musical interaction such as joint finger tapping, individual and dyadic differences yield a range of dyadic synchronization strategies. These strategies, such as mutual adaptation, leading-leading, and leading-following, cannot be differentiated by levels of synchronization alone, but rather by information flow within an interacting dyad. Here we present results from comparing EEG-recorded intrabrain dynamics in two groups of interacting dyads exhibiting the mutual adaptation and leading-leading strategy. We found differences in phase-locked activity within a right-lateralized temporoparietal brain network in the alpha range, as well as in directionality of information flow within this network. These findings suggest that synchronization strategies rely on self-other integration, and that this function may be performed by a temporoparietal brain network. Furthermore, the process of self-other integration may offer a window into the causal underpinnings of interbrain synchronization. Here, an every-present question is whether interbrain synchronization occurs simply due to shared perception of similar stimuli, or due to reciprocal behavioural dynamics. We propose that interbrain synchronization

is a function of real-time integration between the perception of other's actions and self-performed actions. This would entail a strongly dynamical nature of interbrain synchronization, and we discuss how this may be reflected in neural signals.

A-0269 UNDERSTANDING COLLABORATION: NEURAL EVIDENCE FOR INFANT'S ATTRIBUTION OF GOALS TO JOINT ACTIONS

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Interpreting others' actions as goal-directed, even when the actions are unfamiliar, is indispensable for social learning, and can be particularly important for infants, whose own action repertoire is limited. Indeed, young infants have been shown to attribute goals to unfamiliar actions as early as 3 months of age, but this ability appears restricted to actions performed by individuals. In contrast, attributing joint goals to actions performed by multiple individuals seems to emerge only in the second year of life. Considering the restrictions that this would impose on infants' understanding and learning from interactions in their environment, we re-examine this ability by introducing 9-month-old infants to simple joint actions, in which two agents coordinate their actions towards the same goal. To establish whether infants formed an expectation about the future actions of these agents, infants' cortical activity was measured using functional near-infrared spectroscopy (fNIRS). The recorded haemodynamic response indicated that infants attributed goals to simultaneous cooperative actions of two individuals. Thus, even prior to actively engaging in collaborative activities themselves, infants understand and attribute shared goals to observed joint actions, enabling them to learn from, and about, the complementary roles of social interactions, a central characteristic of human culture.

A-0270 NEUROFUNCTIONAL EVIDENCE FOR THE PREDICTIVE NATURE OF HUMAN INTERACTIONS

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Interpersonal coordination is rooted in the ability to anticipate the partner's next step and adapt accordingly. What neuro-cognitive processes support the refined predictive mechanisms at the basis of smooth interactions is yet a matter of debate. In a series of behavioral and neurofunctional studies performed in fMRI, we show that coordination depends on sharing a goal with the interaction partner: this shapes the agents' motor planning by allowing the integration of predictions about the partner's behavior in what we called a "Dyadic Motor Plan" (DMP). In the first set of studies, we showed that the presence of a DMP shapes action observation, overriding the participants' tendency to imitate the partner's incongruent action involuntarily; this is mediated by the predictive activity of

the left ventral premotor cortex, as also revealed by multivariate pattern analysis. In the second set of studies, we show that DMPs also affect action monitoring, by leading the participants to interpret a partner's error "as if" it was their own, through the recruitment of sensorimotor mechanisms, and leading to involuntary corrective attempts. Altogether, our results demonstrate that, during interactions, we process our partners' behavior to prospectively infer their contribution to the shared goal achievement, generating motor predictions for cooperation that are computationally costly at the individual level but finalized at ensuring the interaction success.

A-0271 INTERPERSONAL COORDINATION OF EXPRESSIVE SILENCE IN MUSICAL INTERACTION: A DUAL-BRAIN EEG STUDY

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Pauses are an integral feature of social interaction. For example, conversation partners often pause between conversational turns, and musical co-performers often pause between musical phrases. How do humans coordinate the duration of pauses to ensure seamless interaction? The current study investigated this question in the context of music performance. 40 trained pianists (20 pairs) performed a simple melody featuring fermatas (i.e. notated expressive pauses of unspecified duration) first alone (Solo) and then with a partner (Duet) while electroencephalography (EEG) was recorded. Behavioural findings confirmed that pauses represent a challenge for interpersonal coordination, as Duet partners' tone onset synchronization was reduced for tones following pauses. Duet partners facilitated synchronization of tone onsets following pauses by reducing pause durations. Pauses were shorter in Duet relative to Solo performance, and synchronization of partners' Duet tone onsets was enhanced for tones following shorter relative to longer pauses. EEG analysis revealed stereotypical signatures of action preparation during musical pauses, namely decreases in the power of cortical beta oscillations (13-30 Hz) during musical pauses (event-related desynchronization, ERD). Beta ERD did not differ between pauses in Solo and Duet performance, but was enhanced for shorter relative to longer pauses, suggesting that reduced pause durations in Duet performance facilitated a neural state of enhanced action readiness. Taken together, our findings provide insight into how humans navigate pauses in natural social interactions such as music performance, and demonstrate both behavioural and neural signatures of action preparation during time-varying pauses.

A-0272 INTER-BRAIN SYNCHRONIZATION DURING INTERACTION AND OBSERVATION IN A MIRROR-GAME PARADIGM

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Traditionally, research in cognitive neuroscience (including social neuroscience) has focused on individual brains, however, recent methodological developments allow parallel neuroimaging recordings in multiple interacting participants, so called hyperscanning or two-brain approaches. Some studies using these techniques reported inter-brain synchronization (IBS) when pairs of participants engage in social interaction. However, the majority of those studies used simple finger tapping tasks. From the current state in the field, it cannot be inferred whether IBS is merely a by-product of the tasks that have been used so far. In this study, we approach some of the shortcomings of earlier studies by investigating IBS during complex joint action and action observation conditions while measuring dual-EEG and recording hand movements. Complex movements are created by asking participants to play a version of the "mirror game" (Noy et al., 2011), where pairs of participants produce free synchronized movements using two sliders. Moreover, we introduce a novel, critical movement control condition: we ask participants to produce synchronized movements without interaction, by copying movements of a controlled visual stimulus. If IBS is not a mere by-product of the task, IBS should decrease during this movement control condition.

A-0273 THE NEURAL UNDERPINNINGS OF ALTERED INTERPERSONAL TRUST IN LONELINESS

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Loneliness is a painful condition caused by discrepancies between one's desired and actual social connections and associated with increased risk for psychological disorders and mortality. An ability to form new social relationships critically requires rapid trustworthiness decisions during initial encounters. The rationale of the present functional magnetic resonance imaging study involving a pre-stratified sample of healthy volunteers scoring high (HL, n = 42) or low on a loneliness scale (LL, n = 40) was to investigate to what extent loneliness affects risky choices in a repeated one-shot trust game. Individual inclinations to trust strangers were tested during a social distance task, and general trust preferences were measured by questionnaire. Our results show that HL participants prefer a larger social distance to an unfamiliar experimenter and report significantly reduced general trust compared to LL individuals. During trust decisions, HL participants exhibited blunted left amygdala reactivity which was linked to reduced monetary investments. Furthermore, trust decisions recruited the ventral striatum significantly less in HL participants. In conclusion, our results suggest that loneliness impairs trust by inhibiting amygdala-based evaluations of trustworthiness and attenuating striatal reward anticipation. As such, biased interpersonal trust appears to be a promising target for future interventions to reduce loneliness.

A-0274 LONELY HEARTS: AN FMRI STUDY ON INTEROCEPTION IN LONELINESS

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Interoception refers to the perception of internal bodily states. According to a recent model, interoception encompasses three dimensions: interoceptive accuracy (IAcc), the ability to track your own physiological states; interoceptive sensibility (IS), the perception of one's own ability and the appraisal of interoceptive signals; interoceptive awareness (IAwa), the relationship between (objective) accuracy and (subjective) sensibility. Recent studies have pointed out the relevance of interoception in social situations, showing e.g. that higher IAcc is associated to better emotion regulation in negative social situations and that temporary social exclusion is followed by an acute drop in IAcc. However, no studies have so far investigated the relation of interoception to long-lasting negative social conditions, such as loneliness. Loneliness is the negative subjective feeling that one's needs of social companionship are not being met. The aim of the current study was therefore to investigate how differences in interoception and its neural correlates are related to loneliness. To this purpose, 63 participants were administered a heartbeat counting task while undergoing MRI. Heartbeats were measured with a pulsemeter. Two control conditions were included: exteroception (counting tones) and time estimation (counting seconds). For each condition, accuracies were computed. IS was measured with a self-report questionnaire and with confidence ratings during the task. Loneliness was measured with the UCLA loneliness scale. Both behavioral and neuroimaging results will be discussed in light of the relationship of loneliness with the three dimensions of interoception, controlled for the other two conditions.

A-0275 YES, I CAN! EFFECTS OF POSITIVE SELF-INSTRUCTION ON SUBJECTIVE AND NEURAL CORRELATES DURING SOCIAL FEEDBACK

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In our daily lives we are permanently confronted with social evaluation. Negative social evaluation evokes anger, frustration and decreases self-esteem. Inner self-speech has a self-regulatory function, such as controlling affective reactions. However, this inner self-speech is often negative and evaluative, thereby inducing low self-esteem, fostering anxiety and depression. With the current study we wanted to modify inner self-speech via a cognitive training of positive self-instruction to modulate subjective and neural reactions to negative social feedback in 63 healthy women. Results indicate a general increase in self-esteem in the intervention-group (n=33) compared to the control-group (n=30) and less subjective arousal during the social feedback paradigm. This was accompanied by increased medial frontal cortex activation for feedback from women after the training for positive self-instruction. Thus, our results suggest that positive self-instruction

significantly modifies subjective negative reactions and neural activation associated with affective processing potentially reflecting self-regulatory processes. Fear of negative evaluation and inadequate dealing of social evaluative situations is prevalent in various mental disorders and might lead to social isolation. Our intervention is a promising tool to reduce subjective (maladaptive) reactions to negative social evaluations and to increase self-esteem. Implementations for situations of social exclusion will be discussed.

A-0276 WORKING HARD OR HARDLY WORKING: LONELINESS IS ASSOCIATED WITH HEIGHTENED MOTIVATION FOR INCLUSION WHEN IT IS EASILY ACHIEVED

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Loneliness is characterized by high need for affiliation on the one hand, and hypervigilance to social threat on the other hand. Although evidence suggests that lonely individuals crave social connection, it remains unknown if loneliness is associated with high motivation to be included in social situations. To examine motivation for inclusion we designed a novel task (Active Inclusion Task – AIT) based on the Cyberball paradigm, that for the first time allows participants to actively influence their inclusion by waving a virtual hand controlled by keyboard presses under different conditions of effort demand. We found that loneliness is associated with heightened motivation for inclusion only when the influence of each keypress was high (i.e. low effort demand) as opposed to low (i.e. high effort demand). These results are in line with previous research showing that once a "safe" opportunity to affiliate is presented, lonely individuals exhibit higher social motivation when compared to non-lonely individuals. Building on findings showing that intranasal administration of oxytocin increases the salience of social stimuli, we further examine whether oxytocin will increase the motivation for inclusion in lonely individuals under high effort demand as well. These findings may shed light on the mechanisms underlying social dysfunction in loneliness.

A-0277 CAN OXYTOCIN PROTECT AGAINST SOCIAL ISOLATION: OT EFFECTS ON MICROBEHAVIORS DURING A SHARED GROUP VIEWING TASK

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We are born into groups and "join" others very early in life. Groups are hugely important for how we function in society. Yet, despite the crucial importance of belonging to groups for their protective effects against isolation, very little research has delved into the biological basis of social engagement in groups. In the current study we aimed to bridge this gap by exploring the role of oxytocin on microbehaviors that support the very initial social connections made between group members. Consistent with the social salience model,

we expected oxytocin to enhance the effects of context on group members behavioral displays of self-regulation and connectedness. The study consisted of 29 3-person groups (N=87) that were asked to view emotional movie clips together (funny and disgusting films, counterbalanced) 45 minutes following the administration of oxytocin or placebo. For the purpose of the current talk, we will focus on microbehavioral results that emerged during the presentation of disgusting films. Oxytocin indeed enhanced the amount of times individuals displayed self-regulation acts (specifically, fiddling). Additionally, only if the funny film was not presented first, oxytocin enhanced group members gaze aversion from the screen at the individual as well as the group-synchronized level. These results indicate that when a shared positive "bonding" experience was lacking, then oxytocin enhanced the salience of disgusts' influence on communicative displays of regulation and avoidance in the group, potentially enhancing adaptive alertness that may crucial to group function at the very initial stages of group bonding.

A-0283 BEING HUNGRY DECREASES THE PLEASANTNESS OF TOUCH

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Hunger constitutes one of the strongest behavioural motivators in the animal kingdom. A recent rodent study demonstrated that hunger overrode all competing incentives. However, animal studies also showed that social interaction has the power to override strong incentives such as drug-induced rewards, which have in turn been linked to neglected food intake. Thus, the question arises whether and how these observations are transferable to humans since the experience of hunger is an indispensable aspect of our daily lives. We were particularly interested in how the processing of touch stimuli as a strong interpersonal incentive was affected by hunger state. In this study, participants were measured twice: once fasted throughout the experiment and once satiated after a standardized meal at its beginning. At each session, they performed a series of measurements, including blood and saliva collections. While lying in an MRI-scanner, they rated the pleasantness and intensity of touch stimuli of either very slow (0.3 cm/s), CT-targeted (3 cm/s), or fast (30 cm/s) velocity. Corroborating previous research, pleasantness ratings were highest for CT-targeted touch, while slow and fast touch were perceived as less pleasant. Touch at all velocities was rated as more pleasant when the participants were satiated than when they were hungry. In line with a recent study on motivational hierarchies in rodents, being hungry decreased the pleasantness of touch as an interpersonal incentive. This result will be discussed in light of accompanying neurophysiological correlates and theories on attention and reward processing.

A-0285 MORPHINE EFFECTS ON SOCIAL TOUCH

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The Brain Opioid Theory of Social Attachment (BOTSA) postulates a link between the opioid system and social bonding proposing that affiliative social touch behavior (e.g., grooming in animals) attenuates isolation distress and entails increased endogenous opioid release. Vice versa, social isolation results in decreased endogenous opioids levels and opioid withdrawal symptoms, which can be alleviated by administration of opioids. Therefore, the BOTSA suggests that exogenous opioid administration (e.g., morphine or heroin) might replace the need for social contact. Whereas animal studies generally support the BOTSA, human studies are lacking and the few results are inconsistent. The state-dependent -opioid modulation of social motivation model suggests that opioid administration during negative state results in feelings of comfort and decreased seeking for social contacts, whereas in an initial positive state, opioid use results in a more exploratory state and increased affiliative behavior. Therefore, the present study aims to investigate opioid effects on social touch and its interplay with participant's initial state. The effects of morphine (placebo) on social touch will be investigated while participants are in a negative (neutral) state induced by laboratory stress. During the social touch paradigm soft strokes by a brush and hand to the participant's forearm are administered at two different velocities (3cm/s and 30cm/s) in a counterbalanced order. The study design is a combined between- and within-subject, cross-over double-blind, placebo-controlled design. I will present first results of subjective touch experience (pleasantness and intensity) and physiological response to social touch by using facial EMG, SCR, and heart rate variability.

A-0286 HUMAN TOUCH INFLUENCES ENDOGENOUS OT, WITH BIASED NEURAL RESPONSES DEPENDING ON RECENT SOCIAL INTERACTION HISTORY

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Touch in social interactions can be affective and hedonic, which may play a role in forming and maintaining social bonds. A candidate mediator of such a role is the neuropeptide oxytocin. Little is known about the contribution of endogenously-related oxytocin during social touch interactions in humans, and what cortical regions may be implicated in context-dependent modulation of oxytocin release. To investigate this, we collected serial samples of plasma oxytocin while female participants were caressed by either their male romantic partner or by an unfamiliar male stranger. Results show selective differences in endogenous oxytocin, and their correlates in brain activity, elicited by touch-mediated social interaction. The participants who began the experiment with touch from their partner showed the greatest increase in peak plasma oxytocin levels, whereas those touched by the stranger first showed no significant change from baseline. Neurally, this

corresponded to higher activity in the hypothalamus for partner touch, covarying with individual oxytocin levels. In a second touch interaction, responses to stranger touch after partner touch showed a significant increase, whereas oxytocin levels to partner touch were comparatively diminished following stranger touch. These relative changes corresponded to higher activity for partner touch in a network including the temporal pole, the supramarginal gyrus and the anterior cingulate cortex. Overall, the present findings demonstrate that social touch in humans can influence endogenous oxytocin levels. These responses are modulated by the familiarity of the toucher and the recent history of touch, potentially influencing neural and behavioral receptivity to touch in future social interactions.

A-0287 THE SOCIAL CEREBELLUM: NEW INSIGHTS AND EVIDENCE ON ACTION SEQUENCING

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Recent research has revealed that the posterior cerebellum (Crus II) plays a critical role in social reasoning. One hypothesis is that the cerebellum is responsible for the understanding and automatization of sequences of movements and perceived actions. Understanding actions in their correct order is a prerequisite for inferring the mental state of other persons, including their beliefs, and to anticipate their next actions. I will first give a brief overview on research covered by the next speakers, who tested for the first time cerebellar patients on their social capacities with respect to sequencing, the underlying cerebellar substrates using fMRI, and how neurostimulation of the cerebellum might modulate social inferences of emotions. Next I will demonstrate the role of sequences in social understanding, and the involvement of the cerebellum in social sequencing. A first set of studies focuses on the role of the cerebellum in sequences of actions that are only related with respect to the same trait that they imply. I will then discuss the effect of inconsistencies by introducing some trait-inconsistent actions. A related study focuses on the role of action prediction when a trait of a person is already known. A second set of studies focuses on implicit learning of false and true belief sequences, and how performance differs from structurally similar, but non-social sequences. The third set of studies discusses how the learning of action trajectories may be subserved by the cerebellum. I end with some preliminary results of neurostimulation on social sequence performance.

A-0288 THE CEREBELLAR ENGAGEMENT IN RECONSTRUCTING ACTION SEQUENCES – A STUDY ON CEREBELLAR PATIENTS.

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Novel advances on cerebellar function in detection and generation of action sequences are recently pointing to a role in sequencing social events. The sequencing of actions is a prerequisite for social cognition, since it may contribute to understanding and predicting others' behaviours. Such a process includes the capacity to infer intentions and beliefs, an ability known as mentalizing and reported to be impaired in patients with cerebellar disease. To test the hypothesis of a cerebellar role in understanding social events specifically when sequential processing is required, we compared the performance of patients affected by a neurodegenerative cerebellar disease with healthy matched controls in the Picture Sequencing Task and the Stories Sequencing Task. Participants were required to understand and generate the correct chronological order of (1) well-known social routines, (2) social actions involving reasoning about mental states, or (3) non-social events. The events were presented in cartoons or sentences. The patients also underwent a brain MRI. The results showed cerebellar patients' impairments in reconstructing social actions compared to non-social events, particularly when correct action ordering required participants to reason about the mental states of the protagonist. The impairments in action sequencing were in line with the identified patterns of grey matter reduction, in accordance with cerebellar functional topography. These results confirm a cerebellar role in modulating mentalizing abilities when the reconstruction of social action sequences is required, giving more insight into the specificity of the cerebellar role in social domain.

A-0289 THE SOCIAL CEREBELLUM: NEW SEQUENCING TASKS AND CEREBELLO-CORTICAL CONNECTIONS

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An increasing number of studies highlighted the importance of the cerebellum in social functioning, most often the posterior part (i.e., Crus 1 and 2). One hypothesis states that the basic function of the cerebellum to detect and construct internal models of motor sequences for the planning and execution of movements, extended during human evolution to purely mental sequences which facilitates (social) understanding. We introduce new tasks to investigate cerebellar involvement in the processing of different types of sequences, in which participants generated the correct chronological order of new or well known (non-)social stories. A functional magnetic resonance imaging study showed strong cerebellar activation during sequence generation for all event types compared to passive viewing or reading events, and more so in the posterior Crus 2 for new social events involving agents' beliefs compared to routine (non-)social events. Using dynamic causal modelling, we revealed closed-loop connections between the

active social regions in the cerebellum and mentalizing regions in the cortex. These results confirm that the posterior cerebellum plays a critical role in the understanding and construction of the correct order of new action sequences relevant for social cognition, and shows strong connection with social mentalizing regions in the cortex.

A-0290 NEUROSTIMULATION OF THE AFFECTIVE CEREBELLUM. EXPLORATION OF LATERALIZATION EFFECTS DURING THE PROCESSING OF OTHERS' EMOTIONAL EXPRESSIONS.

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Consistent evidence suggests that the posterior cerebellum contributes to the processing of others' emotional expressions, both when they are conveyed by faces and body postures. However, several aspects remain to be investigated; for instance, possible emotional valence-dependent lateralization effects in the posterior cerebellum. In the present study, we carried out a series of experiments in which we used transcranial magnetic stimulation (TMS) to target both the right and the left cerebellar hemisphere while healthy participants discriminated emotional expressions of different valence. In line with neuroimaging evidence reporting anatomical and functional contralateral connections between the cerebellum and the cerebrum, we showed that the emotional valence-related asymmetry observed in the cerebrum is also found in the cerebellum (at least, to a partial extent). Moreover, in a further study, we demonstrated that inhibitory stimulation of the left cerebellum modulates the corticospinal excitability (measured by motor-evoked potentials over the contralateral motor cortex) in response to the observation of emotional facial expressions. Overall, our findings point to an important contribution of differently lateralized sectors of the cerebellum in emotional processing and show that the activity in the posterior cerebellum is able to determine physiological changes associated with the perception of others' facial expressions.

A-0291 METABOLIC MODULATION OF BELIEF UPDATING AND MOTIVATION

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Objective: Dopamine (DA)-releasing neurons in the midbrain play a crucial role in updating beliefs about cue-outcome associations and initiating motivational responses. DA midbrain activity is also particularly sensitive to peripheral metabolic mediators, such as insulin or glucagon-like peptide 1 (GLP-1). While overeating and obesity have been linked to alterations in midbrain DA function, direct evidence for metabolic modulation of belief updating and motivation and the effect of specific hormones such as GLP1 is lacking. Methods: In a randomized, placebo-controlled, crossover design, 21 lean (body mass index, BMI, < 25 kg/m2) and 17 obese (BMI > 30 kg/m2) volunteer participants

received either liraglutide as GLP-1 analogue or placebo on two separate testing days. Belief updating was assessed using an associative learning task within the MRI, in which participants had to repeatedly re-learn which auditory cue (high or low tone) predicts which visual stimulus (picture of a house or face). Motivation was measured using a force task, in which participants had to spend physical effort to obtain food rewards. Hunger levels were measured using visual analogue scales; insulin, glucose and systemic insulin resistance as assessed by the homeostasis model assessment of insulin resistance (HOMA-IR) were quantified at baseline. Results: We demonstrate that belief updating and motivation are impaired in insulin-resistant relative to insulin-sensitive participants ($F_{(5, 170)}$ = 2.23, p = 0.045; $F_{(1, 127)}$ = 5.11, p = 0.026). In insulin-resistant participants, GLP-1 restored motivation and belief updating (z-value = 3.823, p < .005, ß = 0.233), the latter by enhancing striatal encoding of prediction errors, but did not significantly affect insulin-sensitive participants. Conclusion: Collectively, our behavioral and fMRI findings reveal that GLP-1 modulates belief updating and motivation and restores both in insulin-resistant humans via its central effects on the mesoaccumbens pathway. Because common brain circuits are involved in motivation and belief updating across different domains, these results my indicate an important role of metabolic factors in psychopathology.

A-0292 CONFIDENCE BIASES IN REINFORCEMENT LEARNING AND PSYCHOPATHOLOGY

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Confidence judgments are important to arbitrate between different decision strategies and inform future choices. This metacognitive operation reflects an estimate of the probability that previous choices are correct. We investigated incentivized confidence judgments in the context of an instrumental learning task, in which participants learn associations between arbitrary symbols and gain/loss outcomes. Two initial experiments established a confidence bias when task demands required participants to maximize gains, but not when participants were asked to minimize losses. While participants learned to seek gains and avoid losses equally well, they were significantly overconfident in the domain of gains, and showed well-calibrated confidence in the domain of losses. In six follow-up experiments we further established the robustness of this bias and, additionally, assessed the relationship between confidence and reaction time biases. An additional experiment shows that one functional consequence of overconfidence is an inflexibility in volatile environments when outcomes are framed as gains, but not in a loss context. Moreover, confidence biases might underlie pathological decision-making commonly observed in psychiatric disorders and might therefore help in understanding (meta-)cognitive impairments across disorders. Results from a recent clinical review demonstrating a relationship between symptom severity and confidence abnormalities across a number of disorders (obsessive compulsive disorder, schizophrenia, addiction and mood disorders) support this notion.

A-0293 SELF-ESTEEM AND SOCIAL ANXIETY MODULATE BELIEF FORMATION ABOUT OWN ABILITIES IN A PERFORMANCE CONTEXT

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During everyday interactions people constantly receive feedback on their behavior, which shapes the beliefs they form about themselves. However, this is not a passive process, but people, as agents, naturally have self-regulatory capabilities to develop and adapt their behavior. In order to assess how individuals form self-related ability beliefs in a performance context we modeled prediction error updates of performance expectations in response to manipulated feedback during a cognitive estimation task. We show that updating of self-related ability beliefs was biased towards negative information, contrary to findings in the field of social learning suggesting that people have a tendency to learn better from good news (positivity bias). This negativity bias was specific for learning about own compared to others' performances suggesting that negative feedback in contrast to positive feedback might gain an important role for behavior regulation. This might potentially be related to the value of failure feedback for self-related improvement motivation but could also be due to relatively low personal relevance of the performance domain or low prior self-concepts. We further show that the negativity bias was associated with prior beliefs about the self and that individuals lower in self-esteem had stronger negativity biases. Notably, social anxiety affected self-related negativity biases only when individuals were exposed to a judging audience thereby potentially explaining the persistence of negative self-images which commonly surface in social settings. Self-related belief formation therefore is essentially biased and might be shaped by affective and motivational states that become relevant in the learning context.

A-0294 HOW FINANCIAL INCENTIVES EFFECT EMPATHY

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It is a controversial question whether financial incentives undermine intrinsic motivation. This question is yet hard to answer, as most previous studies have focused on incentive-related changes in behavior instead of incentive-related changes in the underlying motives. Combining drift-diffusion modeling and fMRI, we investigated how financial incentives affect one of the strongest prosocial motives, i.e, the empathy motive, and resulting empathy-based decisions. Our results show that financial incentives facilitate empathy-based decisions, tracked by changes of neural response in the anterior insula. Neural activity in that same region correlated with the individual strength of the empathy motive, and captured the interaction between incentive-related facilitation of prosocial decisions and empathy. The financial incentive facilitated prosocial decisions more

the weaker a person's empathy-related brain responses, i.e, had a strong effect on low empathic, but no effect on high empathic individuals. These findings show that financial incentives can foster prosocial behavior in absence of empathic motivation, but cannot replace or undermine empathy.

A-0295 UNDERSTANDING SOCIAL MOTIVATION: A NEURO-PHARMACOLOGICAL AND CLINICAL ACCOUNT

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Human behavior is motivated not only by primary rewards (such as food), but also by social rewards (such as approval). In the last decade, a fundamental challenge has been to understand the different aspects involved in reward. While animal research has clearly established "wanting" and "liking" as two components differing on the neurobiological and neurochemical level, corresponding research in humans is less conclusive. The present talk addresses this gap of knowledge by testing: a) whether "wanting" and "liking" can be dissociated in humans on the behavioral and neurochemical level for non-social and social rewards; and b) whether such components are differently impaired in clinical conditions such as autism spectrum disorders (ASD). By employing a novel behavioral paradigm in combination with pharmacological manipulations (i.e. dopamine and opioid antagonists; experiment 1 and 2) and functional MRI (experiment 2), we first aimed at differentially targeting these two components. In experiment 3, the same paradigm combined with fMRI was used to investigate reward processing in individuals with ASD compared to neurotypical controls. Participants were tested in a real effort task, to determine their explicit (ratings of wanting and liking and squeezing of hand dynamometer) and implicit (hedonic facial reactions) responses to different types of rewards. Nonsocial rewards were small amounts of milk with different concentrations of cacao. Social rewards were gentle caresses delivered to the forearm at different speeds by a same-sex experimenter. The findings are discussed in light of the current theory of reward processing and social motivation in particular.

A-0296 HOW EXECUTIVE FATIGUE ARISES AND AFFECTS DECISION-MAKING

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Executive control is a critical ability for educational and professional success. In a previous

fMRI study (Blain et al., 2016, PNAS), we showed that executive control is susceptible to fatigue: after one day of hard cognitive work, left lateral PFC activity was reduced during economic choice, which led to more impulsive decisions favoring immediate rewards. However, performance in (rewarded) cognitive tasks stayed stable, suggesting that control ability is not lost with hard cognitive work, but only recruited when it matters most, as if control cost was increased. We measured metabolic changes that could explain the increase in control cost, using magnetic resonance spectroscopy (MRS). Executive fatigue was accompanied by an increase in glutamate level within the left lateral PFC, but not in the visual cortex, with a significant interaction between task difficulty and session. Thus, the increase in control cost could be the result of a regulation process whose purpose would be to limit glutamate accumulation. We specified the effects of executive fatigue on decision-making by additionally including effort and risk discounting tasks. Executive fatigue only affected choices when options involved executive control (delay and effort, but not risk). These effects were dissociated from those of time pressure. While time pressure increased global choice stochasticity, executive fatigue effects were best captured by an additive bonus for low-cost options. This double dissociation suggests that executive fatigue does not affect the decision-making process itself, but increases the preference for low-cost options.

A-0297 MONITORING MENTAL FATIGUE; FROM THE LAB TO THE OFFICE

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Previous research on the effects of mental fatigue in the working environment mainly focused on self-reported behavior of employees, using measures that either interrupted regular office work or relied on subjective measures influenced by the observer's personal judgment. Our aim was to developed an objective method based on typing behavior, which has practical potential to objectively monitor performance efficiency without disturbing regular work-related activities. In order to validate whether indices of typing behavior could monitor the effects of mental fatigue, we first conducted a lab study in which participants performed a typewriting task for 2 hours during which brain activation was recorded using EEG. Our study showed that an increase in backspace use and in the time between two keystrokes were related to changes in brain activation associated with mental fatigue. These effects were observed in a controlled lab setting, where other factors that could either influence typing performance directly, or indirectly through an effect on mental fatigue, were kept stable. Compared to this relatively controlled experimental environment, many uncontrollable factors might influence performance efficiency in a dynamic office environment. Therefore, we subsequently conducted a study to investigate whether indices of typing behavior could monitor the effects of mental fatigue in an actual working environment. In this study, typewriting markers were recorded for six consecutive weeks during regular office work performed in a university environment. Here, we confirmed that typewriting behavior contains sensitive markers that reflect changes in behavior over time.

A-0298 STAND UP FOR YOUR BRAIN: THE EFFECT OF BODY POSTURE ON MENTAL FATIGUE AND COGNITIVE PERFORMANCE

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Humans are not evolved to spend most of their time sitting, thinking, and typing. Nevertheless, in most modern jobs, office employees typically perform intense mental work in an environment encouraging little physical activity. Prolonged seated work induces mental fatigue, which impairs cognitive control, sustained attention, and economic decision-making. In this talk I present two laboratory studies that tested whether alternation in body posture (in comparison to prolonged sitting) can reduce the adverse impact of fatigue on cognition. Participants worked on a battery of cognitive tasks over two hours. This resulted in increased self-reported fatigue in the prolonged sitting condition. On the other hand, in the condition in which participants alternated between 20-minute sessions of sitting and standing, self-reported fatigue was reduced while self-reported task engagement was increased. Preliminary analyses suggest that alternating body posture improves working memory performance in a two-back task (Experiment 1) and reduces attentional lapses and irrational economic choices (Experiment 2). Preliminary analyses of the physiological measures including ERPs, cardiovascular measures and pupil diameter suggest that only changes in the cardiac pre-ejection period reflect compensatory effects of body posture. Our findings show that a standing posture can alleviate fatigue-induced cognitive decrements. These findings extend the growing literature on the positive effects of the use of sit-stand tables on physical health and reveal how and when an active body posture has beneficial effects in the cognitive domain.

A-0299 NEURO-COMPUTATIONAL MECHANISMS OF MOMENT-TO-MOMENT FATIGUE AND ITS IMPACT ON MOTIVATION

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Fatigue - a feeling of exhaustion arising from exertion - is a major factor influencing healthy people's lives, and is a highly prevalent symptom in clinical disorders. Prominent theories suggest fatigue rises through effortful exertion, is restored with rest, and impacts on motivation – when more exhausted, we are less willing to work. However, a computational framework that unifies the subjective 'feeling' with its effects on motivation has been lacking. Here, I put forward a unifying computational framework - a 'fatigue equation' - characterising moment-to-moment fluctuations in the subjective feeling and its effects on behaviour. I show that this model can explain trial-to-trial variability in decision-making and ratings of exhaustion in a task probing people's willingness to exert effort. Using this framework in conjunction with fMRI I will highlight how systems in the healthy brain previously linked to effort-based decision-making are under the influence of moment-to-moment fluctuations in fatigue as calculated within our model. These results suggest that

the subjective feeling of fatigue and motivation are closely linked on a momentary basis. Moreover, this framework has the potential for dissecting the psychological and neural of basis of fatigue in health and disease.

A-0301 PREDICTIVE ACTION-FEEDBACK MONITORING: THE EFFECT OF DISCRETE VS CONTINUOUS ACTION FEEDBACK

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In order to establish meaningful interactions with the environment, we need to be able to distinguish self-generated from externally generated sensory input. It is though that this is mediated by predictions based on the efference copy, which lead to perceptual and neural suppression of self-generated sensory stimuli. However, the brain areas that are suppressed vary across different studies. Furthermore, sometimes perceptual enhancement has been found. In the current fMRI study, we investigated whether the type of feedback can explain the heterogeneous results. Participants performed active and passive hand movements using a passive movement device. In some conditions, participants received continuous visual feedback of the action, in other conditions discrete action outcomes were presented. In all cases, participants were asked to detect variable delays inserted between action and feedback. Behaviourally, we did not find any effect of action type. However, slopes were steeper in continuous conditions, indicating participants were more precise in distinguishing different levels of delay for continuous feedback. On the neural level, we found widespread suppression in active conditions in sensory areas (visual and somatosensory areas), motor areas (motor cortex, cerebellum), and temporoparietal areas often associated with self-other distinction (angular gyrus, middle temporal gyrus). Importantly, a conjunction analysis revealed that this pattern of suppression was similar for discrete and continuous action feedback. Altogether, these results suggest that discrete and continuous action feedback are processed similarly, though continuous feedback might provide us with more cues to reliably detect delays, aiding us in accurate action-feedback monitoring.

A-0302 DISTINCT MOTOR SIGNALS IN SPEECH PREPARATION DIFFERENTIALLY MODULATE AUDITORY RESPONSES

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Actions influence sensory processing in a complex way to shape behavior. For example, it has been hypothesized that during actions, a copy of motor signals—termed corollary discharge (CD) or efference copy (EC) —can be transmitted to sensory regions and modulate perception. Such motor-to-sensory transformation has been evident among animal species and is extended to human speech production and control. However,

the commonly observed inhibitory function of the motor copies is challenged by mixed empirical observations as well as multifaceted computational demands for behaviors. Theories have been proposed that CD and EC may be two separate functional forms that are generated at different stages of intention, preparation, and execution during actions. We tested these theories using speech in which we can precisely control and quantify the course of action. Specifically, we hypothesized that the content available at distinct stages of speech preparation determined the nature of the motor signals (CD vs. EC) and constrained their modulatory functions on auditory processing. In three electroencephalography (EEG) experiments using a novel delayed articulation paradigm, we found that preparation without linguistic contents suppressed auditory responses to all speech sounds, whereas preparing to speak a syllable selectively enhanced the auditory responses to the prepared syllable. A computational model demonstrated that a bifurcation of motor signals could be a potential algorithm and neural implementation to achieve the distinct functions in the motor-to-sensory transformation. These consistent results suggest that distinct motor signals are generated in the motor-to-sensory transformation and integrated with sensory input to modulate perception.

A-0303 REAL AND IMAGINED SENSORY FEEDBACK HAVE COMPARABLE EFFECTS ON ACTION ANTICIPATION

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The forward model implies successful monitoring of sensory feedback to an action linked to an efference copy originating in the motor system. The Readiness Potential (RP) of the electroencephalogram (EEG) has been denoted as a neural signature of the efference copy. An open question is whether imagined sensory feedback works similarly to real sensory feedback. We investigated the RP to audible and imagined sounds in a button-press paradigm and assessed the role of sound complexity (vocal vs. non-vocal sound). EEG was recorded from healthy participants performing a voluntary button press task either with or without sensory feedback. To ensure similar conditions in pre-stimulus neural activity, an overt motor action was required before both an imagined and an audible sound. Stimulus expectancy, task-relevance, and task load (motor output) were comparable across conditions. By showing similarities in preparatory motor activity before actions that lead to audible or to imagined sounds, our findings support functional similarity between auditory imagery and overt auditory perception. In contrast, differential modulation of the RP preceding actions that trigger an imagined self-voice vs. a tone suggest differences in the precision of the efference copy that depends on the nature of the imagined sound. Together, these findings confirm a role of overt and covert feedback in the forward model.

A-0304 SURPRISE AND PRIOR ENTRY: THE ROLE OF PREDICTION IN ACTION-RELATED AUDITORY ERP ATTENUATION

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Predictive mechanisms play a key role in most theories on action-related sensory processing changes. Such mechanisms allow the utilization of information available in non-sensory systems to optimize sensory processing, thus it is an attractive assumption that they may operate for all types of actions and sensory processes. Studies on manual action-related auditory attenuation have been mostly interpreted in this framework, but several studies utilizing coincidence paradigms demonstrated that attenuation occurred even in the absence of a causal action-sound relationship. Although these demonstrations suggest that prediction-based accounts may not be valid, no study directly compared attenuations measured in arrangements with contingent and coincidental action-sound relationships. The goal of the present study was to fill this gap. We compared auditory event-related potentials (ERPs) elicited by action-sound events in conditions with and without causal action-sound relationships. When inspected in isolation, the ERPs elicited in the two arrangements could be interpreted as N1- and P2-effects, as in most previous studies. A comparison involving all elicited ERPs, however, suggested a different interpretation: In the coincidence condition, an action-related N1 attenuation was found, which was followed by a P3a, signaling that the action-sound coincidence was registered as a potentially relevant rare event. In the contingent condition, an earlier N1, and a reduced P3a was found (in comparison to that elicited by tones in a replay condition), which shows that self-induced sounds were unsurprising. These results show that auditory ERP attenuation may occur without prediction, but predictability allows faster sensory processing and reduction of surprise.

A-0305 NEUROCOMPUTATIONAL MECHANISMS OF SOCIAL INFLUENCE IN GOAL-DIRECTED LEARNING

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Humans learn from their own trial-and-error experience and from their social partners to acquire reward values. However, direct learning and social learning were often studied in isolation, and it remains unanswered how brain circuits compute and integrate expected values when direct learning and social learning coexist in an uncertain environment. In this talk, I will present a real-time multi-player goal-directed learning paradigm. Within each group (size of five), one participant was scanned with MRI, and choices and confidence ratings were measured for all participants (overall n = 185, MRI n = 39). We first observed opposite effects of group consensus on choice and confidence: individuals succumbed

to the group when confronted with dissenting social information, but increased their confidence when observing confirming social information. Leveraging reinforcement learning and fMRI we captured nuanced distinction between direct valuation through experience and vicarious valuation through observation, and their dissociable, but interacting neural representations in the ventromedial prefrontal cortex (vmPFC) and the anterior cingulate cortex (ACC), respectively. Connectivity analyses revealed increased functional coupling between the right temporoparietal junction (rTPJ) representing instantaneous social information and the putamen, when individuals made behavioral adjustment as opposed to when they stuck with their initial choice. We further identified that activity in the putamen instantiated a hitherto uncharacterized social prediction error, rather than a reward prediction error. These findings suggest that an integrated network involving the brain's reward hub and social hub supports social influence in goal-directed learning.

A-0306 YOUR PAIN VERSUS MY GAIN: NEURAL CORRELATES OF CONFLICTUAL DECISION MAKING

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Learning the outcome associated to specific actions is a central process in everyday life. Multiple times we must deal with conflictual situations in which the same action is associated with two outcomes with opposite valence. Reinforcement Learning theory well describes how we learn to weigh the different outcomes when choosing which action to perform. However, it is still not clear how we learn to choose between actions that posit a social conflict. Specifically, to study how our participants during fMRI learned to choose between two symbols, one associated with high-gain for self and high pain for another, and another with low-gain for self and low-pain for another, we use Bayesian cognitive modelling. Participants' choices were fitted using the Rescorla–Wagner updating rule and a set of models was tested in a model comparison. The resulting winner model displayed separate learning rates for money and shock and a weighting factor trading off money for self and shock for other. Results of the model-based fMRI analysis revealed no robust signals associated with monetary outcomes or prediction errors, or with the raw shock outcomes. Instead, we found a main effect of prediction error for shock (PES) in the inferior frontal gyrus, as well as responses to PES in insula, cingulate and somato-motor cortices covarying with the learning rate from the shock experience. Since these regions are traditionally associated with firsthand pain, such results suggest that sharing the pain of others is part of how we learn to avoid options that harm the others.

A-0307 THE EFFECTS OF PLACEBO ANALGESIA ON PROSOCIAL DECISION-MAKING DURING PAIN AVOIDANCE

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Previous results regarding placebo analgesia have shown that a down-regulation of one's own pain using a placebo pill presented as a painkiller influences the way we empathize with another person in pain on a behavioral and neurophysiological level. This has been taken to suggest that shared representations may underlie both of these experiences, i.e. that we come to understand the pain of a conspecific by engaging the same mental processes responsible for experiencing that pain ourselves. However, although empathy and prosocial behavior are closely linked and positively correlated, effects of placebo analgesia on prosocial behavior have not been tested yet. In this talk I will present a new, preregistered study (https://osf.io/g3acp) that investigated whether the previously described effects of placebo analgesia on empathy reach one step further, or more concretely, whether and how this manipulation influences prosocial behavior in the form of real effort that we put in for others. We induced placebo analgesia in 45 participants (placebo group) by means of an oral placebo painkiller administration combined with a conditioning procedure to amplify the placebo effect, while a control group (n = 45) did not undergo such experimental manipulations. Participants then completed a prosocial decision-making task including a binary choice whether or not they want to exert physical effort via a hand dynamometer to decrease another person's pain. The results of this study will shed more light on the magnitude of altered first-hand pain perception by means of placebo analgesia, and its effects on prosocial behavior.

A-0308 SOCIAL MOTIVES IN A PATIENT WITH BILATERAL SELECTIVE AMYGDALA LESIONS

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Humans hold social motives that influence how they evaluate and share payoffs with each other. Established models in psychology and economics quantify social motives such as general social value orientation, i.e., whether a person is prosocial or individualist. Prosocial behaviors are further classified according to subtypes of prosocial motivation, i.e., whether a person maximizes joint gains or minimizes inequality. Previous functional neuroimaging studies have linked increased amygdala activity in behaviors to the trial-

by-trial variation in absolute inequality between payoffs for self and another person. However, it is unclear whether amygdala lesions alter social motives-and if so, how. Here, we tested a female patient with selective bilateral amygdala lesions due to Urbach-Wiethe syndrome and three healthy samples (male and female). In a social value orientation task, the patient was generally categorized as prosocial - as was the majority of healthy participants. Importantly, the amygdala lesion patient differed in terms of prosocial motivation by maximizing joint gains rather than minimizing inequality between payoffs. In a joint payoff evaluation task, a Bayesian comparison of several economic models revealed that participants' evaluations of joint payoffs were best described by the Fehr-Schmidt model, which links participants' evaluations to their own payoffs, and to their aversions of advantageous and disadvantageous inequality. Parameter estimates of this model did not differ between the patient and healthy participants. Overall, amygdala lesions did not seem to alter general social value orientation or joint payoff evaluation but shifted prosocial motivation.

A-0309 NEURAL AND PHYSIOLOGICAL INSIGHTS INTO THE VALUE OF A LIFE

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From helping a single person to large-scale policy and voting choices, prosocial choices can be affected by the subjective value of other people's lives. In our lab, we take the perspective that the subjective value of something is reflected in a response to discovering it has been lost. From the psychology literature, it is evident that despite widespread egalitarian principles, not everyone's life has the same impact on emotion and choices. For instance, one person's death soon after a loss of ten thousand does not have the same impact as a single life lost. As the number affected grows, compassion can fade and the value of each individual can decline. Moreover, news of a life lost abroad often does not affect us as much as this news at home. In this talk, I will share our new insights from biological (physiological and fMRI) and behavioural measurements of learning of lives at risk and lives lost in small and large numbers, at home and abroad. We will introduce our new 'New stories' task, and we discuss the roles of biology, bias and self-regulation in subjective value of a life.

A-0310 BEHAVIORAL AND EMG MEASURES OF STOPPING REFLECT DIFFERENT CONTROL PROCESSES IN ACTION CANCELLATION

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The vast majority of research on inhibitory control focuses on response inhibition, i.e. the ability to suppress or stop prepotent response tendencies or already initiated responses. Especially the stop signal task is widely applied as it provides the prime outcome measure

of an individual's inhibitory control capability: the stop signal reaction time (SSRT). The SSRT estimates an individual's latency for implementing stopping (via inhibition) based on go reaction times and the delays between go- and stop-signal presentation. Recent research suggests an alternative and assumption-free measure for the stopping latency based on the peak latency of the electromyographic activity in successful stop trials (partial-response or prEMG). Across several studies, we find that the prEMG and SSRT exhibit only weak to moderate correlations. Further, across conditions and when comparing patient and control groups, the SSRT and prEMG show differential effects. For example, SSRTs did not differ across uni- and bimanual versions of a stop signal task, yet prEMG latencies peaked significantly later in the bimanual version. We further find differential associations of these two measures with activations in the stopping network: whereas both prEMG and SSRT correlated with cortical control areas (such as the preSMA), only the SSRT also exhibited associations with subcortical areas. Our data thus indicate that the SSRT and prEMG reflect different aspects of cognitive control, with prEMG being more tightly associated with proper motor control, whereas the SSRT also seems to be prone to influences of general performance monitoring operations that are tied to the basal ganglia.

A-0311 CRITICAL INVOLVEMENT OF THE ANTEROLATERAL PREFRONTAL CORTEX IN STARTLE REGULATION

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In case defensive responses are not adaptively downregulated after threat termination, chronic anxiety may ensue. Previous FMRI studies suggested the involvement of the anterolateral prefrontal cortex (PFC) in emotion regulation, but it is unknown if direct stimulation of this brain region affects basal defensive responses like startle. In this study, we test whether experimental suppression of the anterolateral PFC impairs downregulation of defensive responses at offset of a threat cue. Healthy participants (n=28) performed an instructed fear task before and directly after exposure to continuous theta burst stimulation (cTBS) aimed at the anterolateral PFC (suppression of inhibitory network). Stimulation of the vertex was performed in a cross-over design. We collected fear-potentiated startle and subjective fear measurements during. As expected, suppression of the anterolateral PFC increased startle potentiation. Surprisingly, this cTBS effect was evident both during and after threat presentation. No effect of cTBS on subjective fear ratings was found. Our results suggest that anterolateral PFC functioning is involved in the regulation of defensive threat-related responses in healthy humans. This involvement does not appear to concern the active downregulation of threat at the offset of a threat cue, but a more general regulation of defensive reactivity to threatening stimuli in general. The significant impact of cTBS on the anterolateral PFC on startle in the threat

condition in particular suggests regulation of subcortical defense circuits. Given clinical implications of impaired regulation of defensive responding, more research is called for to better understand its neural involvement in basal defensive responses.

A-0312 CORTICO-SUBCORTICAL INTERACTIONS AND THE CONTROL OF HUMAN DEFENSIVE ACTION

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Recent decades have seen important progress in the delineation of neural and somatic reactions to fear stimuli. However, how these basic defensive biological reactions support human defensive action is comparatively unknown. The majority of paradigms are passive paradigms that preclude the study of defensive actions such as fight-or-flight. I will present a number of experimental paradigms by which we assessed the neurophysiological control over these defensive actions in humans, combining decision tasks with neural and autonomic measures. Particularly we investigated the shift from the parasympathetic state of freezing to sympathetically-driven fight actions in humans. We show that stronger freezing responses in preparation for action are linked to faster and more accurate subsequent emotional action - countering common believe that freezing is a passive state or even impeding emotional action. Freezing is associated with midbrain periaqueductal gray activity. The shift from freezing to action involves recruitment of the perigenual part of the anterior cingulate cortex (pgACC) as well as pgACC-amygdala connections. These findings, although correlational, translate animal models of the neural switch from freeze-to-action and support a critical role for the pgACC and amygdala in inhibiting freeze-related PAG acitivity to facilitate action.

A-0313 AFFERENT PROCESSES TO RESPONSE INHIBITION - ATTENTION, MOTIVATION, AND THE ROLE OF TRIGGER FAILURES

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Response inhibition is a crucial cognitive-control function, and the Stop-signal task is one of the hallmark paradigms to study it. One of its key advantages is that it can be used to estimate how long it takes someone to cancel an action (called the Stop-signal reaction time, SSRT), and a lot of evidence seems to suggest that a frontal-cortex-to-subcortical neural braking mechanism arises just in time to underlie this phenomenon. Yet, it is unclear whether variation in this mechanism also explains variability across conditions, groups etc. Here, we will summarize evidence suggesting that processes preceding the ultimate implementation of response inhibition, like the amount of attention paid to the Stop stimulus, are relevant for whether or not stopping is successful or not. In addition, reward manipulations increasing stopping ability, also seem to converge on attentional

processes. While in traditional SSRT estimation, the respective effects seem to relate to a faster stopping process (shorter SSRT), novel Bayesian modelling approaches suggest that the difference rather relates to the fact that the stopping process is triggered more consistently (leading to fewer "trigger failures"), rather than progressing faster. The present results therefore highlight the role of afferent processes in response inhibition in general, as well as the need to dissociate the consistency of triggering response inhibition from its speed.

A-0314 THE PERCEPTUAL ROOTS OF IDEOLOGICAL DOGMATISM

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Contemporary human history has been marked and punctuated by periods of authoritarianism as well as times celebrating nonconformity. Similarly, there are individual differences in levels of authoritarianism; however, the factors shaping an individual's authoritarianism have been traditionally attributed to socioeconomic and cultural factors. This talk will depart from these primarily social accounts and instead posit that we can trace the emergence of authoritarianism to the brain. It will ask: Does ideological authoritarianism have its roots in neural architecture? And are the neurobiological origins of authoritarianism manifest in the developing brain? To address this, the talk will discuss a unique dataset of over 200 participants in a longitudinal neuroimaging study, which has tracked participants from the age of 14 to their adulthood. It will present evidence evaluating the extent to which neural and cognitive markers in early adolescence can predict authoritarianism and political policy attitudes in adulthood. To the best of our knowledge, this constitutes the first study to directly investigate how trajectories in brain development and cognitive function relate to the formation of political and intergroup beliefs in later life. The results suggest that it is possible and fruitful to build neurobiological models of political behavior through interdisciplinary research. The implications for the burgeoning fields of social and political neuroscience will be discussed, and methodological innovations will be highlighted. These findings underscore the power of cognitive and affective neuroscience to tackle socially-pertinent questions facing modern democracies.

A-0315 EPISODIC SIMULATION SETS THE STAGE FOR EMPATHIC PROCESSING ACROSS POLITICAL GROUPS

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We can empathize with others' misfortunes – regardless of whether these misfortunes are witnessed or read about. The latter case leaves room for imagination, which can vary in its level of detail. Specifically, we rely on episodic memory to generate mental imagery about specific misfortunes and their surroundings. Although in-group bias in empathy is well-documented, we know little about the underlying mechanisms. The degree to which

we engage episodic memory to generate rich mental imagery could plausibly influence subsequent empathic responses. Here, we investigated episodic simulation (the ability to imagine events using episodic memory) as a candidate mechanism underlying intergroup empathy bias. Borrowing manipulations of episodic simulation from the memory literature we conducted 3 studies online and in the laboratory (N = 1199). Following these manipulations and controls, participants provided self-reported empathy judgments about political in- and out-group members' written misfortunes. Upregulating episodic simulation increased empathy ratings for both in- and out-group members compared to control. To our knowledge, this is the first set of studies linking episodic simulation to empathy, thereby documenting a new component of how we might conceptualize empathy in both behavior and the brain.

A-0317 BELIEFS ABOUT POLARIZED SCIENCE: A METACOGNITIVE PERSPECTIVE

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Climate change has become one of the most heavily contested science topics, and has generated a dangerous mix of scientifically correct information, misinformation, and outright disinformation in the public discourse and media. In order to adequately respond to information of unknown veracity, citizens need not only accurate climate change knowledge, but also accurate confidence: Confidence that reflects the accuracy of knowledge. Here we investigate the accuracy of citizens' confidence in their climate change knowledge, and compare it to the accuracy of confidence in general (non-polarized) science knowledge in two national German samples (n = 588, n = 509). Citizens verified a series of true and false statements about climate change, and about general science. After each verification, participants indicated their confidence in their verification. Results showed that the accuracy of citizens' confidence in climate change knowledge was (1) only around half of what it could be based on the accuracy of their knowledge; (2) lower for climate change knowledge compared to general science knowledge; and (3) these differences held when controlling for differences in knowledge. Moreover, the accuracy of citizens' confidence explained beliefs about the riskiness and anthropogenicity of climate change, above and beyond the accuracy of knowledge. We conclude that citizens are unnecessarily confused about what they know and do not know about climate change, and more so than for non-polarized science. These results may help inform theories in social neuroscience about the role of metacognitive processes in the formation of polarized beliefs.

A-0318 SELF-OTHER DISTINCTION AND THE RIGHT TEMPORO-PARIETAL JUNCTION IN NEUROPSYCHIATRY

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The degree to which we match our own mental or physical state to that of another person can be a critical determinant of effective social interaction. While we can mirror another person's mental or physical state to empathise with or imitate them, understanding that another person is unaware of something that we know about means holding in mind distinct mental states for the self and other. Research demonstrates the importance of the right temporo-parietal junction (rTPJ) in self-other distinction. This region is active when we inhibit imitation, or hold in mind the belief of a person that contrasts with our own belief. Furthermore, disrupting rTPJ activity can interfere with self-other differentiation. From a clinical perspective, neuropsychiatric disorders that threaten the integrity of the rTPJ may therefore lead to deficits in social cognition and function. Patient studies (in e.g. schizophrenia, autism spectrum disorder, Tourette syndrome etc.) have yielded evidence of links between atypical self-other distinction, rTPJ dysfunction, and clinical symptoms. For example, adults with Tourette syndrome who show increased sensitivity to others' emotions exhibit different rTPJ activity to healthy controls when viewing emotional facial expressions, and this rTPJ activity is associated with clinical symptoms, including sensori-motor abnormalities. Importantly, some findings imply that some of the clinical symptoms associated with atypical self-other distinction may reflect a form of coping or compensation strategy. Transdiagnostic clinical studies can make an important contribution to our understanding of self-other distinction and its underlying neural correlates, as well as informing the development of new measures and interventions.

A-0319 AN FMRI STUDY ON SPONTANEOUS AND EXPLICIT MENTALIZING IN AUTISTIC ADULTS

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The socio-communicative difficulties of autistic individuals are hypothesized to be caused by a deficit in the ability to represent mental states, referred to as Theory of Mind or mentalizing. However, as many individuals with autism show successful performance on explicit mentalizing measures, the deficit is thought to be better captured by measures of spontaneous mentalizing. To date, spontaneous mentalizing in autism has not been tested at the neural level. Here, we investigated brain activation during explicit and spontaneous mentalizing in autistic adults using fMRI. Recent findings indicate involvement of the right temporoparietal junction (rTPJ) in both explicit and spontaneous mentalizing, and thus decreased rTPJ activity was expected in autism for both. Twenty-four autistic adults and 21 neurotypical controls carried out a spontaneous and an explicit version of the same mentalizing task. They watched videos in which both they themselves and another agent formed a belief about the location of an object. Only in the explicit version

participants were instructed to sometimes report the agent's belief. No behavioral group differences were revealed in either task version. A planned region-of-interest analysis of the rTPJ showed that this region was more active for false- than for true-belief formation, independent of task version. This effect of belief was absent in the autistic adults. Our findings suggest neural differences between autistic adults and neurotypical controls both during spontaneous and explicit mentalizing, and indicate the rTPJ to be crucially involved. The finding that these neural differences do not necessarily lead to differential performance warrants further research.

A-0320 ELEVATED SELF-OTHER DISTINCTION AND ABERRANT PROCESSING OF EMPATHIC EMOTIONS IN REMITTED DEPRESSION

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Major depressive disorder (MDD) and its development are strongly associated with impairments and difficulties in social interactions. Deficits in empathy, a vital skill for social interactions, have been identified as a major risk factor for relapse. Despite the obvious link between a central social skill and vulnerability for a clinical condition that is closely related to problems of a social nature, there is surprisingly little neuroimaging research on potential deficits in socio-affective processing in remitted MDD. To fill this gap, we carried out the first functional magnetic resonance imaging study on empathy in remitted depression, and measured behavioral and neural empathic responses of remitted patients to a pain-empathy task. Compared to acutely depressed patients and healthy controls, remitted patients reported higher target pain ratings. At the neural level, remitted patients showed increased activity in the right temporo-parietal junction. This region, which is central to self-other distinction, also showed reduced connectivity to the anterior insula. Furthermore, we observed reduced activity in brain regions involved in the processing of empathic emotions (amygdala, left anterior insula) and affective facial expressions (fusiform face area, posterior superior temporal sulcus). This pattern of results suggests heightened self-other distinction and, possibly as a consequence thereof, lowered empathic responses to others' negative affective states. Increased expectations of target pain may lead remitted patients to divert their attention from the targets to avoid emotional harm. This may be beneficial in a certain situation, but might constitute vulnerability by hindering individuals from experiencing rewarding social interactions in the long run.

A-0321 DO DIFFERENT THEORY OF MIND TASKS ENGAGE DISTINCT PROCESSES IN THE TPJ?

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The right Temporo-Parietal Junction (TPJ) is the most commonly activated part of the brain when humans engage in understanding other's mental states, referred to as mentalizing or Theory of Mind (e.g., Schurz et al., 2014). It has been shown that the TPJ consists of several sub-units that are part of different anatomical networks (Bzdok et al., 2013; Mars et al., 2012). The present study sets out to clarify how these sub-units link to different sub-functions of Theory of Mind and social cognition. We first map sub-areas of the TPJ in individual subjects based on connectivity-based parcellation of resting-state data. Individual sub-areas are then overlaid with brain activation for different ToM tasks, including false beliefs (Saxe et al., 2003), social animations (Castelli et al., 2000), and biological motion (Peuskens et al., 2005). Brain activity for false beliefs and biological motion can be neatly linked to specific sub-areas of the TPJ. By contrast, activity for social animations spreads across two sub-areas. We follow up this result by analyzing parts of the Human Connectome S1200 data-set. We find that behavioral variability in rating of social animations is linked to variability in activity-to-subarea mapping around the TPJ. This suggests that variability of TPJ activation might be linked to different interpretations of partially ambiguous social stimuli, rather than anatomical indecisiveness around a network "nexus" or "junction". Using NIH Toolbox measures, we further show that the variability in activity-to-subarea mapping in the TPJ is correlated to the quality of social relationships of individuals.

A-0322 CHARACTERIZATION OF INDIVIDUAL DIFFERENCES IN FEAR LEARNING THROUGH LATENT CLASS GROWTH ANALYSIS

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Anxiety disorders are heterogeneous and the challenge is to uncover underlying mechanisms towards pathological fear that cut across diagnostic boundaries. A potential factor may be found in deficient (un)learning of fear as assessed in a fear conditioning experiment. Meta-analyses have indicated that fear learning deficiencies in anxiety disorders concern impaired inhibitory control, both when it comes to responding to stimuli that are not associated with danger ('CS-') during acquisition of fear, and during

the extinction phase when subjects can learn that the stimulus previously associated with danger ('CS+') is no longer dangerous. A first study that included patients with various anxiety disorders (N=104) and matched controls (N=97) employed latent class growth analysis on trajectories of learning. Results indicated that patients were more often categorized in trajectories characterized by increased fear to the CS- (generalization of fear) and in trajectories characterized by poor extinction of fear. However, only a subset of patients show these maladaptive patterns of learning, as many patients (>50%) displayed the more adaptive patterns of learning. Follow-up studies in larger samples of healthy participants have replicated the patterns of learning found in the clinical sample, and have confirmed that classes of participants with the maladaptive learning patterns characterized by generalization or poor extinction can be associated with higher trait anxiety and stronger maintenance of fear at one and 6 weeks follow-up. In sum, this data-driven approach shows promise as a tool for the classification of individuals who show this particular deficit in fear inhibition.

A-0323 DEFICIENT THREAT-SAFETY DISCRIMINATION IN THE ANXIOUS VISUAL BRAIN

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Deficient threat-safety discrimination is a potential risk factor for anxiety disorders. Little is known if this reduced discrimination and related fear generalization is originating already in early visual cortex. I will present studies in which we employ steady-state visual evoked potentials (ssVEPs) in different conditioning paradigms to investigate the visual cortex responses to signals of threat and safety. In a first study using a differential fear conditioning paradigm, we found that highly socially anxious individuals do not discriminate between a face associated with a social threat and a face associated with non-threat. This could be interpreted as an indicator of over-generalization, which is why in a further study we tested fear generalization learning. Here we found no evidence for enhanced generalization in social anxiety, but interestingly a strong suppression of the response to the stimulus most similar to the learned threat, suggesting inhibitory interactions between visual neuronal populations. In a further study where we employed a modified NPU threat paradigm to investigate the visuocortical processing of predictable and unpredictable threat cues and contexts, we found selective processing of predictable threat cues and enhanced processing of aversive contexts. In a further study we found that while low trait-anxious individuals exhibited larger ssVEP amplitudes to contextual threat, high trait anxious individuals did not differentiate among contextual threat and safety. Overall the present results point at the notion that anxiety is associated with altered threat-safety discrimination processing in early visual cortex, which may be a transdiagnostic biomarker for psychopathologies across the anxiety spectrum.

A-0324 NEURAL CORRELATES OF DEFICIENT SAFETY LEARNING IN INDIVIDUALS WITH LOW RESTING HEART RATE VARIABILITY

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Extinction of conditioned fear serves as a laboratory model for exposure treatment with patients suffering from anxiety disorders. Thus, an enhanced understanding of individual differences in extinction learning may help to improve exposure treatments. In previous studies, we observed that individuals with low resting heart rate variability (HRV) show a deficit in safety learning as indexed by fear-potentiated startle responses during fear conditioning experiments and that panic disorder patients with low resting HRV are more likely to drop out from or show residual symptoms after exposure treatment. Here, we used fMRI with a differential fear conditioning paradigm to investigate the neural correlates of the observed safety learning deficit in individuals with low resting HRV. To that end, individuals with low and high vagally mediated HRV were selected from a sample of students screened for resting HRV parameters und underwent a differential fear conditioning paradigm during fMRI scanning. Individuals with low HRV showed decreased vmPFC activity in response to safety signals during acquisition training as well as decreased vmPFC-amygdala connectivity throughout the learning experiment. These findings correspond to the idea that both safety learning and vagally mediated HRV are partly mediated by vmPFC projections to subcortical brain regions such as the amygdala. Thus, a less efficient connectivity between the vmPFC and the amygdala might explain the observed safety learning deficit in individuals with low HRV.

A-0325 LOOKING FOR SAFETY: A COMPARISON BETWEEN THREAT ABSENCE AND THREAT TERMINATION

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After few pairings, stimuli presented shortly before an aversive unconditioned stimulus (US) elicit fear responses as compared to stimuli associated with US absence, i.e. safety. Strikingly, US offset elicit an appetitive feeling called relief and stimuli presented upon the moment of relief elicit appetitive conditioned responses such as attenuation of startle reflex. It remains unclear whether such appetitive responses are due to the relief after US offset or rather to the safety, which normally follows US offset. In this study, we tested this question. Fifty-eight participants learned that one stimulus (fearCS) was shortly presented before an electric shock (US), one stimulus (reliefCS) was presented shortly after the US, and one stimulus (safetyCS) was never associated with the US. During the following summation test phase, both fearCS and reliefCS as well as fearCS and safetyCS were presented in compound. We found successful fear acquisition for both verbal and

physiological responses meaning that fearCS compared to both safetyCS and reliefCS was rated more aversive and elicited startle potentiation as well as larger skin conductance response (SCR). During summation test, SCRs but not startle responses were significantly attenuated by the compounds safety/fear and relief/fear as compared to the fearCS. In summary, conditioned fear was inhibited by both safety and relief signals suggesting that relief-associated stimuli entail safety properties.

A-0326 BOOSTING SAFETY LEARNING AND TACKLING FEARFUL AVOIDANCE USING COUNTERCONDITIONING

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A central symptom of anxiety is avoidance behaviour, with excessive avoidance being predictive of poor clinical outcomes. This suggests that reducing avoidance could be a fruitful path towards reducing societal problems associated with anxiety. In spite of a large body of evidence on how to reduce fear responses, only few studies have explored how to reduce avoidance. We developed an approach-avoidance conflict paradigm that is sensitive to individual differences in trait anxiety, sex and generalized psychophysiological fear responses. We subsequently used this paradigm to assess the impact of an appetitive counter conditioning (CC) training on costly avoidance behaviour in a healthy group of 23 participants. Results indicated that CC-training in combination with an extinction procedure strongly reduces negative valuation and importantly decreases avoidance behavior. These effects are stronger than for extinction training alone. This preregistered study showed the expected potential of boosting appetitive motivation for avoidance behavior. This suggests that treatment may benefit from focusing on increasing appetitive motivation to overcome avoidance. However, replication of this finding is warranted given the small sample size and therefore we recently tested an additional group of 29 participants. At the meeting the results will be presented together with an analysis of which individuals particularly might benefit from adding counter conditioning to boost safety learning.

A-0327 CAN STIMULATING THE EAR HELP YOUR HEART? TRANSCUTANEOUS STIMULATION OF THE EAR REBALANCES AUTONOMIC FUNCTION.

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There have been many advances in neuromodulatory devices to deliver painless and non-invasive stimulation as a treatment for conditions such as epilepsy and depression. We have utilised the technique of transcutaneous stimulation of the tragus region of the ear (tragus stimulation) to alter autonomic function in humans, shifting the balance towards

parasympathetic (vagal) dominance. There is a strong correlation between baseline sympathetic activity of each individual and the effectiveness of tragus stimulation. Critically, this is also observed in older healthy people over the age of 55, where the balance of baseline autonomic activity is shifted towards sympathetic predominance. Furthermore, chronic tragus stimulation, for just 15 minutes a day over two weeks shifted the baseline levels of autonomic activity towards vagal dominance. Interestingly, subjects also reported improvements in measures of quality of life, mood and sleep. Using neuronal tracing studies, we established that the pathways mediating the effects of tragus stimulation may involve not only ascending inputs to the nucleus of the tractus solitarius and paratrigeminal nucleus but also sensory afferent projections through the upper cervical spinal cord. Moreover, in the working heart brainstem preparation, tragus stimulation decreased sympathetic activity, an effect that was reduced when the dorsal roots were cut. Thus the circuits involved may be more complex than originally thought. These effects of tragus stimulation could be therapeutically relevant since many conditions, such as heart failure are characterised by higher sympathetic activity and this non-invasive neuromodulation may be a viable treatment in these disorders.

A-0328 THE EFFECT OF TRANSCUTANEOUS VAGUS NERVE STIMULATION (TVNS) ON MARKERS OF NORADRENERGIC ACTIVITY.

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Transcutaneous vagus nerve stimulation (tVNS) is a neurostimulatory technique becoming increasingly popular as a potential therapeutic intervention for a wide range of neuropsychiatric disorders (e.g., epilepsy, depression). A major hypothesized working mechanisms through which tVNS could install beneficial effects for such disorders, is the enhancement of central noradrenaline (NA). However, evidence for such noradrenergic mechanism is limited and primarily based on animal research using invasive VNS. In a series of two human studies, we investigated effects of tVNS on markers of phasic (pupil size in study 1, P300 in study 2) and tonic (salivary alpha-amylase in both studies, cortisol and resting pupil size in study 1) NA activity. In each study, 45 healthy participants performed a novelty auditory odd-ball task on two separate days: once while receiving tVNS and once while receiving sham stimulation. Stimulation started 10 minutes before and remained constant during the task. Resting pupil size, cortisol, and salivary alpha-amylase were assessed prior to and at the end of stimulation. Phasic reactions in pupil size and the P300 were studied in response to the oddball task stimuli. We hypothesize that tVNS compared to sham stimulation enhances phasic and resting pupil size, P300, salivary alpha-amylase and cortisol. The data collection is completed. Findings will presented and discussed in terms of hypothesized NA-enhancing effects of tVNS.

A-0329 FROM ATTENTION TO MEMORY: A POTENTIAL MODULATORY ROLE OF NOREPINEPHRINE BY TRANSCUTANEOUS VAGUS NERVE STIMULATION.

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Animal research has consistently found that vagal nerve afferents modulate the central norepinephrinergic release via the locus coeruleus-norepinephrine (LC-NE) system, which supports attention and memory-related processes. To extend these findings to human research, we investigated, in a series of ERP studies, the influence of transcutaneous vagus nerve stimulation (tVNS) on attention and memory. As an indirect marker of central NE release we also measured salivary alpha-amylase (sAA) levels in these studies. In the first ERP study we observed that the attention-related P300 component was enhanced during continuous vagal nerve stimulation, compared to sham. In a second study, in which we investigated the effects of tVNS on encoding of emotional and neutral scenes, we found larger emotion discrimination in the early late positive potential (LPP), an ERP component related to motivated attention. When recognition memory was measured - one week later - for these stimuli, we found enhanced recollection for emotional scenes that were encoded under tVNS, compared to sham, as well as enhanced ERP Old/New differences (index for recollection-based memory) during retrieval. Interestingly, P300 amplitudes (Study 1), LPP amplitudes and recollection memory for emotional scenes (Study 2) were moderated by the increase of sAA levels during tVNS, suggesting that the sAA response to tVNS could be an indicator of the efficacy of tVNS on NE-mediated processes. Taken together, our studies suggest that tVNS may facilitate attention, learning and episodic memory by means of increase of NE release.

A-0340 TASK-SET PRECISION MODULATES ATTENTIONAL BIASES TO TASK-IRRELEVANT THREAT: EVIDENCE FROM A HIGH TRAIT ANXIOUS SAMPLE

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Threat-laden visual information is known to strongly compete for and bias attentional selection, with this traditionally viewed as an involuntary and automatic phenomenon. However, growing evidence now implicates a role of cognitive factors in determining attentional biases to threat. The present study investigated what role one's current task-set may play in modulating biases in attention to threat within a sample of high trait anxious participants, who typically show pronounced threat biases. They completed a dot probe-like task, searching for a particular target face stimulus while attempting to ignore occasional fearful face distractor images. The target face identity was either held constant across an entire condition or was cued anew at the start of each trial. To measure attentional capture by threat, we recorded event-related potentials and examined the

N2pc component as an early visual marker of attentional selection. Results showed that a reliable N2pc component was elicited in response to fearful face distractors during search for targets that changed trial-by-trial. However, no reliable N2pc was found when participants searched for a constant target image, with instead some evidence of a distractor positivity or PD component indicative of early visual suppression. These results demonstrate that one's current task-set can modulate attentional biases to threat even within a sample of high trait anxious participants, and suggest that attentional selection of threat in the visual environment is not always obligatory. This has direct implications to current therapeutic interventions aimed at attenuating threat-related attentional biases in anxious populations.

A-0341 THE ROLE OF THE ERN IN EMOTIONAL VULNERABILITY AND RESILIENCE IN SURVIVORS OF PRIMARY BREAST CANCER

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Breast cancer (BC) is the most prevalently diagnosed malignancy amongst women with more than half of diagnoses given at working age. The trauma of receiving a diagnosis and anti-cancer treatment(s) has been associated with prolonged cancer-related-cognitive-impairments (CRCI) and elevated emotional vulnerabilities including, anxiety and depression. We have demonstrated that perceived CRCI can predict the severity of emotional vulnerability and quality of life in breast cancer survivors (Chapman et al., 2019). The current studies examine the utility of the error-related negativity (ERN) a neurocognitive marker of cognitive control and error performance-monitoring in predicting emotional vulnerability. BC survivors completed a battery of questionnaires measuring cognitive and emotional wellbeing as well as work ability. In addition, they also completed a Change Detection Task, Operation Span Task and a modified Flanker whilst the ERN and the error positivity (Pe) were recorded. Compared with healthy controls, BC survivors showed a greater ERN and a wider recruitment of associated fronto-central network indicative of compensatory effort. Perceived anxiety and depression, as well as emotional functioning, role functioning, global health status, and rumination were significantly associated with the ERN with more severe symptomology indicative of greater emotional vulnerability and worse functioning meeting a more negative ERN amplitude. These results are a crucial first step in supporting the role of the ERN to guide the early diagnosis of emotional and cognitive vulnerabilities in breast cancer, as well as understanding the effects of neurocognitive training in regulating the ERN and boosting resilience in every day performance.

A-0342 NEUROCOGNITIVE MARKERS OF IMPAIRED ATTENTIONAL CONTROL IN PTSD AND THEIR ROLE IN IMPROVING QUALITY OF LIFE IN PTSD

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There is an urgent need for cognitive interventions that target the improvement of everyday life attention control dysfunctions in PTSD, who suffer from debilitating cognitive and emotional symptoms. In my talk, I will present the results of two studies that, firstly, highlighted the importance of ERP components such as VPP, P300, and P200, as critical neurocognitive markers of PTSD, and subsequently investigated the near and far transfer effects of adaptive working memory training to improve cognitive efficiency and quality of life in PTSD. In the first study, individuals with PTSD showed inefficient attention control demonstrated by enhanced neural activity accompanied by reduced processing speed, reductions in working memory capacity, and greater levels of intrusive thoughts in comparison with a healthy control group. Results also showed that compared with healthy controls, PTSD as well as non-PTSD groups showed enhanced neural activity in the presence of ambiguous distractors in the working memory task suggestive of processing inefficiency. The results of the second study indicated the positive near and far transfer effects of a non-emotional adaptive dual n-back training on both behavioural as well as neural markers of attentional control as well as various key facets in quality of life measures relating to intrusion and avoidance. Overall our results provide a new proof of concept that emphasizes the effectiveness of adaptive working memory training in chronic psychiatric disorders such as PTSD.

A-0343 CULTIVATING AFFECTIVE RESILIENCE: TRANSLATIONAL BENEFITS FROM A NOVEL COGNITIVE-EMOTIONAL TRAINING INTERVENTION

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Available evidence highlights the importance of emotion regulation (ER) in psychological well-being, but translation of the beneficial effects of ER from laboratory to real-life benefits in affective resilience is still scarce. In my talk, I will present proof-of-concept evidence from a novel cognitive-emotional training intervention targeting the acquisition of ER skills aimed at increasing resilience against emotional distress, in a group of veterans. This pilot intervention involved training nineteen veterans over for 5-8 weeks

in applying two effective ER strategies (Focused Attention and Cognitive Reappraisal) to scenarios presenting emotional conflicts (constructed with both external and internal cues), and was preceded and followed by cognitive, executive, clinical, and personality assessments; a subsample of ten participants also underwent recording of resting state functional MRI data. Results show overall enhanced executive function and psychological well-being, following training, reflected in increased working memory and general self-efficacy. Moreover, resting state fMRI results showed enhanced functional connectivity between brain regions associated with ER (prefrontal cortex) and basic emotion processing (amygdala), and decreased connectivity between regions associated with cognitive control and visual processing. These findings suggest that our training promotes increased crossed talk between brain regions exerting ER and regions that are susceptible to such top-down control, coupled with reduced bottom-up influences from perceptual regions. Overall, our results provide proof-of-concept evidence that resilience and well-being can be learned through ER training, and that training-related improvements, manifested in both behavioral change and neuroplasticity, can translate into real-life benefits in dealing with emotional challenges.

A-0344 THE HIDDEN CONTRIBUTION OF NEUROSCIENCE IN COGNITIVE AND EMOTIONAL HEALTH

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A noticeable strength of this symposium is that it presents promise for the inclusiveness of neurocognitive applications in addressing similar symptomatology in a number of different populations (generalized anxiety, PTSD, survivors of breast cancer, veterans). In my role as Discussant, I will be drawing on key findings across the four talks to make an integrative argument of the potential predictive role of neural markers in the understanding and treatment of psychopathology as well as building cognitive resilience training techniques. With the increasing popularization of online interventions, neurocognitive training that draws on solid theoretically driven research can not only reduce burden on clinical care, but provide a platform where exercises such as cognitive emotion regulation can be promoted by increasing processing efficiency at low cost and used by thousands of people who can be at risk of psychological vulnerability.

A-0345 INVESTIGATING ANTICIPATORY PROCESSES DURING SEQUENTIALLY CHANGING REWARD PROSPECT: AN ERP STUDY

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Performance-contingent reward prospect modulates the balance between cognitive stability and flexibility in voluntary task switching. Typically, high reward prospect is associated with increased stability, indicated by a low voluntary switch rate (VSR). But

in a context with sequentially changing reward magnitudes this effect depends on the immediate reward history: Only when a high reward prospect repeats (reward remains high), stability is increased. In contrast, when reward prospect increases (high reward following low reward) cognitive flexibility is promoted, indicated by a relatively high VSR. To gather more information about the underlying mechanisms of changing reward expectations during voluntary task choice, we conducted two experiments – one with a standard voluntary task switching, one with a hybrid forced- and free-choice task switching paradigm – and measured reward cue-locked event-related potentials (P2, P3b, CNV). The experiments yielded consistent findings: The P2 amplitude was stronger in response to high vs. low reward reflecting an early attentional boost by high reward anticipation. The P3b was highest in increase, intermediate in remain high, and lowest in low reward trials suggesting responsiveness to both working memory updating and motivational arousal. Finally, the CNV increased with decreasing distance to the target and was sensitive to both reward magnitude and sequence with the lowest amplitude found in reward remain low trials suggesting that preparatory control is only increased when worth the effort. Taken together, early attentional processes (P2) were boosted by mere reward magnitude, while later processes (P3b, CNV) were sensitive to both reward magnitude and its sequence.

A-0346 STABILITY-FLEXIBILITY DILEMMA IN COGNITIVE CONTROL: A DYNAMICAL SYSTEM PERSPECTIVE

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One of the most compelling characteristics of controlled processing is our limitation to exercise it. Recent work suggests that constraints on the allocation of cognitive control facilitate flexible task switching at the expense of the stability needed to support goal-directed behavior in face of distraction. Here, we formulate this problem in a dynamical system, in which control signals are represented as attractors and in which constraints on control allocation limit the depth of these attractors. We derive formal expressions of the stability-flexibility tradeoff, showing that constraints on control allocation improve cognitive flexibility but impair cognitive stability. Finally, we provide evidence that human participants adapt higher constraints on the allocation of control as the demand for flexibility increases but that participants deviate from optimal constraints.

A-0347 THE MIDBRAIN IN FLEXIBLE AND PERSISTENT COGNITIVE CONTROL – THE USE OF VTA AND SN PROBABILISTIC ATLASE

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The dopaminergic system has been associated with cognitive control, and most fMRI studies focus on the role of dopaminergic target structures, the prefrontal cortex and striatum, in the trade-off between flexibility and persistence. However, it is still unclear how the two dopamine (DA)–producing structures in the midbrain, the ventral tegmental area (VTA) and substantia nigra (SN) pars compacta (SNc), exactly modulate cognitive control by means of DA-release to their targets. Some studies treat the VTA and the SN/SNc as a single midbrain DA-complex, due to technical limitations, although histological literature does not indicate a structural and functional unity of VTA and SNc. In fact, they are developmentally, morphologically, and functionally distinct although there is likely to be functional overlap between VTA and SNc. Fortunately, recent developments in in-vivo MRI allow more anatomical precision even in the midbrain using higher field strengths and tailored sequences specifically designed to increase the contrast to noise in a specific area. Consequently, we have constructed a number of probabilistic atlases for the VTA and SN. Thus, today we are able to expand our research on how flexible and persistent cognitive control emerge by means of testing the relationship of the VTA, SN and their target structures in cognitive control. In this talk, I will first discuss the challenges and limitations associated with studying the dopaminergic midbrain using in-vivo (f)MRI, showcase the midbrain atlases we created, and finally outline how this could help us understand the neural dynamics of cognitive control in the human brain.

A-0348 DYNAMIC ADJUSTMENTS IN METACONTROL PARAMETERS

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Metacontrol has been operationalized as a multifactorial process involved in shaping the dynamic balance between cognitive persistence and flexibility. Although an abundance of work has already been devoted to the identification of factors that are able to modulate this balance, it is yet to be uncovered how moment-to-moment adjustments in metacontrol parameters are triggered (Mekern, Hommel, & Sjoerds, 2019). Within this talk, I will present results from an experimental paradigm that was recently developed within our lab, specifically designed to uncover such dynamic adjustments. A total of 117 participants completed two runs of the hybrid foraging task (inspired by Hills, Todd, & Goldstone, 2010). In order to assess participants' general tendencies to explore/exploit, we adopted the Marginal Value Theorem (Charnov, 1976), which aims to characterize and provide an approximation of optimal foraging behavior by tackling the patch-leaving problem. To transiently modulate the metacontrol balance, the hybrid foraging runs were interspersed by a mood-induction manipulation (excited vs. sad), as research has repeatedly indicated affect manipulations to impact metacontrol (Hommel,

2019). In line with previous work, we expected higher levels of valence and/or arousal to promote overall flexibility, consequently increasing the level of exploration in the foraging paradigm. Importantly, provided that metacontrol parameters are supposedly dynamic in nature, we anticipated such control adjustments to be time- and context dependent. I will end my talk by discussing the broad applicability of such paradigms and highlighting how such novel techniques can provide us with more advanced insights in the dynamics of metacontrol policies.

A-0349 TACTILE INTEROCEPTIVE SIGNALS MODULATE THE SENSE OF BODY OWNERSHIP

Laura Crucianelli
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Touch plays a vital role in early social and self-development, and in the maintenance of psychological wellbeing in humans. In the last decade, philosophy, neuroscience and psychology alike have paid increasing attention to the study of interpersonal affective touch, which refers to the emotional and motivational facets of tactile sensation. These affective signals from tactile stimulation are processed by a separate physiological system (i.e. C Tactile afferent fibers), which projects to the insular cortex, a core brain region for bodily self-awareness and homeostatic regulation. Thus, according to some views, these signals from the skin can be re-defined as an interoceptive modality since they provide information about the internal state of the body. Accordingly, I will present a series of studies (N = 140) exploring body representation using a wellestablished illusion of ownership, i.e. Rubber Hand Illusion, and particularly the contribution of both interoceptive (i.e. information about the physiological condition of the body, such as affective touch and temperature) and exteroceptive (i.e. visual cues) signals to the perception of a body part as belonging to ourselves. Our results show that not only spatial and temporal but also interoceptive congruency might be necessary for the rubber hand illusion to occur. Thus, skin-mediated interoception signals may make a unique contribution to the sense of body ownership, and by implication to our embodied psychological 'self'. Such studies hold the potential to provide empirical confirmation to the idea that our self is built upon caring, embodied interactions with others via multisensory integration processes.

A-0350 IF IT'S HOT IT'S MINE IF IT'S COLD, IT'S YOURS: BODY OWNERSHIP AND BODY TEMPERATURE

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Recent evidence has postulated the existence of a link between body ownership and body temperature. I will present 3 studies on healthy subjects and braindamaged patients on this topic. In study 1, 34 healthy participants were administered with a mirror box

illusion paradigm. The participants' right hand was positioned against the mirror, while their left hidden hand was positioned 6'' from the mirror – creating a conflict between visual and proprioceptive estimates of limb position. They were asked to tap their left and right fingers synchronously or asynchronously on the mirror. Results showed a bilateral temperature drop following the synchronous condition compared to the asynchronous condition, which correlated with the illusion of limb displacement extent. In study 2, we investigated body temperature variations following Caloric Vestibular Stimulation (CVS), in a patient affected by somatoparaphrenia who regained the sense of body part ownership after the stimulation. Results showed an increase in body temperature after CVS, which also correlated with the temporary restored sense of limb ownership. In study 3, we investigated body temperature in individuals with Body Integrity Dysphoria (BID) who may report an intense desire to have one of their healthy limbs to be amputated. Seven individuals with BID seeking for amputation of one leg were administered with a bodily awareness task. Results showed a decrease in leg temperature bilaterally in BID compared to controls when their attention was directed to the legs. These findings demonstrated that the integration of exteroceptive and physiological signals maintains a coherent sense of the self.

A-0351 THE SELF-OTHER BODY BOUNDARIES IN BRAIN-DAMAGED PATIENTS WITH PATHOLOGICAL EMBODIMENT

Carlotta Fossataro
University of Turin

The sense of body ownership (i.e., the feeling that our body parts actually belong to us) is something that we typically take for granted. However, it can be dramatically impaired in pathological conditions. Paradoxical behaviours of brain-damaged patients affected by bodily awareness disorders can shed light on the normal neurocognitive mechanisms involved in the construction of the bodily self. I will present some studies about a novel delusion of body ownership that we recently described in brain-damaged patients who misidentify other people's limbs as their own (i.e., Pathological Embodiment). A series of experimental evidence suggests that Pathological Embodiment is not a mere verbal confabulation but, instead, alters the patients' conscious behaviour in both motor and somatosensory domains. According to the classical neuropsychological inference, this pathological behaviour suggests the existence, in the normal functioning brain, of a specific neural process that binds self-awareness to one's own body, as opposed to others' body.

A-0352 DOES THE MOTOR SYSTEM REALLY CARE ABOUT YOUR (OWN) BODY?

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The feeling that our body belongs to us is commonly referred to as the sense of body ownership, a phenomenon generated by the combination of multiple sensory modalities (e.g., touch, vision, proprioception). However, it is not yet clear whether the sense of ownership over our body supports movement. Whilst there is some evidence to suggest that manipulations of body ownership can induce changes in target-directed action and motor cortical activity, this does not mean that a sense of ownership over the body is important for movement production per se. To address these issues, we examined the influence of two manipulations of upper limb ownership on simple rapid finger movements. In the first experiment, in which we used multisensory disintegration to reduce the sense of ownership over participants' real right hand, we observed no convincing evidence for interference with basic movement. We observed similar results in another experiment when we used the rubber hand illusion to induce a sense of ownership over a false hand. These results suggest that the motor system is not reliant on a strong sense of ownership over the real body to produce basic movement, in contrast to the performance of target-directed actions, which necessarily requires distinguishing between world and self. In addition, movements can be rapidly generated even when one's real limb has been 'replaced' with a false one, confirming that false limbs can be effectively integrated into the motor system – a potentially important finding for prosthetic development.

A-0353 HOW THE EFFECTS OF ACTIONS BECOME OUR OWN

Laura Zapparoli, Eraldo Paulesu
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Although much of the functioning of our motor system occurs without awareness, we "know" when we are actors of our behaviour. The feeling of voluntarily controlling our own actions and, through them, the events in the outside world, is the so-called sense of agency, a crucial component of action monitoring and self-awareness. To some, this sense of agency derives from a post-hoc reconstruction of a likely causal relationship between an event and our preceding movements (reconstructive hypothesis); others propose that the sense of agency originates from prospective comparisons of motor programs and their effects (constructive hypothesis). To test these alternative models, we devised a temporal judgment task that allowed us to measure the intentional binding phenomenon, an implicit measure of the sense of agency. Using fMRI, we found that the sense of agency is associated with a brain network, including the pre-SMA and dorsal parietal cortex. Repetitive transcranial magnetic stimulation affected the sense of agency only when delivered over the pre-SMA, and specifically when time-locked to action planning, rather than when the physical consequences of the actions appeared. Our findings show

that the activity of brain regions involved in action at the stage of its planning is important for the manifestation of an implicit sense of agency, making the constructive hypothesis on the sense of agency more likely. By the same token, our findings allow us to reject a strictly post-hoc reconstructive hypothesis, solely based on logical inferences about the circumstances that have led to a physical event to occur.

A-0354 REGULATING NEGATIVE EMOTIONS OF OTHERS REDUCES OWN STRESS: NEURAL CORRELATES AND THE ROLE OF EMPATHY

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While witnessing the suffering of other people results in personal distress, it is not clear whether regulating others' emotions in such situations also comes at an emotional cost for the observer. The present study included 62 subjects and used a novel functional Magnetic Resonance Imaging (fMRI) paradigm to investigate mechanisms of self and other emotion regulation via reappraisal and their relationship with individual differences in compassion and cognitive empathy. We found that individuals exhibited especially high levels of personal distress when an interaction partner -vs. themselves- was exposed to aversive photographs and that especially highly compassionate individuals were prone to such personal distress. When engaging in social emotion regulation, however, personal distress was reduced in the observer at a similar rate as in self emotion regulation. FMRI analyses showed increased activation for other vs. self emotion regulation in the precuneus and the left temporo-parietal junction, which are commonly engaged in social cognition. This activation was associated with lower self-reported stress and decreased sympathetic autonomic activity. Moreover, precuneus activation during other regulation showed a specific effective connectivity profile with parietal emotion regulation regions. This study demonstrates benefits of actively regulating another person's emotions for reducing one's own distress and identifies the precuneus as an important node for social emotion regulation.

A-0355 BRAIN MECHANISMS OF SOCIAL EMOTION REGULATION

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Emotion regulation, any process by which emotional feelings are altered, is crucial for our emotional well-being. Though often overlooked, in addition to self-regulating our

emotions, fellow conspecifics affect our feelings on a daily basis – a process known as social emotion regulation. On the one hand, the simple presence of a trusting other can have a calming emotional effect. On the other hand, people can use more elaborate techniques to change our emotions, such as social cognitive emotion regulation or social reappraisal. We still know very little about the neural systems involved in the two regulation strategies. To reveal the neurobiological underpinnings of supportive social presence and social reappraisal, participants were exposed to negative stimuli in an fMRI scanner while either alone or in the presence of a psychotherapist they briefly met before the experiment. Depending on the study, the psychotherapist regulated participants' emotions either via supportive social presence or by way of social reappraisal. The impact of supportive social presence on negative feelings was mediated by three sequential processes; it first reduced activity in the orbitofrontal cortex, ventromedial and dorsolateral prefrontal cortices, and anterior and mid-cingulate; then, activity was lowered in the amygdala and thalamus; finally, this led to lower reported aversive emotions. Social reappraisal instead recruited the fronto-parietal brain system typically involved in self-initiated reappraisal, and additionally engaged the "social default mode network" – dorsomedial PFC, precuneus and temporoparietal junction. Our findings illuminate brain processes underlying the two social emotion regulation strategies and have important implications for psychotherapy.

A-0356 NEURAL BASIS OF EMOTIONS IN SOCIAL INTERACTION

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Emotions are central in social interaction, affecting our interpretations of the situation as well as our behavior. We enter social interaction in our current emotional state, as do the other people involved. Emotions of the interaction partners consequently affect each other during interaction in a reciprocal fashion. Moreover, while we sometimes automatically align with the emotional state of others (e.g., feelings of happiness when a friend tells a happy story) in other situations the emotional state of the other triggers a mismatching emotion in us (e.g., fear when an angry person attacks). Yet, the neural mechanisms underlying the flow of emotions across interacting persons remain unresolved. In a series of studies using naturalistic stimuli – emotional stories and movies – during functional magnetic resonance imaging (fMRI), we investigated the neural basis of emotional alignment. We showed that similarity of emotional states during autobiographical stories is associated with similarity of neural states between the speaker and the listener. Changes in experienced valence and arousal were associated with speaker-listener neural synchronization in brain regions supporting attentional, auditory, somatosensory, and motor processing, and in brain regions involved with emotional processing, respectively. Furthermore, while previous studies using movies have largely assumed automatic alignment of emotions and ignored

the potential misalignment between the emotional state of movie characters and viewers, we combined eye-tracking and fMRI data using emotional movies to demonstrate the behavioral and neural substrates of these differences. Taken together, our results allow a better parcellation of the emotional processes during naturalistic interaction.

A-0357 INTER-BRAIN NEURAL SYNCHRONY DURING RECIPROCAL SOCIAL INTERACTION

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An emerging body of research shows inter-brain neural synchrony (IBS) during different forms of social interaction. Here we review the recent literature and propose several underlying principles of IBS, leading us to ask – in a world full of people and opportunities to synchronize with them, what directs our neural and behavioral alignment with anyone specific? We provide several examples of how this inter-brain neural synchrony between the "mutual social attention systems" – i.e., the coupling between TPJ and/or prefrontal cortices of interacting partners facilitates more attunement and greater allocation of attention to a specific social interaction, its participants and its goals, while tuning out other potential interactions. We propose a core mechanism for social connectedness comprising of a loop between two components: a Social Attention System and a Social Alignment Loop. Importantly, we elaborate on the potential role of the neurochemical mechanisms of Oxytocin and Dopamine in modulating the loop between these two components, thereby determining why we align our behavior with anyone specific. We propose that our model may be particularly relevant for elucidating mechanisms of reciprocal social interaction. Finally, we suggest the possibility that dysfunctional IBS within the mutual social attention system may contribute to the etiology and maintenance of psychiatric and clinical conditions associated with deficits in social cognition and interaction.

A-0358 MODELLING DYNAMIC FACIAL EXPRESSIONS OF EMOTION USING DATA-DRIVEN METHODS

Rachael Jack
University of Glasgow

Understanding how face movements convey emotions has been a source of intense investigation for over a century. However, addressing this question is challenging due to the number and complexity of dynamic patterns the human face can make. Traditional approaches have primarily used theory-driven methods and hypothesis testing, which, while advancing understanding, have restricted knowledge by introducing Western-centric biases. New technologies and data-driven methods developed via interdisciplinary collaborations alleviate these constraints, giving traction to this complex

task and delivering novel insights. Here, we showcase an approach that combines social and cultural psychology, vision science and psychophysics, mathematical psychology, and 3D dynamic computer graphics to objectively model dynamic facial expressions of emotions in different cultures. We provide precise characterizations of the dynamic face movements that are cross-cultural, that are culture-specific, and the emotion information they convey, including broad dimensional information (e.g., positive, high arousal) and specific emotions (e.g., delighted). Specifically, we show that four, not six, core expressive patterns are cross-cultural, and that facial expressions of emotion transmit information in an evolving, broad-to-specific structure over time. Our work challenges dominant views of universality and forms the basis of a new theoretical framework that has the potential to unite different views (i.e., nature vs. nurture; dimensional vs. categorical). Finally, we show transference of this knowledge of dynamic facial expressions to social robots by providing a generative syntactical model for social face signaling, thus providing new opportunities for Psychology to play a central role in designing digital agents of the future.

A-0359 CHARACTERIZING VARIABILITY IN AFFECTIVE EXPERIENCES ACROSS ADOLESCENCE

Leah Somerville
Harvard University

Classic research has revealed that the transition to adolescence is marked by intensified experiences of negative affect, which has frequently been linked to the increased risk for onset of psychopathology during this developmental phase. Using a data-driven analytical approach in a large corpus of affect report data in children and adolescents, we aimed to characterize whether negative affect changes in intensity and in kind across development. We assembled affect report data from N>800 9-17 year olds who took part in the Human Connectome Project in Development, a large crossnational study conducted in the USA. Latent profile analysis revealed multiple negative affect subtypes in this age range, including individuals whose negative affect was predominantly sad and lonely, predominantly angry, predominantly anxious and others. This talk will present findings focused on whether these subtypes are differentially predominant at different ages and relate differentially to psychopathology risk.

A-0360 FUNCTIONAL BRAIN NETWORKS MEDIATING INDIVIDUAL DIFFERENCES IN VALENCE BIAS

Maital Neta
University of Nebraska, Lincoln

Negativity bias has been thought to underpin the development and persistence of mood and anxiety conditions. This bias can be seen in early development and is relatively stable, but can be overridden with emotion regulation strategies. The neurobiological bases of negativity bias, however, remain poorly understood. Studies have shown that specific facial

expressions can be useful elicitors of negativity bias. Although some expressions (e.g., happy or angry) provide clear information about the emotions and intentions of others, others (e.g., surprise) are ambiguous because they signal both positive (e.g., unexpected visit from an old friend) and negative events (e.g., hearing news that a friend was in a car accident). When presented without contextual information, these ambiguous expressions are used to identify a valence bias; or the tendency to perceive positive or negative meaning. We have shown that the automatic interpretation of surprise is biased negatively and this early negativity involves the amygdala. Producing a positive interpretation, then, requires an additional regulatory process, which might be compromised in depression and anxiety. Our work examines the contribution of two putative neural mechanisms of regulation that allow for a positive bias: 1) regions functionally connected to the amygdala; and 2) regions that comprise a domain-general control network (i.e., the cingulo-opercular network), which are recruited when making judgments about ambiguity. Using resting state functional connectivity and machine-learning algorithms (support vector regression), we determine the extent to which individual differences in brain connectivity in these networks can predict one's valence bias.

A-0361 DEGENERACY IN NEURAL MODELS OF AFFECT AND EMOTION

Ajay Satpute
Northeastern University

Degeneracy refers to a many-to-one mapping between physical structures and their functional (including psychological) outcomes. It is a common property in biological systems. In this talk, I propose degeneracy in the biological signals related to fear. Using supervised learning approaches, I present findings showing that fear of heights, social situations, and spiders have different peripheral physiological correlates (N = 50), and that the multivariate neural patterns for fear are also distinct in each case (N = 21). While these novel findings support degeneracy in the biological basis of fear, unsupervised strategies are actually preferable for a discovery-oriented science that reveals degeneracy in affective science. A new unsupervised computational approach, referred to as neural topographic factor analysis (NTFA), is proposed to address degeneracy in neuroimaging data. Simulations show how NTFA performs when the mind-brain mapping is degenerate v. non-degenerate. NTFA is a useful approach to uncover the neural basis of individual differences in task-based fMRI, to test experimenters' a priori assumptions about how stimuli organize into conditions, and to formally model degenerate neural mappings. NTFA, when applied to the presented neuroimaging data on fear, suggests there is systematic, fear-related neural variation even at the level of individual subjects. Implications are discussed for identifying putative biomarkers for fear, and affective and emotional states more generally.

A-0362 AFFECTIVE FACE PROCESSING IN THE ABSENCE OF RIGHT TEMPORAL LOBE STRUCTURES

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Enhanced processing of emotional stimuli is well known as the concept of motivated attention (Lang, 1997). Although temporal lobe structures, such as the amygdala, are commonly assumed to be crucial for the enhanced processing of emotional stimuli, evidence for a causal influence is rare and inconsistent. To clarify the impact of temporal lobe structures on affective face processing, we investigated a homogenous group of 19 patients who underwent right temporal lobe resection (rTLR) including amygdala and hippocampus and a matched control group. We collected behavioral data as well as electrocortical responses towards affective and neutral faces in a passive viewing paradigm. ERPs were analyzed in four time windows associated with the processing of emotional and/or facial stimuli (P1, N170, EPN, LPP). Results showed that rTLR causes a decreased emotional modulation in very early (P1) and late (LPP) time windows. For mid-latency components, emotional modulation was intact (N170), yet shifted from right-lateralized to bilateral processing (EPN). Behavioral data showed neither a group difference regarding valence and arousal ratings of faces nor in basic emotion identification. However, a morphing paradigm demonstrated that rTLR patients need more information to correctly identify a facial expression. Memory performance for faces was reduced in patients, but a more liberal response behavior toward affective faces occurred in both groups. Our data specify electrocortical time windows when affective face processing is modulated by right temporal lobe structures. The finding of rather mild behavioral deficits supports the notion that multiple mechanisms contribute to successful processing of facial expressions.

A-0363 THE IMPACT OF ADVERSE CHILDHOOD EXPERIENCES ON SOCIAL LEARNING, FACE PERCEPTION AND RECOGNITION: AN ERP STUDY

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Individuals with adverse childhood experiences (ACE; i.e., abuse and/or neglect) often develop stress- and anxiety-related disorders in adulthood. These are associated with impaired discrimination between threat and safety cues, as well as memory deficits even within safe situations. Whereas healthy individuals are more likely to recognize emotionally arousing stimuli than neutral ones, it is assumed that this beneficial effect of arousal on memory is reduced in participants with ACE. Using event-related brain potentials, we examined the impact of (un-)successful contextual threat and safety learning on memory encoding and recognition of faces. In Study 1, 30 healthy participants

saw 60 neutral faces either in a context signaling threat-of-shock or safety (30 pictures each; encoding session). In the following recognition session, the 60 old and 30 new faces were presented intermixed and participants had to decide whether a face was new or previously presented in which context (old/new source memory task). Results show that face processing varied as a function of contextual source information during the encoding session. Threatening compared to safe face–context compounds revealed differential neural processing (early parieto-occipital and late fronto-central negativity). Regarding recognition performance, face and source recognition was very poor. Still, brain activity differentiated previously seen faces from newly presented pictures (old/new ERP effect). In Study 2, 40 individuals with ACE underwent a similar experimental procedure. Preliminary results indicate that an explicit learning instruction and prolonged picture presentation boosted the general memory performance. Behavioral and ERP findings will be discussed within the framework of stress-related disorders.

A-0364 ATTENTIONAL CONDITIONS DIFFERENTIALLY AFFECT EARLY, INTERMEDIATE AND LATE NEURAL RESPONSES TO EMOTIONAL EXPRESSIONS AND CONDITIONED EMOTIONAL FACES

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There is an ongoing interest in understanding human face and emotional expression perception. However, the role of attentional conditions for the modulation of early (P1, N170), mid-latency (EPN) or/ and late (LPP) components of the ERP to emotionally relevant faces are still unclear due to high variability of task conditions and study power in previous studies. In this talk, two preregistered and highly powered experiments are presented manipulating feature-based attention to a perceptual task, the face, or the emotional information in the face, examining ERP responses. One experiment (N = 40) focused on the comparisons between fearful versus neutral expressions, the other (N = 40) on inherently neutral expressions which were negatively or neutrally conditioned by semantic information. ERP data show that firstly, P1 emotion effects are task-independently found for emotional expressions, but not for conditioned faces. Further, N170 responses are task-independent as well, but found for both emotional expressions and conditioned faces. In contrast, attention-task by emotion interactions are found for the EPN and LPP. For the EPN, emotion effects are most pronounced when attention is directed towards the emotional feature, but not abolished in other tasks. For the LPP, attention to the emotionally relevant feature is necessary to elicit a late differentiation, being similarly observed for inherently emotional as well as for conditioned emotionally charged faces. These results further specify the attention constraints of mid-latency and late emotion effects, as well as the resource independency of the N170 and the additional low-level dependency of the P1 component.

A-0365 BEAUTIFUL IS GOOD, MORAL IS BETTER: SOCIAL JUDGMENTS BASED ON FACIAL ATTRACTIVENESS AND AFFECTIVE INFORMATION

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Social-emotional impressions are formed based on the attractiveness of a person's face, and we tend to judge beautiful people more positively. Further, knowing about the good or bad deeds of persons strongly influences how we perceive and judge others. Here, we investigated the interplay between attractiveness and person-related information on social judgments, employing event-related brain potentials. Participants associated negative, neutral or positive information with attractive or less attractive persons. In a separate test phase, they judged the persons based on the information. Attractiveness had an influence on social judgments only in the neutral but not in the positive or negative information condition. Reaction times reveal a congruency effect in the emotional knowledge conditions: positive information lead to faster judgments of attractive faces, and negative information to faster judgments of less attractive faces. Modulations of early brain responses associated with reflexive emotional processing (early posterior negativity, EPN) showed independent effects of affective information and attractiveness. Whereas later brain responses associated with more reflective emotional processing (late positive potential, LPP) reveal an interaction of person information and attractiveness, with stronger effects in the congruent conditions. Our findings suggest that social judgments are predominantly based on affective information, but may also be modulated by facial attractiveness.

A-0366 VERBAL THREAT LEARNING AS A FUNCTION OF PERSONAL RELEVANCE AND EMOTIONAL EXPRESSION: INSIGHTS FROM PERIPHERAL PHYSIOLOGY

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Recent research has shown that pictures of highly supportive individuals fail at acquiring aversive features and improve extinction learning in classical conditioning protocols. However, in studies using the threat-of-shock paradigm it has been observed that verbal threat instructions easily override pre-existing emotional meaning of loved familiar faces (e.g., romantic partner, parents) and emotional expressions, prompting a clear defensive reaction. Here, we aimed at looking into the modulation of psychophysiological responses related to threat as a function of both personal relevance and emotional expression in order to further clarify whether pictures of highly supportive individuals could act as prepared safety cues. Forty-six participants took part in this study, where pictures of loved and unknown individuals were used as threat/safety cues displaying happy, neutral and angry facial expressions. The task comprised a total of 78 picture

trials including 48 auditory startle probes. Happy and angry faces were used as threat/safety cues, whereas neutral faces remained uninstructed. Main results revealed a clear defensive reaction regardless of either personal relevance or emotional expression: faces cueing threat were associated with sustained heart rate deceleration, increased skin conductance, and potentiated startle. Nevertheless, a different pattern emerged for corrugator and zygomaticus EMG activity: pictures of the romantic partner with a happy expression elicited corrugator inhibition and increased zygomaticus responses compared to unknown individuals, irrespective of verbal instructions. Taken together, these results show that threat instructions do not spare loved ones and call further into question the hypothesis that these stimuli could be considered as prepared safety cues.

A-0372 SPATIAL PROCESSING DURING AVERSIVE VR EXPERIENCES: ARE INTRUSIVE MEMORIES VIEWPOINT-DEPENDENT?

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Intrusive memories are a core feature of post-traumatic stress disorder (PTSD). According to Dual Representation Theory, these symptoms can arise when trauma survivors fail to form hippocampus-based trauma representations that are allocentric and independent of one's viewpoint (i.e., coding features relative to each other rather than to the viewer). I will discuss empirical evidence linking better allocentric memory to fewer intrusive memories and lower levels of PTSD symptoms. I will highlight a series of studies addressing spatial memory formation in a Virtual Reality (VR) scenario that provokes intrusive memories in healthy participants. Study 1 (N=92) demonstrates that spatial memory is better from the original encoding perspective compared to shifted viewpoint, which requires additional allocentric processing. Enhanced spatial memory was also evident for scene elements that caused higher levels of distress, and among individuals who had superior allocentric abilities. Replicating and extending these findings, we show that the VR scenario successfully elicits intrusive memories measured in a 3-day intrusion diary (Study 2; N=100) and with an intrusion provocation task (Study 3; N=96). Furthermore, Study 2 and 3 manipulated explicit spatial encoding strategies, but were largely unsuccessful in altering objective indices of spatial memory. However, correlational analyses suggest that a stronger subjective focus on spatial relationships may be associated with lower intrusion-related distress. I will discuss implications for the role of hippocampus-based memory formation in PTSD and avenues for future research, including an allocentric memory training that we are currently developing.

A-0373 REDUCED COHERENCE OF EPISODIC MEMORIES FOR NEGATIVE EVENTS IS ASSOCIATED WITH INCREASES IN INTRUSIVE MEMORIES

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Events are thought to be stored in episodic memory as coherent representations, with which the constituent elements are bound together, so that a cue can trigger re-experience of all elements via hippocampal pattern completion. Negative events can influence memory in complex ways, strengthening memory for the emotional content whilst impairing important associations between the content and surrounding context, and in some situations resulting in severe memory disturbances as seen in posttraumatic stress disorder (PTSD). I will discuss behavioural and neuroimaging findings showing how the presence of negative items can disrupt associative memory and reduce the coherence in which multimodal events are remembered. I will highlight the key role of the hippocampus in supporting memory coherence and the way with which negative content might down modulate its function to weaken associative encoding and impair pattern completion. I will also discuss how these characteristics of memory for negative events contribute to the occurrence of intrusive memories for negative events, a primary feature of PTSD.

A-0374 TEMPORO-SPATIAL DYNAMICS OF THE IMPACT OF EMOTIONAL CONTEXT ON OBJECT RECOGNITION MEMORY.

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It has frequently been observed that single emotional events are better remembered than neutral events. Interestingly, when emotional information is encoded as a part of a complex event, such as in the context of or in relation to other events and/or source details, the modulatory effect of emotion is less clear. In a series of electrophysiological (ERP) and neuroimaging studies (fMRI), we examined how emotional, contextual source information (background images) modulates long-term retrieval of associated neutral material (neutral objects) and contextual source details. We observed that objects from emotional contexts were better remembered and with more source details than objects from neutral contexts. This memory enhancing effect of emotional context was also accompanied by larger late parietal Old/New differences in ERPs, and larger activation of recollection-related brain regions, including areas from the medial temporal lobe, posterior parietal and prefrontal cortices during retrieval. The recollection-related enhancement for emotional associates in ERPs was also observed even when retrieval was not explicitly instructed, that the mere viewing of salient associated information automatically facilitate retrieval. This talk will also include data (which are currently analysed) on the potential disruptive role of stress on item and source memory for emotional information. Altogether, our findings may provide valuable insights into the binding mechanisms involved in the

activation of emotional memories by contextual cues, which could also be relevant for trauma and stressor-related disorders.

A-0375 FORGET ABOUT IT: THE INFLUENCE OF STRESS ON THE ABILITY TO CONTROL INTRUSIVE THOUGHTS

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Intrusive thoughts can prevent us from letting go of what we would rather forget. Intentional memory control, can lead to subsequent forgetting of these thoughts. Intentional control relies on the function of the executive control network, which is found to be impaired after exposure to acute stress. The current talk will discuss the extent to which acute stress affects the capacity to intentionally control intrusive thoughts about future fears and its underlying neural correlates. We hypothesize that this stress-induced increase in intrusions will be paralleled by 1) reduced cross-frequency coupling between frontal theta phase and posterior gamma power and 2) less reduction in theta power in the medial temporal lobe for no-imagine items. Results demonstrate that the stress induction using the Maastricht Acute Stress Test (MAST), was efficient as demonstrated by significant increases in subjective and physiological stress markers (e.g., blood pressure and cortisol). The total amount of intrusions were significantly higher after exposure to acute stress. Behavioural results and frequency analyses will be presented. These findings provides the groundwork for understanding the effects of stress on memory control and the neural mechanisms that underlie intrusive thoughts.

A-0376 THE HIPPOCAMPUS AND FEAR GENERALIZATION ACROSS CONTEXTS: IMPLICATIONS FOR POST-TRAUMATIC STRESS

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The ability to remember which cues in the environment predict threat serves an imperative survival-mechanism. Because natural stimuli rarely re-occur in the exact same way, the ability to generalize fear learning across situations is essential. But such fear-generalization across contexts can turn maladaptive when nonthreatening stimuli or contexts are inappropriately treated as harmful, a main characteristic of patients with anxiety disorders and post-traumatic stress disorder (PTSD). A sub-region of the hippocampus - the dentate gyrus (DG) – is thought to be essential for the successful encoding and retrieval of distinct memory traces of similar experiences, thereby actively disambiguating overlapping sensory inputs. Thus, DG-dysfunction may result in a failure to disambiguate a new experience from stored fearful memories and may thereby be at

the root of fear-generalization. In the present talk I will commence by presenting a series of behavioural and psychophysiological studies revealing how alterations in contextual processing due to stress and concomitant stress hormones can modulate vulnerability for the development of traumatic memory intrusions as seen in PTSD. Then, I will discuss recent work revealing that smaller dentate gyrus subfields of the hippocampus relate to amplified fear generalization across contexts. Finally, I will discuss a large-scale prospective study revealing that smaller pre-trauma volumes of the DG predict post-trauma development of stress-symptoms, most notably traumatic intrusions. Together this series of studies reveal detailed insight in the mechanisms of fear generalization across contexts, and how these relate to increase vulnerability for the development of traumatic memory intrusions.

A-0378 RACIAL BIAS IN NEURAL RESPONSE TO OTHER-RACE PEOPLE IS REDUCED WITH EXPOSURE TO POSITIVE SOCIAL INFORMATION

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The present study used EEG/ERPs to detect the activation of implicit stereotypical representations associated to people diverse ethnicity and their possible reduction through the presentation of "progressive" material in the form of videos. In study 1, EEG/ERPs signals were recorded while 20 Italian Caucasian participants, unaware of the overall study's purpose, were visually presented with 285 sentences that could either violate, non-violate (e.g., "the Roma girl was involved in a robbery) or be neutral with regard to stereotypical concepts concerning other-race people (e.g. Asians, Africans, Arabic). ERPs were time-locked to the terminal words and the results showed that words violating ethnic stereotypes elicited a greater anterior N400 response, reflecting a difficulty in integrating the information incongruent with pre-existing stereotypical knowledge. In Study 2, the same procedure was applied to 40 participants after they had been exposed to either a social or a neutral video documentary, both accompanied by classical piano music. While the experimental group was presented a social video that pictured other-race individuals involved in "prestigious" activities that violated stereotypical negative assumptions (e.g. a black neurosurgeon leading a surgery team), the control group viewed a neutral documentary about flora and fauna of the world. The results showed that only the control group exhibited a greater N400 in response to words incongruent with ethnic stereotypes, exactly as in the Study 1. No N400 effect was found for the experimental group. The swLORETA inverse solution, performed on the prejudice dependent N400 showed that the Inferior Temporal and the Superior and Middle Frontal Gyri were the strongest N400 intra-cortical sources in both studies. The data possibly indicate how the visual exposition to "progressive" material can reduce a pre-existing racial prejudice (as reflected by N400 effect), Further research will be necessary to establish whether this modulation it is maintained over time, beyond the working memory span.

A-0379 ACUTE PHYSICAL ACTIVITY INFLUENCES INTERCEPTIVE PROCESSING: THE MODERATING ROLE OF CHRONIC STRESS

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Background: Interoception, defined as the sense of the internal bodily state, plays a critical role in the multifaceted concept of wellbeing. More specifically, the ability to accurately track and monitor physiological signals – interoceptive accuracy (IAcc) – has been proposed to support a more finely-tuned regulation of the self. Whilst supporting stability of the organism to support allostasis, IAcc itself has also been found to be modifiable by context-specific manipulations e.g. induced physiological arousal or cognitive-based focus of attention. One factor proposed to influence such context-specific elevations in IAcc is chronic stress. It remains unclear, however, how chronic stress influences such processes in healthy, non-clinical populations. Methods: Therefore, in a 2x2 repeated-measures design, 24 healthy adults (Mage = 26.71 ± 5.46, 50% female) completed four conditions varying in both physiological arousal (arousal vs rest) and focus of attention (interoceptive vs exteroceptive) to assess the influence of chronic perceived stress on context-specific elevations in IAcc. Chronic perceived stress was measured using the perceived stress scale (PSS10) at baseline, and IAcc was measured using the heartbeat tracking task immediately after each 20-minute manipulation. Results: Results revealed that those with higher chronic perceived stress had a significantly higher IAcc following manipulations of physiological arousal compared to those reporting lower chronic perceived stress, accompanied by a significantly higher overall rating of task enjoyment for those conditions. No significant differences in either IAcc or overall task enjoyment were found in the rest conditions. Additionally, there were no significant effects for the focus of attention manipulation. Conclusion: Results are discussed in light of stress attribution and the eustress phenomenon.

A-0380 DOES BELIEF IN FREE WILL INFLUENCE BIOLOGICAL MOTION PERCEPTION?

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While previous research suggests that belief in free will influences the attribution of intentionality towards social behavior, virtually no research has been done to investigate whether high-level beliefs can also influence more basic processes of social perception. The aim of our study is to investigate whether free will related beliefs (including belief in dualism and belief in determinism) influence basic social-cognitive processes relevant to intention perception such as biological motion perception. Specifically, based on evidence that biological motion is an intention carrier, we hypothesized that belief in free will might act like a "magnifier" that enhances biological motion detection through increasing perceived intentionality. We adopted Signal Detection Theory (SDT) to measure the ability of detecting biological motion from scrambled background noise (d') and response

bias (c). Experiment 1 (N = 380) suggested that belief in free will, belief in determinism, and belief in dualism negatively predicted perceptual sensitivity, and that increased belief in determinism and dualism were associated with a lower detection threshold. In Experiment 2 (N = 294), we manipulated belief in free will. While we did not find an effect of the manipulation on sensitivity and response bias, we did find that belief in determinism predicted response bias across both groups. An exploratory analysis combining the data of Experiment 1 and 2 finally suggested that belief in dualism negatively predicts perceptual sensitivity and that increased belief in determinism is associated with a lower detection threshold. In conclusion, our study broadens the perspective of top-down processing of social perception by demonstrating that free will related beliefs correlate with basic social-perceptual processes and decision making. Key words: high-level beliefs, social perception, biological motion, free will belief, determinism belief, dualism belief

A-0381 YOUR BEHAVIOUR MAY HELP ME, BUT I DON'T TRUST YOU: THE INFLUENCE OF GAZE-CUE VALIDITY ON IMPRESSION FORMATION

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People are adept at detecting and extracting social information in their environment. Without instruction, we effortlessly infer traits about others from observing their behaviour. For example, the validity (congruence with target) of faces' gaze-cues influences subsequent ratings of their trustworthiness, even when their cues are task irrelevant. Little is known about either how quickly we learn to detect others' social cues, or how the utility and valence of cues relates to the strength of impressions formed when cues are task relevant. Here, gaze-cue validity experienced during an incentivised game explored both the social learning process itself, and its influence on impression formation. Across two pre-registered experiments, participants completed a card-guessing game where following a probability based strategy allowed for adequate performance (max 62.5%). Faces provided either valid (helpful) or invalid (deceitful) gaze-cues by looking toward or away from the correct answer, respectively. Crucially, all faces were predictive, meaning higher accuracy could be achieved if their gaze-cue validity was detected and used to guide choices, and even though some faces displayed negative behaviour, it did not have a negative effect on the players' performance. Some participants learned the utility of the faces' cue validity almost immediately, while others learned more slowly. Notably, there was no difference in accuracy rates for valid and invalid faces, suggesting the predictability of gaze-cues, not their valence, was most important for learning. Despite that, invalid faces were perceived much more negatively than valid faces (Exp.1) and faces who behaved inconsistently, thus interfering with performance (Exp.2). Further, learning-rates did not predict impression strength. Interestingly, a small minority of participants did not use the cues throughout the game, revealing that even when social cues are available and task relevant, they are not always identified. Together, results demonstrate that even when another's negative behaviour benefits us, we will still consider their perceived intent over our own outcome when it comes to forming beliefs about their character.

A-0382 THE CONTRIBUTION OF VISUAL VERSUS AUDITORY INFORMATION TO DIFFERENT FACETS OF EMPATHY

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Humans often depend on empathy, broadly defined as the ability to understand others' thoughts and feelings. Empathy encompasses a cognitive dimension, understanding another person's internal states, as well as an affective dimension, sharing the other person's emotional states. For both processes, we may rely on auditory and visual cues to extract different kinds of information. In order to better differentiate the roles of the auditory and visual channels in social communication, we've created a modified version of the Empathic Accuracy Task, a naturalistic, ecological task and stimuli set that would enable examining different features of the empathic response. I will present a set of behavioral, psychophysiological, EEG, and lesion data that give new insight on the role of the auditory and visual channels in empathy and social communication. Using different variations of this task, we have now shown that hearing the target tell the story is significantly more important for empathic accuracy than seeing the target. However, seeing the other contributes to heart-rate synchrony, a proxy for experience-sharing. Moreover, while hearing alone is indeed enough to accurately understand the emotional state of the other, seeing each other may contribute to the affective experience, specifically to greater feelings of togetherness, trust, empathy and a sense of being listened to. Using a broad set of research techniques, I will elucidate some of the different roles that auditory and visual cues play in social communication, and specifically in empathy.

A-0383 INTEROCEPTIVE SENSITIVITY IS ASSOCIATED WITH NEURAL REPRESENTATION OF OTHERS' REWARDS

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Interoception –the ability to sense one's own bodily states– has been linked not only with social cognition and behaviour, but also with informing embodied experiences of reward anticipation and receipt that facilitates goal-directed actions. Both interoception and social reward processing have been associated with activity in anterior insula (AI) and anterior cingulate cortex (ACC). Here, we examined how interoception relates to the neural processing of others' rewards in these regions, and whether they play different functional roles. We measured (i) interoception, using a task that quantifies people's sensitivity to internal bodily signals relative to external information; (ii) motivation to help others, using a task where people trade-off effort against profit for self and other; and (iii) neural reward representations, using an fMRI task where participants passively witnessed monetary gains and losses for self and other. Using these methods, we dissociated two distinct links between social reward processing and interoception. Higher interoceptive sensitivity was associated with (i) being more motivated by others' rewards when choosing whether an effort is worth it and (ii) more dissimilar neural reward representations for self and other

in right AI but not in ACC. However, participants who were more motivated to exert effort for others' rewards, regardless their interoceptive sensitivity, showed more similar BOLD activation patterns between self/other rewards in ACC but not in AI. Thus, these results suggest that while ACC representations of others' rewards are tied to prosocial behaviour and motivation, AI representations are embodied.

A-0384 CONFIRMATION OF INTERPERSONAL EXPECTATIONS IS INTRINSICALLY REWARDING

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People want to interact successfully with other individuals, and they invest significant efforts in attempting to do so. Decades of research have demonstrated that to simplify the dauntingly complex task of interpersonal communication, perceivers use stereotypes and other sources of prior knowledge to predict the responses of individuals in their environment. Here, we show that these top-down expectations can also shape the subjective value of expectation-consistent and expectation-violating targets. To do so, we had participants read statements pertaining to expectations rooted in gender stereotypes or in knowledge about US presidents, and measured the subjective value of expectation-consistent or expectation-violating events. Specifically, in two neuroimaging experiments (n = 58), we observed increased activation in brain regions associated with reward processing—including the nucleus accumbens—when perceivers observed information consistent with their social expectations. In two additional behavioral experiments (n = 704), we observed that perceivers were willing to forgo money to encounter an expectationconsistent target and avoid an expectation-violating target. Together, these findings suggest that perceivers value having their social expectations confirmed, much like food or monetary rewards. Moreover, our findings highlight the influence prior social expectations have on how we understand information about other people.

A-0385 HOW DOES SOCIAL PRESENCE CHANGE EMPATHIC ACCURACY FOR PAIN AND ITS PHYSIOLOGICAL AND NEURAL BASIS?

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The actual presence of another person is an essential feature of social interaction. Acknowledging this, social neuroscience has started to shift from studying individuals to studying interacting individuals. However, until now it has rarely been tested directly what difference it makes for our understanding of others and associated neural processes if the interaction partner is physically present or only indirectly accessible (e.g. in a video chat). Empathy and empathic accuracy towards the pain of another person might be especially affected by the presence of the other. In presence, more detailed information about the other and heightened arousal might increase the ability and motivation to be

empathically accurate. We tested this in a new paradigm that compares the empathic accuracy of an observer for the pain of a target person when the other is present or only observable via real-time video interaction. EEG responses of one observer as well as skin conductance and heart rate of both participants were measured. We hypothesized that in the direct interaction, empathic accuracy would be higher and physiological responses of the observer to the pain of the other and physiological alignment within pairs would be stronger than in the video chat. Due to the pandemic, data collection had to be postponed but is currently being finished. We will present behavioral and physiological data from 20 pairs of participants. We believe that the results will be informative for our understanding of empathy and also more generally for the neuroscientific study of social cognition and affect.

A-0386 NAVIGATING THE GARDEN OF FORKING PATH OF EXPERIMENTAL MEASUREMENT IN FEAR CONDITIONING RESEARCH

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Experimental measurement is often characterized by heterogeneous operationalization even when aiming to test the same hypothesis. Yet, it has been unclear whether this impacts on the results and consequently on replicability. Here, I present a series of empirical studies employing a multiverse approach aiming to facilitate navigation of the garden of forking path of experimental measurement in fear conditioning research. First, I demonstrate analytical heterogeneity by using the "extinction retention index" (ERI) as an example. A systematic literature search identified sixteen different ERI formulas and calculating these in four existing datasets strikingly illustrates their non-convergence and hence questions what we think we know about extinction retention. Second, I illustrate exclusion of 'non-learner' and 'non-responder' as a second example of analytical heterogeneity and provide case examples on the potential impact on study outcome and interpretation based on re-analyses of existing data. Third, I present a data multiverse study in which we re-analysed two different data-sets with different response quantification approaches for skin conductance data, which were derived from a systematic literature search. Results are discussed in a replicability framework. Fourth, I report a model multiverse study investigating heterogeneity in statistical models as derived from a literature search, and present a newly developed Rpackage to run the full model multiverse in a single line of code. These examples illustrate that seemingly subtle, semantic, procedural and data analytical details may have a huge impact on results, their interpretation and consequently theory building and replicability and suggest specific remedies for the future.

A-0387 CALIBRATING THE MEASUREMENT OF COGNITIVE VARIABLES IN EXPERIMENTAL RESEARCH

Dominik Bach
University College London

What is the best way of measuring a subject's momentary attention, item memory, or choice confidence? For many of these attributes, multiple distinct ways of measurement are used simultaneously. It would be desirable to provide an objective, rational criterion to select between different measurement methods. Here, I suggest to create intended values of an attribute using well-known experimental manipulations, an approach termed calibration. These intended values can then serve as external validity criterion, and thus define retrodictive validity: the correlation between intended and measured values. In my talk, I address three interrelated questions ensuing from this approach. First, I outline the circumstances under which retrodictive validity is informative on measurement error. In these circumstances, maximising retrodictive validity minimises measurement error. Secondly, I address to what extent calibration results generalise to different and potentially novel experimental paradigms. It turns out that this is the case when the new paradigm does not alter the properties of the measurement model, which are termed validity conditions. Third, I ask how to maximise generalisability of retrodictive validity estimates from finite samples. Apart from increasing sample size, improving the effectiveness of an experimental manipulation can have a major impact in many situations. In summary, I provide a generic framework for evaluating measurement methods in experimental psychology, which may provide a route towards measurement standardisation and optimisation.

A-0388 OPTIMISING EXPERIMENTS THROUGH SIMULATION-BASED DESIGN

Filip Melinscak
University of Vienna

At what intensities should stimuli be presented? How often should trials of different conditions occur? Which choices should be reinforced? In psychological research, questions of experimental design, such as these, are often resolved through painstaking piloting, i.e., trial and error. Yet, it would be difficult to find proponents of such a trial-and-error strategy in the closely related activity of data analysis: few would argue that the best way of fitting a multiple regression is to play with coefficients until the fit seems reasonable. In this talk I will argue that this methodological asymmetry of readily using computation in data analysis, but relying on intuition in experimental design, should be seen with suspicion. Although a principled solution to optimal experimental design has already been offered in the 1950s, practical application has been stalled by computational complexities. Now, with modern optimization methods and abundant computing power, large design spaces can be intelligently searched, with candidate designs being evaluated through simulations, rather than laborious piloting. Consequently, optimal

experimental design methods have been developed for various domains of psychological research, including the study of associative learning, which I will present as a use case. This example will illustrate the crucial importance of theory (in the form of quantitative models) for optimal experimental design. Finally, I will sketch future possible venues for methodological research into optimal experimental design.

A-0389 DEVELOPING AND PROVIDING AN INFRASTRUCTURE FOR OPEN SCIENCE – WHAT ZPID HAS TO OFFER

Stefanie Mueller
Leibniz Institute for Psychology (ZPID)

While often perceived as positive and praiseworthy, open science is not widely practiced and has yet to reach its full potential in many research disciplines. ZPID, the Leibniz Institute for Psychology, fosters open science practices in psychology and related disciplines by providing researchers with tools and services at each stage of the scientific process. For instance, ZPID operates 1) a database for psychological literature and tests, 2) a preregistration platform that is linked to 3) a cost-free data collection offer, 4) an online environment for teaching coding of data analyses, and 5) a repository for publishing digital research materials, rendering them archived, citable and findable. In this talk, I will focus on the open science practice of preregistration, that is, specifying details about the design, sample, and analyses of a study prior to data collection, and submitting the plan to a third-party, such as a public repository. In this context, I will introduce the lab track, ZPID's data collection offer comprising an incentive for high-quality preregistrations: Researchers can apply for a free data collection by submitting a detailed preregistration protocol that will be peer-reviewed. The lab track includes quota-samples for online studies and on-site eye tracking or PC-based studies that we conduct at our lab in Trier.

A-0390 REWARD-CONTEXT EFFECTS ON WORKING MEMORY: INSIGHT FROM AN EEG-PUPILLOMETRY STUDY

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Performance has been found to be better when it is rewarded than when not rewarded, leading to a wide use of rewards to increase motivation hence improving performance. However, little is known whether reward-related improvements come at the expense of non-rewarded performance or enhance the proactive control in tasks that are intermittently rewarded. Here, we conceptually replicated the work of Jimura et al. (2010) by combining behavioural-EEG-pupillometry measures in a block-wise design. Participants were asked to perform on a visual working-memory task in blocks containing performance-contingent rewarded trials (R+) and non-rewarded trials (R-) as well as in blocks containing purely non-rewarded trials (NR). With this design, we were able to compare performance in R- and NR trials, thus gaining insight whether performance in the R- trials profited from the

reward prospects in the R+ trials (i.e., context effect). Our findings indicated that a context effect was observed mostly in reaction times. Findings from pupillary responses and ERPs further explained the context vs. transient effects especially during the incentive cue and memory task phases. The implications of the current findings will be discussed.

A-0391 MOTIVATION AND CHOICE OF STRATEGY IN EXTRINSIC EMOTION REGULATION

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Attempting to influence another person's emotions is known as EER. EER may involve different strategies, such as problem-solving, acceptance, distraction, and reappraisal. Emotion regulation is a motivated process, thus it is important to understand the mechanisms subserving the motivational aspect of emotion regulation. The aim of the present study was to examine which strategies people use more often when providing EER, and what can possibly account for the choice of strategy. Specifically, we explored the association between motivation to help, similarity to others, and strategy choice. Participants watched four videos of people describing a negative situation they had experienced. Participants were then required to provide help to the person in the video in writing. Next, they completed a questionnaire assessing the EER strategies they used to provide support. They also reported their motivation to help to the other person and how much they think they are similar to this person. Results revealed that motivation to help, as well as similarity to the other person were both associated with help using reappraisal and acceptance, but not with the use of other strategies. These findings imply that in EER, motivation and similarity are essential to choosing an effective EER strategy.

A-0392 EFFECTS OF SOCIAL DISTANCING ON THE STRENGTH HALO EFFECT: DOES ATTACHMENT STYLE MATTER?

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During the COVID-19 pandemic, we have been urged, among the measures, to distance ourselves from others. While we usually tend to make inferences about others' trustworthiness from their aesthetic appearance, a phenomenon called the Halo Effect, or confirmation bias, it is possible that preventive policies change individuals' strategies. While the Halo Effect has been widely studied, for example, to compare its strength

when individuals rate strangers of their same or different gender, little is known about the stability of the effect over time. Additionally, recent studies revealed that individuals' emotional responses during the pandemic were modulated by their attachment styles. It is possible that individuals' attachment styles influence the magnitude of change in the strength of the Halo Effect under stressful situations, such as when asked to distance from others. Here we investigate how using a prime affects the strength of the Halo Effect, in relation to individuals' attachment styles. In this study, participants (N = 298) were asked to rate the aesthetics and perceived trustworthiness of 96 strangers' faces of different age, gender, and ethnicity. Faces were rated before and after the presentation of a prime, that promoted Social Distancing or Close Contact with others. Results revealed that the strength of the Halo Effects is affected by primes that promote Social distancing, as well as by individual's attachment style, but not by the interaction between the two. Our results can help shed the light on how different individuals were affected by the pandemic outbreak and preventive policies.

A-0393 THE MINIMAL EXPOSURE DURATION REQUIRED FOR NEURAL PROCESSING OF FACES AND EMOTIONAL EXPRESSIONS

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Faces are believed to be processed quickly, efficiently, and perhaps unconsciously. Previous studies have suggested a processing advantage for upright over inverted faces, and for emotional over neutral faces. If so, would orientation and emotion affect the minimal exposure duration required for a face to be discriminated? Due to hardware limitations, studies examining fast visual processing typically present stimuli for suprathreshold durations and disrupt processing with a mask. Here, we report four experiments using an LCD tachistoscope that enables sub-millisecond presentations. Participants discriminated the location of a face from that of a scrambled face, in unmasked presentations ranging in duration from 0.8 to 6.2ms. We found that above-chance discrimination requires ~2.5ms of stimulation. An advantage for upright over inverted faces arose at durations greater than 4.4ms, for both perceptual and metacognitive sensitivity. We found no evidence of differential discrimination of emotional faces. EEG-ERP analysis and multivariate decoding analysis found evidence of face processing and conscious access at 4.3ms, but only revealed evidence for differential emotion processing at the longest presentation durations, once participants could reliably perceive faces. Finally, whilst decoding analysis found evidence of face and emotion processing at shorter durations than ERP analysis, it could not decode either factor with shorter exposure durations than 4.3ms, suggesting

that conscious access may be required for processing of emotional expressions. These findings clarify the minimal exposure duration required for face perception, emotion processing, and conscious access and suggest that while holistic processing provides an advantage in perception and awareness, emotion does not.

A-0394 MEASURING THE NEURAL CORRELATES OF THE VIOLATION OF SOCIAL EXPECTATIONS: A COMPARISON OF TWO EXPERIMENTAL TASKS

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Ample evidence exists that people's brains respond differently to stimuli that violate social expectations than to stimuli that confirm social expectations. However, there are inconsistencies between studies in the neural components on which differential brain responses are found, as well as in the direction of the differences. These inconsistencies might be attributed to varying experimental tasks used to measure brain responses to the violations of social expectations. Therefore, the current paper examined which of the two frequently used paradigms, Impression Formation Task (IFT) or Implicit Association Test (IAT), provided more robust ERPs in response to the violation of gendered expectations. An IFT and IAT paradigm were administered among 25 young adults (age 22-31, 56% male), while brain activity was assessed with electroencephalography. The IFT and IAT specifically measured the violation of gendered expectations with regards to toy preferences and behavioral tendencies of young children. In the IFT, participants were presented with faces of boys and girls, followed by a word that described male-typed and female-typed toys/behaviors. In the IAT, participants were asked to assign male-typed and female-typed toys and behaviors to an illustration of a boy and girl. The results showed that both tasks were able to elicit meaningful event-related potentials (ERPs). Yet, the IFT evoked more ERP effects to the violation of gendered expectations on three of the four selected ERP: P1 amplitudes, relevant for attentional processing, were larger for trials that confirmed gendered expectations, whereas larger peaks in the N170 were observed during the violation of gendered expectations. The LPP showed enhanced activation when toy and activity preferences violated gendered expectations, but also when behavioral expectations were confirmed. With regards to the IAT, elevated P3 amplitudes, often associated with attentional focus on unexpected items, were observed when participants were asked to assign male-typed toys to a girl. We thus recommend the use of IFT paradigms when studying the neural processes underlying the violation of social expectations.

A-0395 PERSONALITY TRAITS AND SOCIAL PRESENCE MODULATIONS OF SYNTACTIC PROCESSING

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Although it has been established that syntactic processing can be affected by extralinguistic factors, including emotional and social aspects, individual differences in personality are understudied relative to language processing. Given that personality shapes our social interactions, it is also possible that personality interacts with social context when comprehending language. The main aim of this study is to investigate how differences in personality might affect morphosyntactic language processing, as reflected by event-related brain potentials (ERP) components, and whether these effects may further vary as a function of social presence. In a correctness judgement task, participants read sentences that were correct or contained a morphosyntactic error, being either alone or in the mere presence of a confederate. Participants' NEO-FFI (NEO Five-Factor Inventory) scores were used to analyze behavioral, electrophysiological, and ERP data. Neuroticism and Extraversion interacted with error rate and reaction time, while Conscientiousness only interacted with reaction time. Interestingly, both less extraverted and more open participants showed a higher galvanic skin response in the social condition, compared to the alone condition. ERP were partially in line with these behavioral results. Introverts presented, as expected, a LAN component to morphosyntactic anomalies in the alone condition, which turned into a more N400-like component in the social presence condition. In contrast, a clear LAN was triggered in both conditions for extraverts. These results suggest a change in the processing strategy of morphosyntactic features triggered by social presence, as a function of personality. While introverts used a more heuristic-like or associative processing style, extrovert seemed to use the customary algorithmic and rule-based strategy. Lastly, whereas higher Conscientiousness was related to a larger LAN and a reduced P600 components, lower Conscientiousness seemed to reflect the opposite pattern. This might suggest that the rule-abiding tendencies associated with higher Conscientiousness favor more efficient syntactic processing. Altogether, our findings substantiate that personality differences should continue to be explored in relation to language comprehension and social context effects.

A-0396 THE NATURE OF SYNTAX: AUTOMATIC AND CONTEXT-DEPENDENT.

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Syntactic processing has been often considered an ultimate example of automatic processing. Actually, masked words containing syntactic anomalies processed without awareness can trigger event-related potential (ERP) components similar to those triggered by conscious syntactic anomalies. Likewise, recent evidence also shows that emotional and other relevant extralinguistic information -such as social presence- is able to modulate conscious syntactic processing regardless of its level of awareness. These results are also in line with suggestions that, under certain circumstances, syntactic processing could also be flexible and content-dependent. Nevertheless, whether syntactic parsing can be both automatic and flexible has not been sufficiently studied. To this purpose, we examined whether and how masked emotional words (positive, negative and neutral adjectives) that could contain (50%) morphosyntactic anomalies (masked anomalies) affect linguistic comprehension of an ongoing unmasked sentence that can also contain agreement anomalies between the noun and the verb (unmasked anomalies). ERP modulations were observed by unconscious emotional information (EPN), masked anomalies (LAN and a weak P600) and unmasked anomalies (LAN/N400 and P600). Furthermore, both emotional and syntactic masked information modulated the early syntactic component triggered by unmasked anomalies and delayed the onset of the P600 component. Altogether, the findings support, on the one hand, the automatic nature of syntax, given that syntactic components LAN and P600 were observed to unconscious anomalies. On the other hand, the flexible, permeable and context-dependent nature of the syntactic processing is also supported, since unconscious information modulated conscious syntactic components. This double nature of syntax supports current theories of automaticity that suggest that even unconscious/automatic information can be flexible, adaptable and context-dependent.

A-0397 ASSOCIATION BETWEEN MATH ANXIETY AND A LESS EFFICIENT SHIFTING BETWEEN ARITHMETICAL TASK-SETS: AN ERP STUDY

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People suffering from math anxiety feel tension and show difficulties when performing

maths. According to the Attentional Control Theory (ACT), highly anxious individuals need to invest more resources (e.g. more time) to perform a cognitive task. This reduced processing efficiency is due to a lessened attentional control. Therefore, the efficiency of executive functions related with attentional control, such as shifting from one task to another, might be affected by math anxiety. We conducted an ERP task-switching experiment to study whether math anxiety affects shifting efficiency between arithmetical tasks. Twenty highly math-anxious (HMA) and 20 low math-anxious (LMA) individuals verified two-digit additions and subtractions. We used a task-cueing paradigm with transitions cues indicating whether to repeat or switch the task. The cue-to-target interval (CTI) was set long enough to allow an efficient shifting function executing task-set reconfiguration before the onset of the operands. We expected that a less efficient shifting caused by math anxiety would delay the task-set reconfiguration, conducting to a switch cost in response time and no centroparietal cue-locked switch-specific positivity in the CTI. Behavioural results showed no switch cost for LMA in additions and a repetition cost in subtractions, which might indicate larger sequential difficulty effects for subtraction than additions. HMA showed a significant switch cost in additions and no significant repetition cost in subtractions. The cue-locked switch-specific positivity was elicited only in the LMA group. These results suggest that HMA individuals took longer to execute shifting. They completed task-set reconfiguration beyond the operands onset, which generated a switch cost in the easiest task, nullified the sequential difficulty effect in the hardest one and implied no cue-locked switch-specific positivity. Finally, a larger frontal P2 amplitude was detected after the cue that anticipated a switch to the hardest task in the HMA group, revealing higher attentional resources recruited by HMA individuals when the most threatening condition is anticipated.

A-0398 PRIDE AND SHAME IN SOCIAL CONTEXT: A NEUROFUNCTIONAL DYNAMIC APPROACH THROUGH EVENT-RELATED BRAIN POTENTIALS

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The neural underpinnings of social emotions such as pride and shame are largely unknown. The present study aims to add evidence to this field by exploiting the advantage of Event-Related brain electrical Potentials (ERP) to examine the neural processes underlying pride and shame as they unfold over time. For this purpose we used an innovative paradigm in which a dot-estimation task was adapted to explore these emotions as elicited in a simulated social context where the participant played online against three other people. After every trial, the participant received feedback on proper and others' correctness or failure. Emotions of pride and shame emerge as a function of the comparison between proper and others' performance. Pride is maximal when the participant is right and all the other players are wrong. In turn, shame is maximal when the participant is wrong and all the other players are right. Pride prompted an early negativity seemingly originated in

medial parietal regions (precuneus) and possibly reflecting social comparison processes in successful trials. This was followed by a late positivity originated in medial frontal regions, probably reflecting the verification of singularly successful trials. Shame, in turn, elicited an early negativity apparently originated in the cuneus, probably related to mental imagery of the social situation. It was followed by a late positivity mainly originated in the same regions as the early negativity for pride, then conceivably reflecting social comparison processes, in this occasion in unsuccessful trials. None of these fluctuations correlated with self-reported feelings of either emotion, suggesting that they instead relate to social cognitive computations necessary to achieve them. The present results provide a dynamic depiction of neural mechanisms underlying these social emotions, probing the necessity to study them using an integrated approach with different brain imaging techniques.

A-0401 KNOWING ONESELF AND OTHERS: METACOGNITIVE SENSITIVITY AND SOURCE ACCURACY JUDGEMENTS

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Metacognition is the ability to represent, monitor and control one's cognitive processes (Proust, 2011). Metacognition has predominantly been studied in terms of its intra-personal implications. However, metacognition should also be serving social functions. Humans rely on a rich source of information communicated by others while forming beliefs and making decisions. In order to reap the benefits of this richness, one should be able to discriminate between reliable and unreliable sources, and information from misinformation. With this study we ask if metacognition can help us judge the credibility of a message or a source. Research showed that rules, cues and theories used for metacognitive self-assessment can transfer to evaluation of other social agents (Koriat, 2010). Accordingly, we examine whether metacognitive sensitivity, ability to discriminate one's correct decisions from incorrect ones, facilitates source assessment and guide better information-seeking decisions concerning social sources. In an online experiment we measured 105 participants' metacognitive sensitivity with a 2AFC paradigm. After providing their decisions on each trial participants received social feedback by a fictitious previous participant. We included four social sources, each with a varying degree of feedback accuracy (20%, 40%, 60%, 80%). Finally, participants rated the accuracy and trustworthiness of these sources. We predict that those higher in metacognitive sensitivity will be better at assessing the trustworthiness and competence of a social source. The results will be discussed in detail.

A-0402 EFFECT OF NMDA RECEPTORS BLOCK VERSUS GABA-A RECEPTORS MODULATION ON AFFECTIVE DISORDERS AND BRAIN ELECTRICAL ACTIVITY IN RATS WITH METABOLIC SYNDROME

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Metabolic syndrome is a common worldwide disorder characterized by insulin resistance, obesity, dyslipidemia, and hypertension. It is associated with other comorbidities like sleep apnea and cardiovascular complications. Metabolic syndrome is associated with cognitive and affective dysfunction and has been linked to neurodegeneration. Moreover, there is impaired neurotransmission and chemical signaling homeostasis in Metabolic syndrome like increased glutamate and reduced neurosteroids that are modulators for inhibitory neurotransmitter Gamma-Aminobutyric acid receptor. The present study aimed to investigate and compare the impact of blocking NMDA glutamate receptors against allopregnanolone administration as a modulator for GABA-A receptors. Forty-two male rats constituted the animal model divided into control groups, metabolic syndrome groups (untreated, treated with memantine, and treated with allopregnanolone). The study groups evaluated functional assessment for exploratory activity, anxiety, and depression. An electroencephalogram assessed the electrical activity of the brain. Functional and electrical results correlated to the serum and brain tissue biochemical measurements: markers for glucose homeostasis, lipid profile, inflammatory markers, glial cells activation, and synaptic plasticity markers.

A-0403 BLOCKING PRIMARY SOMATOSENSORY CORTEX WITH TMS ATTENUATES SOMATOSENSORY THREAT MEMORY CONSOLIDATION

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Pavlovian threat conditioning, also termed fear conditioning, is known to be based on synaptic plasticity in the amygdala; however other brain areas are important as well. A case in point are primary sensory cortices, which are crucially required in rodents when conditioned stimuli (CS) are complex. If this is the case in humans as well, and whether sensory cortices are required for discriminant learning from simple stimuli, remains

unknown. Here, we used continuous theta-burst transcranial magnetic stimulation (TMS), and targeted either contralateral (experimental group, N = 25) or ipsilateral (control group, N = 27) S1 immediately before conditioning. After overnight consolidation, fear-potentiated startle in the experimental group was reduced, as indexed by startle eye blink during CS+ compared to CS. This effect did not depend on whether CS were simple or complex. There was no group difference during acquisition: both groups learned to associate CS with US, as indexed by skin conductance responses and pupil size responses during acquisition. Our results suggest that primary somatosensory cortex is required for consolidation of differential threat memory from somatosensory CS in humans, regardless of CS complexity. Targeting primary sensory cortex may provide an entry point for treatment developments in fear and anxiety disorders.

A-0404 EXPLORING THE INTERACTION BETWEEN HANDEDNESS AND BODY PARTS OWNERSHIP BY MEANS OF THE IMPLICIT ASSOCIATION TEST

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Our brain disposes of different incoming sensorimotor signals across body parts, which is reflected by variations in bodily-specific representations. We thus hypothesize that the feeling of body ownership may also be not spatially uniform; rather it may vary across different body-parts, depending on their degree of motor interaction with the environment. Signals produced during movement, in fact, seem to be particularly important in building body-part ownership. In detail, we set out to test whether the dominant (vs. non-dominant) hand is perceived as more belonging to oneself. We used the Implicit Association Test (IAT) to explore whether this possible asymmetry is present, by measuring the strength of the implicit association of the right hand with the self. Moreover, in order to test whether this asymmetric association is human-body specific, we tested whether a similar asymmetry characterizes the association between a right (vs. left) animal body part with the concept of self. One-hundred-forty healthy subjects, balanced for handedness, were administered with the IAT, either assessing the self/right-hand or the self/right-animal part association. Our results revealed the presence of a linear relationship between the magnitude of the implicit association "self"/ "right hand" and the subject's handedness. In particular, the strength of this association increased as a function of the hand preference. Critically, the handedness score did not predict the "self" / "right animal body part" association strength. Our findings suggest that the dominant and non-dominant hands are differently perceived at an implicit level as belonging to the self, in healthy participant. This asymmetry may be due to the different roles that these body parts play in our motor behavior, which could be reflected by their different cortical representations. Future investigations are needed to further explore these aspects, and how they unfold in healthy and pathological behavior.

A-0405 INFLUENCE OF WORKING MEMORY LOAD ON EMOTION REGULATION EFFECTIVENESS - AN ERP INVESTIGATION

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The present experiments were designed to investigate the impact of working memory (WM) load on emotion regulation (ER) effectiveness using cognitive reappraisal (Experiment 1, n = 30) and attentional distraction (Experiment 2, n = 30). Considering that: (i) WM enables storage and manipulation of (stimulus-related) information and (ii) reappraisal acts by manipulating the stimulus meaning, we hypothesized that high (versus low) WM-load would reduce reappraisal efficacy. By contrast, given that distraction acts by blocking the elaborated processing of a stimulus meaning, we hypothesized that high WM load would enhance ER effects of distraction. To test these hypotheses, we measured the Late Positive Potential (LPP)–an electrocortical marker of sustained motivated attention, whose amplitude is sensitive to manipulations of stimulus meaning and decreases with WM load. Results confirmed our predictions, showing that high WM-load eliminated the significant LPP amplitude difference between up- and down-regulation conditions (present in the low WM load condition) in case of reappraisal (Experiment 1), but exerted additive modulatory impact on the LPP amplitude in case of distraction (Experiment 2). Our findings highlight the importance of WM for distraction and reappraisal and show the divergent role WM may play in determining the regulatory effects of distinct ER strategies.

A-0407 THE KEY TO BETTER MEMORY UNDER STRESS: THE EFFECT OF CORTISOL RESPONSE ON INTERFERENCE RESOLUTION AND MNEMONIC DISCRIMINATION

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Previous studies have shown that stress has a beneficial effect on memory encoding. However, there is no clear consensus on which encoding-related processes are affected under stress. In the present study we investigated the relationship between inter-individual differences in neuroendocrine response to moderate stress and interference resolution during memory encoding. Participants were healthy young adults who were exposed to the Cold Pressor Test, which procedure was developed to induce acute combined (physical-psychological) stress in laboratory settings. Then participants completed the modified version of the Mnemonic Discriminations Task. Specifically, they were presented with photographs of emotionally arousing (negative and positive) and non-arousing (neutral) scenes followed by a recognition memory test where they saw a mixture of old and new stimuli. Crucially, participants were also presented with critical lure items, i.e.,

visually similar stimuli to ones presented at encoding. We found that participants who had higher cortisol response to the stress induction were better in discriminating between the previously studied items and their visually similar lures. This effect was present for the emotionally arousing and non-arousing materials as well. Our findings indicate that increased hormonal response to acute stress has a beneficial impact on the formation of distinct, non-overlapping, unique memory representations, and consequently, on better episodic memory encoding under stress.

A-0408 INFLUENCE OF AFFECT ON MOTOR ADAPTATION

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Motor learning is strongly influenced by a variety of factors including amount and structure of practice, nature of feedback and focus of attention. Whether and how affect influences the learning and retention of newly learned movements is less explored, despite prior work demonstrating that emotional manipulation can modulate motor control parameters such as speed, accuracy and posture. Here we aimed to examine the impact of affective manipulation on a form of motor learning termed motor adaptation in which people learn to modify motor behaviour to predictively account for the effects of environmental perturbations. We hypothesized that learning rate would be enhanced for positively-valenced emotional stimuli while greater retention of learning would be observed for negatively-valenced emotional stimuli. Three groups with 15 participants each were administered either happy, angry or neutral emotional face stimuli centrally for 150ms, prior to target appearance during visuomotor rotation learning trials. Participants made reaching movements, with a 30° counter-clockwise visuomotor rotation at four targets. All groups displayed robust learning, but learning rates were significantly higher for the happy group as compared to neutral. However, the retention measures were comparable for all the groups with no significant differences. These findings indicate that motor learning rates can be modulated by emotional manipulation, specifically facial affect, which has pervasive and ecologically valid characteristics. This affective modulation could then be exploited to enhance and strengthen re-learning of movements during rehabilitation following neurological injury, for instance due to Stroke, in an inexpensive and feasible manner. Keywords: affective manipulation, emotion, motor adaptation, facial affect, emotional valence, motor learning, rehabilitation, motor control

A-0409 INTERPLAY BETWEEN SYNTACTIC AND MOTOR SYSTEMS IN THE HUMAN BRAIN: AN EVENT-RELATED POTENTIALS STUDY FROM THE EMBODIED COGNITION PERSPECTIVE

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The present work is framed within the field of embodied cognition theories, which defend that linguistic cognition could be evolutionarily based on other processes related to direct interaction with the environment, such as those regarding (motor) action and the comprehension of actions by others. Although these theories have classically focused on the semantic aspects of language, in this study we focus on syntactic ability -understood as the ability to hierarchically sequence linguistic elements in a sentence-, which we hypothesise could be partially based on the same brain mechanisms used to sequence actions and, more specifically, observed motor actions. In order to explore this, we conducted an event-related brain potentials (ERP) study consisting of two tasks: a sequencing task of actions observed in video, which is immediately followed by a sentence comprehension task (consisting in the detection of grammatical violations). Our main manipulation relates to the (syntactic) structure of both the actions depicted in video and the sentences: both having either a somewhat linear structure or a non-linear structure. Our main result is that, after non-linear observed actions, the LAN (Left Anterior Negativity) component, the classic electrophysiological pattern related to the early detection of grammatical violations, appeared not only to grammatical violations, but also to grammatically correct material. This LAN to correct sentences was nevertheless not as large as to ungrammaticalities and was more spatially constrained, but sufficient to significantly dismiss the differences between correct and incorrect materials. The effect was more prominent when sentences were relative –i.e. "non-linear". Our results suggest both tasks –action observation and grammaticality judgment- make use, at least partially, of the same brain resources, in line with theories of embodied cognition.

A-0410 DETECTION OF SPONTANEOUS AND POSED DYNAMIC EMOTIONAL FACIAL EXPRESSIONS USING TIME FREQUENCY ANALYSIS

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The authenticity of emotional facial expressions may completely change the observer's perception and reaction. However, how the brain extracts the genuineness of emotional expressions is a topic never explored. The literature on emotional perception mainly relied on static pictures or dynamic posed (or fake) emotional facial expressions raising serious

doubts about the ecological impact of these results. We compared the kinematics perception of genuine and posed emotional facial expressions for the first time using time-frequency EEG analysis. The cortical activity of 33 participants was recorded during their perception of three different facial expressions of genuine and posed emotions: happiness, fear, and disgust. Overall, we observed strong differences in both the timing and the topography of the canonical EEG bands. In particular, posed happiness in comparison with genuine one revealed over frontal sites, increased delta and theta power at the onset and offset of the facial expressions. Compared to posed fear, genuine fear elicits an increase in alpha and beta bands followed by an increase in theta activity. Finally, for facial expressions of disgust, we found an early increased theta, alpha, and beta activity for the posed expressions, followed by increased activity in alpha and beta bands during the perception of genuine disgust. Our results support the significant difference between spontaneous and fake facial expression stimuli and provide new insights into the perception of emotions displayed by faces.

A-0411 A COMPREHENSIVE JUDGMENT OF MORAL CHARACTER: AN EEG STUDY ON THE INFLUENCE OF POLITICAL ORIENTATION ON MORAL JUDGMENT

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The traditional approach to moral judgments emphasizes the role of rational deliberations. More recently, this approach has been challenged by theories that highlight the important role of emotions in moral judgments (e.g., Greene et al., 2001; Haidt, 2001). To empirically support this claim, explicit judgments have widely been used to investigate the relationship between morality and emotion. By contrast, event-related potentials (ERPs) provide a time-resolved implicit measures of the affective and cognitive mechanisms underlying moral judgments. The present study aims to extend previous knowledge on the role of emotions in moral judgments using ERPs as well as explicit and deliberate moral judgments. In the first experiment, we used human faces as target stimuli. In previous studies, it had been shown that neutral faces often gain emotional valence through associative processes. To experimentally test whether faces can also trigger emotions based on moral contexts, we presented faces showing neutral expressions and paired them with fictive agents/patients in scenarios describing morally harmful, helpful or neutral behavior. In ERPs, an early modulation of moral valence occurred after 80-120 ms, indicating rapid attention allocation towards morally charged faces. In the explicit moral judgments, morally positive and negative scenarios were rated as significantly different from neutral scenarios as well as from each other. Our findings suggest that the relation between moral judgments and emotion can be observed in explicit judgments but also impacts already early attentional processes. An ongoing second experiment is

motivated by research on the influence of political attitudes on moral judgments. We are testing a sample of conservative (n=20) and progressive (n=20) subjects to measure the influence of individuals' political orientation on morally associated agents, using again both behavioral and EEG measures.

A-0414 SPATIO-TEMPORAL BRAIN DYNAMICS OF THE EVOLVING SOCIAL SELF

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Current research on self-identity suggests that the self is settled in a unique mental representation updated across the lifespan in autobiographical memory, whose access is prioritized depending on personal relevance of identities and distance in time. Spatio-temporal brain dynamics of these cognitive processes are poorly understood. Previous literature using faces as the best icon of self-identity have approached this issue using temporal and spatial procedures independently. Temporal approaches using ERP reveal early modulations (N170-N250) indexing global face configuration and familiarity processes. Subsequently, specific self-identity modulations at later latencies (P3-LPC) indicate relevance and self-prioritization processes. Spatial approaches using fMRI observe activation of face-specific regions (fusiform area) involved in face configuration processing, and medial cortical regions tracing the self into autobiographical memory at different time distances. The present study combined both approaches, disclosing spatial-temporal brain dynamics based on low-resolution brain electromagnetic tomography and temporal activity of brain source current densities. A face recognition task was used separated in two blocks: identity (self, close-familiar and unknown) and age (childhood, adolescence, adulthood) recognition. Early identity effects (150-200 ms) revealed fusiform area activations to global face configuration of unknown faces, particularly in childhood. The supramarginal gyrus discriminated self from unknown identities in childhood when attending overtly to identity. Around 250-300 ms, the medial PFC was involved in self identification, and both the precuneus and fusiform cortices exhibited larger activation to self and close-familiar compared to unknown faces, regardless of life stages. At later latencies (300-600 ms), precuneus-posterior cingulate-fusiform areas were coupled to the medial PFC to discriminate self-specific from other identities, at different life stages: a posterior hub was dominant to past distant self processing, and an anterior hub maintains current self representation. Self identity recognition comprises a temporal-course extending from global face-body configuration, followed by familiar-unfamiliar discrimination and, finally, self-specific processes. A coordinated coupling of anterior and posterior hubs supports an updated representation of self-identity from past autobiographical memories.

A-0415 TDCS AS TREATMENT INTERVENTION TO INCREASE EMPATHY AND REDUCE AGGRESSION IN OFFENDERS

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Studies have shown that impairments in the ventromedial prefrontal cortex (vmPFC), a structure associated with social interactions and decision-making, play a crucial role in aggression in forensic patients. However, current treatment in forensic patients is found not to be so effective. A promising non-invasive intervention is to modulate the vmPFC by transcranial Direct Current Stimulation (tDCS). This study aimed to investigate high definition (HD)-tDCS as an intervention to increase empathic abilities in order to reduce violent behavior in forensic patients. In addition, using electroencephalography (EEG), we examined the effects of tDCS on the event-related potentials P3 and LPP in reaction to situations that depict victims of aggression (i.e. empathy). These potentials are found to be associated with affective processing, such as attention for- and evaluation of emotional events. Fifty male forensic substance use patients (25 in the tDCS group and 25 in the sham group) were tested in a double-blind, placebo-controlled study. The patients received HD-tDCS two times a day for 20 min for five consecutive days. Before and after the intervention, the patients completed self-reports, performed the Point Subtraction Aggression Paradigm (PSAP), and EEG was recorded while patients performed an empathy task. Results showed a significant decrease in aggressive responses on the aggression task and a decrease in self-reported reactive aggression in the tDCS group. Additionally, we found an increase in LPP amplitude (so an increase in affective processing) after tDCS intervention in the tDCS group compared to the sham group. No effects on self-reported empathy and the P3 amplitude were found. Current findings are the first to find effects of tDCS modulating electrophysiological responses associated with affective processing and thereby reducing aggression in forensic patients. The results show the potential for tDCS as an intervention in forensic mental healthcare.

A-0416 ACTION CO-REPRESENTATION UNDER THREAT: A SOCIAL SIMON STUDY

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Exposure to danger are almost always social episodes. The literature on emergency and disasters indicate that coordinated actions (e.g., moving objects together to impede the progression of say, terrorists) prevail in such contexts. This means that psychological mechanisms should be in place to allow us monitoring others (i.e. represent others

and their actions) in situations of intense anxiety. In this study, we examined the effect of sustained anxiety on action co-representation. Forty pairs of participants performed the Social Simon task developed by Sebanz and colleagues in safe or anxiety-inducing contexts. Anxiety was induced by exposing participants to randomly delivered aversive screams. Our results indicate that co-representation abilities are preserved under anxiety-inducing contexts. In addition, and consistent with social buffering, we observed that sustained anxiety was lower in participants who performed the task in dyads as compared to a control group of 38 participants who performed the task alone. Altogether, our findings suggest that our social, emotional and cognitive abilities are preserved but also likely transformed by the presence of others in threatening contexts.

A-0417 DO NEURAL RESPONSES TO HEARTBEATS DISTINGUISH BETWEEN EXPERIENCED AND OBSERVED EMOTIONS?

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On a daily basis, we share each other's joy and frustrations, yet despite the contagious nature of emotions, we are perfectly capable of dissociating the emotion we are experiencing from the emotions displayed by someone else. Such differentiation between experienced and observed emotions might seem trivial, but becomes more puzzling considering that many physiological responses and neural activations are shared between experiencing and observing of emotions. It follows that some self-related neural mechanism must specify the self to differentiate between the two. Because the heartbeat evoked response (HER), the transient neural response generated at each heartbeat, has recently been proposed to anchor the self, we test here whether the neural monitoring of heartbeats help differentiate between experienced and observed emotions. To explore this question, participants engaged in a task in which they were instructed at each trial to rate naturalistic images based on how they themselves felt when viewing the image (experienced emotion), or how they thought the person depicted in the image felt (observed emotion) while brain activity (EEG) and physiological reactivity (cardiac activity, facial EMG, and Skin Conductance Responses (SCR)) were recorded. While participants prepared to rate an image for experienced or observed emotion, HERs significantly differed between conditions. The difference was localized in the right frontal operculum and left occipital cortices, and correlated with the subjective valence ratings and empathic traits of participants. We additionally found experienced-observed differentiation in physiological markers during image exploration; SCR amplitude was increased if images were rated for experienced compared to observed emotion, while valence responses in the zygomatic were enhanced when rating experienced emotion. There was no correlation between HERs during instruction, reflecting ascending body-to-brain inputs, and physiological measures during image exploration, reflecting descending brain-to-body outputs. Our results show that, in line with the hypothesis of a role of HERs in specifying the self, HERs distinguish between the experienced and observed emotion conditions.

A-0418 NEURAL ACTIVITY DURING FEAR PROCESSING DEPENDS ON CIRCADIAN VARIATION OF MIGRAINE ATTACK ONSET – AN FMRI STUDY

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Migraine subgroups with distinct typical circadian attack onset peaks may be present among migraineurs. This variety may be reflected in neural activity, since migraine is a brain disorder. So, we tested this hypothesis by comparing functional brain activities of migraine subgroups with distinct typical circadian attack onset peaks. 31 episodic migraineurs without aura (females=24, mean age=26.97 years) were selected. Three subgroups were detected with distinct self-reported typical circadian peak of attack onset: 1) Morning (n=8), 2) Evening (n=9), and 3) Varying start (n=14). Whole brain activity of the groups were measured interictally using an implicit emotional processing fMRI task with happy, sad, fearful and neutral facial stimuli. Brain activity to fearful (but not sad or happy) facial stimuli significantly differed: the Evening start group showed increased activity in areas related to the processing of emotional (for example superior temporal gyrus and left posterior cingulate cortex), painful (including left middle cingulate and left supramarginal gyrus) and multisensory (such as right Heschl's gyrus and superior temporal gyrus) stimuli in comparison with the Morning start group. Our results suggest that interictal neural activity during fear processing may be related to circadian variation of migraine attack onset, a phenomena reflecting migraine heterogeneity and showing potential use in prophylactic treatment.

A-0419 SELECTIVE PROGESTERONE RECEPTOR MODULATION TREATMENT DOES NOT IMPACT BRAIN MORPHOLOGY IN WOMEN WITH PREMENSTRUAL DYSPHORIC DISORDER

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Premenstrual dysphoric disorder (PMDD) is a mood disorder characterized by cyclic

affective and physical symptoms emerging in the luteal phase of the menstrual cycle and severely impairing everyday life. Despite evidence supporting menstrual cycle effects on brain structure, the anatomical signatures of PMDD are poorly understood. The acute variations in progesterone levels, and its metabolite allopregnanolone, during the luteal phase have been suggested as critical to the occurrence of PMDD symptoms. The present study aimed to explore the effects of selective progesterone receptor modulator (SPRM) treatment, compared with placebo, on grey matter volume and surface morphology in women with PMDD. SPRM treatment was hypothesized to be associated with structural changes in regions of relevance to PMDD symptoms. In total, 35 PMDD women with PMDD were randomized to SPRM treatment or placebo. Participants had their brains scanned using high-resolution structural magnetic resonance imaging (MRI) during the luteal phase, before and after a 3-month treatment with ulipristal acetate. Severity of PMDD symptoms was assessed through self-reports on the Daily Record of Severity of Problems and gonadal hormone levels were measured by liquid chromatography - tandem mass spectrometry. Voxel-based morphometry and surface-based morphometry on SPM12, as well as subcortical volumetric analyses using FSL-FIRST were implemented to assess treatment effects on regional brain morphology in PMDD, adjusted for total intracranial volume and body mass index. Whole brain and ROI approaches were employed to assess time by treatment group interaction effects on grey matter volume and surface measures. No significant treatment effects were observed for either of the grey matter parameters in any region. Ongoing additional correlation analyses are being performed to further investigate the relationships between grey matter structure and symptom improvement, over the whole group. These findings suggest that other neural correlates than gray matter may contribute to the improvement of mental symptoms observed upon treatment with the selective progesterone receptor modulator.

A-0420 TO TRUST OR NOT TO TRUST? FACE MODULATION OF "SOCIAL AVATARS".

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Trust is a fundamental aspect of human interaction and modern societies. Facial expressions contain valuable social information for humans to assess whether another person can be trusted or not. Seeing someone for the first time rapidly and reliably evokes social trait impressions within a social trait space spanning two dimensions, namely trustworthiness/warmth and dominance/competence. Virtual reality offers the opportunity to study social interaction in a standardized set-up, but can the social trait space also be informative and manipulated to create virtual humanoid avatars? We conducted an online study with 35 neurotypical German native speakers (aged 18-35). A

total of 210 computer-generated male avatars were created using computer generated faces from the modelling middleware Facegen, differing on the scale of trustworthiness (Oosterhof & Todorov, 2008). Faces were placed on virtual humanoid bodies and presented as videos which differed in their expression of trustworthiness. Participants were asked to rate the avatars on trustworthiness, dominance, arousal and valence. In this study, we found a linear (t=47.67, p < .001) and quadratic (t = -4.76, p < .001) trend of trustworthiness ratings along the manipulation of this dimension. We further found a strong positive correlation between participants' trustworthiness and valence ratings (b = 0.582, p < .001) and a small negative relationship between trustworthiness and arousal rating of the avatars (b = -0.10 p < .001). In summary, we could show that faces differing on the dimension of trustworthiness can be successfully transferred on to virtual avatar bodies and evoke similar evaluations in the social trait space as would be expected from their pictorial counterparts. A set of virtual avatars that are validated within the social dimensions of trustworthiness and dominance are a potentially valuable tool for studying human interaction in virtual reality.

A-0421 COGNITIVE CONTROL PROMOTES EITHER HONESTY OR DISHONESTY, DEPENDING ON ONE'S MORAL DEFAULT

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It has been proposed that cognitive control is crucially involved in making (dis)honest decisions. However, the precise nature of this role has been hotly debated. Is honesty an intuitive response or is willpower in the form of cognitive control needed to override an intuitive tendency to cheat? We have proposed reconciliation of these conflicting views by demonstrating that activity in areas associated with cognitive control enabled dishonest participants to be honest, whereas it allowed cheating for honest participants. Thus, cognitive control does not promote (dis)honesty per se; it depends on one's moral default. In the present study, we aimed at replicating this finding with electrophysiological data (EEG) while using an external localizer task to mitigate the problem of reverse inference. Our analysis reveals that the same neural signature evoked by cognitive control demands in the Stroop task can be used to predict (dis)honest choices in an independent task, providing converging evidence that cognitive control can help honest participants to cheat, whereas it facilitated honesty for cheaters.

A-0422 ACTION-REACTION BINDING: VISUAL AND MENTALIZING AREAS ENCODE REACTIONS IN FUNCTION OF THEIR PRECEDING ACTION PROMPTS

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Being able to recognize and interpret other people's behavior is key for adaptive social functioning. While research has made great progress in understanding how this is done, it has largely neglected that we often see people together rather than in isolation. To interpret such situations, it is important to process not only individual actions but also the links between them. Previous work indicates that social interactions are recognized spontaneously in a network of brain regions commonly associated with action observation and mentalizing. However, it is not yet known how the brain distinguishes interacting from independently acting individuals. Here, we test the hypothesis that rather than being coded in isolation, actions in social settings are coded relative to other people's actions. To this end, we developed a sequential paradigm, where each trial started with an action prompt from one actor (e.g., reaching for help), followed by a congruent (e.g., reaching) or incongruent (e.g., jumping) reaction from another actor. Using representational similarity analysis, we show that reactions are coded not only in terms of kinematics but also in terms of their preceding social prompt, both in visual (V1, MT, pSTS) and in mentalizing areas (TPJ and precuneus). We further show that the encoding of reactions in function of their preceding action prompt is driven at least partly by action-reaction congruency. Together, these results show that we do not represent observed actions as isolated units, but instead recode them in function of their social context.

A-0423 VICARIOUS NEURAL REACTIVITY TO PLEASANT AND UNPLEASANT TOUCH: A COMBINED IVR-EEG STUDY

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Empathy allows the understanding of others' emotional experiences by sharing their affective and sensory states. According to the embodied cognition account, perceiving someone's affective state automatically activates the somatic and emotional neural representations of the same state in the observer. Immersive virtual reality (IVR) represents a unique tool to investigate the role of embodiment phenomena in vicarious sensations – including tactile ones – and their neural underpinnings. Studies have shown that both middle and late latency EEG components are modulated by the vicarious perception of pleasant and unpleasant touch. However, how valence and physical perspective affect

neural correlates of attentional and emotional processing of affective touch is still unclear. We combined IVR and EEG to examine the neural reactivity to vicarious experiences of pleasant and unpleasant touch observed by two different perspectives. Healthy participants observed a caress (pleasant), a syringe (painful), or a little ball (neutral) stimulating their virtual right hand (first-person perspective, 1PP), or the right hand of another avatar sitting in front of them (third-person perspective, 3PP) in IVR. Painful and pleasant stimuli were rated as less pleasant and more pleasant than neutral ones, respectively. Higher ownership scores were recorded for the 1PP virtual hand compared to the 3PP avatar's hand. Middle latency EEG responses at occipital sites (time window: 160-400 ms), related to selective attention and stimulus relevance, were greater contingent to scenarios depicting pleasant and unpleasant compared to neutral touch, and specifically for 1PP conditions. Late latency activity at occipital sites (LPP; time window: 440-600 ms), reflecting arousal and motivational salience, was significantly lower for pleasant compared to neutral and unpleasant touch. To conclude, emotional valence and different physical perspectives differentially modulated middle and late latency neural activity to vicarious affective touch. Of note, the amplitude reduction of late EEG activity for our pleasant stimuli supports the hypothesis on the role of social touch in decreasing arousal. Further studies will specifically address this question.

A-0424 HYPERSCANNING: A VALID METHOD TO STUDY NEURAL INTER-BRAIN UNDERPINNINGS OF SOCIAL INTERACTION

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Social interactions are a crucial part of human life. Understanding the neural underpinnings of social interactions is a challenging task that the hyperscanning method has been trying to tackle over the last two decades. Here, we review the existing literature and evaluate the current state of the hyperscanning method. We review the type of methods (fMRI, M/EEG, and fNIRS) that are used to measure brain activity from more than one participant simultaneously and weigh their pros and cons for hyperscanning. Further, we discuss different types of analyses that are used to estimate brain networks and synchronization. Lastly, we present results of hyperscanning studies in the context of different cognitive functions and their relations to social interactions. All in all, we aim to comprehensively present methods, analyses, and results from the last 20 years of hyperscanning research.

A-0425 CAN ATTENTIONAL BIAS TOWARDS THREAT BE MODIFIED BY REWARD CONTINGENCIES?

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Attentional biases such as the preferential processing of threatening stimuli by visual and cognitive systems are thought to play a causal role in the etiology of anxiety disorders. Consequently, MacLeod et al. (2002) raised the idea of deliberately manipulating those biases in order to alleviate symptoms, commonly referred to as 'attentional bias modification' (ABM). This is typically implemented by introducing a spatial contingency between stimuli in order to (implicitly) direct attention away from specific stimuli towards others. The method has yielded mixed results, with success being modulated by factors such as type of anxiety and training paradigms, and measured outcome variables. However, within the domain of social anxiety in particular, two approaches have shown promising first results. Using socially relevant stimuli (i.e. faces) and participants preselected for increased social anxiety, Reutter et al. (2017) identified the N2pc component in the EEG as a reliable measurement for attentional bias. Concurrently, Sigurjónsdóttir et al. (2015) showed reward manipulations (instead of spatial contingencies) to be effective at influencing attentional biases in an ABM task. In the present study, we combined the two approaches to see whether we can replicate the influencing effect of reward on attentional bias in healthy subjects (N = 60), focusing on changes in the N2pc within a single training session. At the same time, we evaluate the effect that task instruction has on the training's effectiveness by comparing implicit and explicit instruction conditions to a control condition. Results will be presented and discussed in the light of current developments in the field of ABM research.

A-0426 OSCILLATORY SYNCHRONIZATION MECHANISMS UNDERLYING HUMAN COOPERATIVE DECISION-MAKING

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The tendency of humans to synchronize their behavior to other people is a key ability in any type of prosocial behavior. However, although it happens almost automatically, the adjustment of behavior and the conformity to others for a common goal is a complex phenomenon whose neural mechanisms are not well understood. The goal of the present experiment was to study the oscillatory synchronization mechanisms underlying the automatic convergence of behavior in an EEG hyperscanning experiment. 36 people performed a purely cooperative decision-making task in dyads in which they had to guess the correct position of a point in a line. Intra- and inter-connectivity among electrodes was assessed using intersite phase clustering in four main frequency bands (theta, alpha, beta

and gamma) using a two-level Bayesian Mixed Modelling approach. Results showed that, although they were neither instructed nor rewarded to do so, participants converged in their estimations about the position of the point after knowing the estimation provided by their peers. In addition, EEG connectivity after the first feedback showing the result of the peer compared to the next presentations revealed two main synchronization patterns among frontal and parietal electrodes: an increased connectivity in the beta band in the first 500 ms; and higher gamma connectivity between 500 and 1000 ms. These results suggest distinct oscillatory synchronization mechanisms underlying the different processes needed in the convergence of behavior with other people.

A-0427 ACTION SOUNDS INFORMING OWN BODY PERCEPTION INFLUENCE GENDER IDENTITY AND SOCIAL COGNITION

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Sensory information can temporarily affect mental body representations. Footstep sounds carry information about the weight and the gender of the walker and real-time alteration of the walker's footstep sounds has been shown to affect the walker's perceived body weight, and masculinity and femininity. Further, body representation is hypothesized to influence higher-level cognition, and swapping into a body with another sex in Virtual Reality (VR) has recently been shown to temporarily alter gender identity. Here, we extend this research by investigating the effect of auditory-induced illusory changes in one's own body (through altered footstep sounds) on gender identity and relation to gender groups. In two experiments with a within-subjects design, cisgender participants (26 females, 26 males) walked with headphones which played altered versions of their own footstep sounds that sounded more typically male or female. Baseline and post-intervention measures quantified gender identity (Implicit Association Test (IAT)), relation to gender groups (Inclusion of the Other-in-the-Self (IOS)), and perceived masculinity/femininity. Results show that females felt more feminine and closer to the group of women (IOS) directly after walking with feminine sounding footsteps. Similarly, males felt more feminine after walking with feminine sounding footsteps and associated themselves relatively stronger with 'female' (IAT). The findings suggest that gender identity is temporarily malleable through auditory-induced own body illusions. Furthermore, they provide evidence for a connection between body perception and an abstract representation of the Self, supporting the theory that bodily illusions affect social cognition through changes in the self-concept.

A-0429 THE SOUNDTRACK OF MY BODY: IMPLICIT BODY WEIGHT DISTORTIONS IN AUDITORY-DRIVEN BODY ILLUSION IN SUBCLINICAL AND CLINICAL EATING DISORDERS

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Body image concerns have been linked to eating disorders (EDs); however, their co-occurrence with body-representation distortions (e.g. body size/weight overestimations) remains debated. Previous studies on multisensory visuo-tactile bodily illusions reported higher ownership over fake hands in people with EDs compared to healthy populations, suggesting stronger influences of external sensory signals in EDs. Here we manipulated body size/weight estimations by means of a sensorimotor auditory-driven bodily illusion to investigate whether body-representation mechanisms are altered in subclinical and clinical EDs, assuming an overreliance on external (auditory) bodily signals. In this illusion, participants walk while their footstep sounds are altered to seem produced by lighter ('High-Frequency') or heavier ('Low-Frequency') bodies. Consequently, participants represent their body as lighter/slimmer or heavier/wider and adapt their gait, probably to reduce sensory prediction errors in internal forward models. We recruited 58 healthy women and assigned them to 3 groups according to their self-reported ED symptomatology (EDS): Low-EDS, Medium-EDS, High-EDS (Experiment 1), and 15 women with Anorexia Nervosa (AN; Experiment 2). We collected self-report and behavioural body-representation measures (body visualization, gait parameters). We predicted an enhanced body-weight illusion (i.e., lightest/slimmest represented body in 'High-' vs 'Low-Frequency') in people with High-EDS and AN in comparison to Low- and Medium-EDS. In Experiment 1, we found group differences in both behavioral measures but not in self-report measures. Contrary to our predictions, High-EDS participants displayed the longest stride times, typical of heavier bodies, and widest body visualizations in High- vs. Low-Frequency. In contrast, Low-EDS participants showed this behaviour in Low-Frequency, as in previous studies with healthy participants. Similarly to High-EDS, AN participants in Experiment 2 represented their body as widest/heaviest in the 'High-Frequency' condition. Our results suggest altered sensorimotor body-representation mechanisms in subclinical/clinical EDs, providing new insights into the cognitive and affective understanding of body-representation and opening opportunities for the development of novel diagnostic tools/therapies for people with/at risk of EDs.

A-0430 USE OF A REAL-LIFE PRACTICAL CONTEXT CHANGES THE LINK BETWEEN IMPLICIT BODY REPRESENTATIONS AND REAL BODY MEASUREMENTS

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A mismatch often exists between people's mental representations of their own body and their real body measurements. These distorted representations have an impact on motor, affective, and social functioning, and on general and clinical well-being. We investigated whether the mismatch between perceived and real body measurements is reduced when contextualizing body perception in a real-life practical scenario, in contrast to body perception in an abstract scenario and perception of one's ideal body. Using a reverse correlation paradigm, we constructed implicit, unbiased, data-driven visual depictions of participants' mental body representations. Across three conditions – own abstract, ideal, and own concrete body – participants selected the body that looked most like their own, like the body they would like to have, or like the body they would use for online shopping. In the own concrete condition only, we found a significant correlation between perceived and real hip width, suggesting that a match between perceived and real body size only exists when body perception takes place in a practical context, although the negative correlation indicated that these implicit body representations are not necessarily accurate. Further, participants who underestimated their body size or who had more negative attitudes towards their body weight showed a positive correlation between perceived and real body size when body perception took place in an abstract scenario. Finally, our results indicated that different body areas were implicated in body perception judgments across the different scenarios. These findings add several insights to the study of body perception, and in particular to research on the match between our own body appearance and our implicit mental representations of it. By showing that the implicit mental representations of our own body depend on situational and cognitive and affective individual differences, and suggesting that different neural processes might be employed for different types of body representations, our findings have both clinical (e.g. anorexia nervosa, body dysmorphic disorder) and practical (e.g. development of online avatars) implications.

A-0431 PRIDE AND EMBARRASSMENT IN CHILDREN AND ADULTS: DOES AUDIENCE PRESENCE MATTER?

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Although previous studies have examined the emotions embarrassment and pride in childhood and adulthood separately, few studies have considered their developmental trajectories in a single paradigm. The present study examined the facial expression and

physiological response associated with pride and embarrassment across the lifespan. Since both emotions are highly social, we also investigated whether the presence of an audience in the immediate environment modulated these responses. Three age groups were invited to participate: younger children (3.5-5.0yo), older children (8-10yo), and adults. In the embarrassment task, participants were asked to perform a short song. In the pride task, participants completed a puzzle which included bogus positive feedback. Video recordings of both tasks were played back to participants in order to elicit both emotions, while physiology (EDA/ECG/cheek temperature) and facial expressions were recorded. Half of the participants watched these videos in the presence of two audience members, whilst the other half watched these videos alone. Data collection is ongoing, but we are confident that we will be able to show results of at least n=100 participants by the time of the conference. We hypothesize that adults will show more pride and embarrassment facial expressions, and a greater physiological hyperarousal response than both older and younger children, but especially so in the presence of an audience. Older children should similarly show more facial expressions, and a greater arousal response than younger children, but especially so in the presence of an audience. Preliminary analyses on the child facial expression data suggest that older children show longer facial displays of embarrassment than younger children, but similar levels of pride.

A-0432 EARLY CROSS-FORMAT INTEGRATION OF NUMBER WORDS AND DIGITS IN ADULTS, BUT NOT IN CHILDREN

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Converting digits to number words and vice versa seems to be an effortless process in adults. It is as yet unclear whether the integration of the two formats takes place automatically, and how it develops during childhood. We investigated whether the representation of an Arabic digit is automatically and involuntarily activated upon hearing the corresponding number word in adults and nine-year-olds. In an ERP experiment, we presented participants (20 adults and 20 nine-year-olds) with unimodal (two digits) or cross-modal (one number word and one digit) number pairs, which were either identical (e.g., "one" and 1) or non-identical ("one" and 9). We designed a passive task in which participants did not respond to numerical stimuli. Adult ERPs showed strong effects of congruency, both uni- and cross-modally: The P2p component was more positive for incongruent than congruent number pairs. As the P2p emerges in an early time window before conscious processing, this indicates an automatic integration of number words and digits. In the later P300 window, we found more positive amplitudes for incongruent number pairs in the unimodal condition, indicating semantic processing. Conversely, we did not find a P2p effect of numerical congruity in 9-year-olds. In this age group, we could only replicate the later unimodal P300 effect. Thus, both age groups seem to process unimodal number pairs semantically, even though access to the number semantic was not required. We could show that adults integrate number words and digits automatically,

while 9-year-olds do not, suggesting that this integration process develops over an extended period and is still ongoing in 9-year-olds.

A-0433 NEUROANATOMICAL EVIDENCE OF THE FACTORIAL STRUCTURE OF EXECUTIVE FUNCTIONS

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The latent structure of executive functions (EFs) remains controversial. Confirmatory factorial analysis (CFA) has provided support for both multidimensional (assumes EFs to be functionally separable but related components) and bifactor (proposes all components are nested within a common factor) models. However, these models have never been compared in patient samples, nor with regard to their neuroanatomical correlates. Here, we systematically contrast both approaches in neurotypicals and in a neurodegenerative lesion model (patients with the behavioral variant frontotemporal dementia, bvFTD), characterized by executive deficits associated with frontal neurodegeneration. First, CFA was used to test the models' fit in a sample of 341 neurotypicals and 29 bvFTD patients based on performance in an executive frontal screening battery which assesses working memory, motor inhibition, verbal inhibition, and abstraction capacity. Second, we compared EFs factor and observed scores between patients and matched controls. Finally, we used voxel-based morphometry (VBM) to compare the grey matter correlates of factor and observed scores. CFA results showed that both models fit the data well. The multidimensional model, however, was more sensitive than the bifactor model and the observed scores to detect EFs impairments in bvFTD patients. VBM results for the multidimensional model revealed common and unique grey matter correlates for EFs components across prefrontal-insular, posterior and temporal cortices. Regarding the bifactor model, only the common factor was associated with prefrontal-insular hubs. Observed scores presented scant, non-frontal grey matter associations. Converging behavioral and neuroanatomical evidence from healthy populations and a neurodegenerative model of EFs supports an underlying multidimensional structure.

A-0434 CAN THE DOUBLE EMPATHY PROBLEM ACCOUNT FOR FALSE BELIEF RESULTS IN AUTISM?

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The double empathy problem (Milton, 2012) reframes social difficulties in autism as following from a disjuncture between neurotypical and autistic individuals, not as an issue tied to the autistic individual per se. On the basis of this notion, scholars often reject the influential Theory of Mind hypothesis, which asserts a deficit in mental state representation or 'mindblindness' in autism (Baron-Cohen et al., 1985). Here, we reconceptualise the claims made by the double empathy problem within the framework of relational mentalizing (Deschrijver & Palmer, 2020). In this view, individuals (including those on the autism spectrum) may experience more social ease when interacting with likeminded individuals (i.e., generally sharing similar mental states), which for autistic individuals may be other autistic people. However, autistic individuals are expected to run into more difficulties relative to neurotypical individuals whenever mental conflict arises (i.e., when confronted with 'unlikemindedness'). Hence, social issues characteristic of autism may be an issue tied to the autistic individual, even while interaction with other autistic individuals can be more successful. I assess these claims in light of recent data collected in the context of the double empathy problem. Via a systematic review, I selected empirical studies that presented participants with social stimuli obtained from autistic and from neurotypical persons (e.g., videos, facial expressions,…), either presented the stimuli to an autistic or a neurotypical group (partially-crossed design); or to both an autistic and a neurotypical group (fully-crossed design). In general, neurotypical individuals give more negative ratings to autistic versus neurotypical others, and are also worse in emotion recognition of autistic versus neurotypical facial expressions. Since studies using mentalising materials are rare, these results can hardly counter the theory of mind hypothesis of autism at this point in time. The relational mentalising framework shows promise to give direction to future research efforts.

A-0435 OBEDIENCE TO AUTHORITY IN THE AFTERMATH OF A GENOCIDE. A SOCIAL NEUROSCIENCE STUDY IN RWANDA

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We investigated to what extent the first generation of Rwandese born after the 1994 genocide would comply with immoral orders to inflict pain to another individual. We recruited 72 Rwandese in Rwanda and 72 Rwandese in Belgium. We observed that the more they reported that their family suffered during the 1994 genocide, the less they complied with immoral orders. This effect appeared to be mediated by a higher neural

response to the pain of others for participants who reported a greater family suffering. We also observed that Rwandese tested in Belgium disobeyed more frequently to immoral orders than Rwandese tested in Rwanda. Results indicated that the best predictive factor of prosocial disobedience was a low cultural relationship to authority, thus emphasizing the weight of culture and education on people's behaviors. The present study opens new paths for interdisciplinary field research dedicated to the study of obedience.

A-0436 CORRELATED EFFECTS OF THE DOPAMINE ANTAGONIST HALOPERIDOL ON OWN WALKING SPEED AND EMOTION PERCEPTION FROM OTHERS' WALKS

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Although Parkinson's disease (PD) is commonly thought of as a "movement disorder", a growing body of literature has reported deficits in emotion recognition (Argaud et al., 2018). Studies have proposed both a direct role of dopamine in modulating emotion recognition in PD and an indirect relationship mediated by motor processing, however findings are sparse and inconsistent (Argaud et al.). We aimed to explore the potential pathways by which dopamine affects emotion perception in PD by mimicking their hypodopaminergic state in a healthy adult sample. We used a double-blind, placebo-controlled procedure to test effects of the D2 antagonist Haloperidol on participants' walking speed and their emotion recognition from gait, using dynamic point-light walker (PLW) stimuli. On two separate days, once after receiving 2.5mg Haloperidol and once after receiving placebo, 33 healthy participants first viewed and rated angry, happy, sad and neutral PLWs. Subsequently, participants walked at their preferred walking speed for two minutes. Acceleration was recorded using two smart phones attached to participants' ankles. Using Bayesian mixed effects models, we observed that the magnitude of drug effects on walking speed predicted drug effects on perceived emotion intensity, such that participants who walked slower under haloperidol rated emotions as more intense (β = -0.64, P(β < 0) = .99). Control analyses demonstrated that this effect was specific to perceiving emotion from body, not facial, motion and could not be explained by drug effects on mood or time perception. We discuss these results in the context of motor simulation and implications for movement disorders such as PD.

A-0438 PHYSIOLOGICAL SYNCHRONY AS A BIOLOGICAL CORRELATE OF SHARED AFFECT

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The way humans share emotions with other individuals is a topic of growing interest in af-fective sciences. Despite a rich theoretical literature, empirical evidence is lacking regarding the biological mechanisms involved in shared affects and how to measure them. In two stud-ies, we tested the hypothesis that physiological synchrony (PS), the co-variation of autonom-ic activity between individuals, represents a biological correlate of shared affect. In particu-lar, here we assessed the reliability of phase clustering, a widely used measure in brain re-search, as a quantifiable index of physiological synchrony in shared affect. In the first study, we recorded a comprehensive set of autonomic signals (electrodermal activity, facial elec-tromyography, electrocardiogram) in pseudo-dyads of single participants exposed to the same affective stimuli. The analysis revealed patterns of synchronization or desynchroniza-tion that were consistent with the affective characteristics of the stimuli. These results sug-gested that PS reflects similarity in participants' emotional responses, even in the absence of social presence. In the second study, we replicated our analyses on an existent dataset, which measured action co-representation in dyads in 'threat' vs. 'safe' conditions, elicited through a "threat of scream" paradigm. The results showed higher PS in electrodermal activ-ity in the 'threat' condition than in the 'safe' condition. Moreover, PS was higher in genuine dyads than in pseudo-dyads, which indicated an additional effect of social presence. In sum, physiological signals synchronized across individuals in response to affective contexts, espe-cially in situations of social presence. These findings further support the hypothesis that PS is a biological correlate of shared affect. Future directions include comparing PS with simi-larity in subjective experience, as both are candidate processes for the emergence of collec-tive emotion.

A-0439 EXPLORING POST ANESTHESIA RESPONSES IN SOCIAL BEHAVIORS: INSIGHTS FROM COLOR CODED RATS

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The relation of stress and social behaviors in the neurobiology are rather convoluted. It is significant to understand the behavioral links between stress, anxiety, resilience, and social behavior in rats, with particular attention to different social contexts. It is necessary that animal to get chemically restrained in studying physiological mechanisms in many occasions. In the current investigations we used color coded male rat models to explore

the effects of anesthesia in social behaviors under different experimental conditions, which are utilized to understand the aggressive behaviors during various stages. The study also connects with blob distribution data and their trajectories using colorwheelHSV, which aid in defining colors and their detecting mechanism as per Hue, Saturation and Value of the blob. The underlying situations in understanding barcodes will be examined to delineate the outcomes of various social behaviors by introducing automated software apart from manual validation. Keywords: ColorwheelHSV, Blob Distribution, Color-Coded Rat, Aggressive Behaviors

A-0440 THE EFFECT OF EMOTIONAL CONTEXTS ON EMOTION PERCEPTION IN DYADS

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Social interactions convey important information that must be interpreted correctly in order to successfully navigate the complex social world. The majority of research to date, however, has focused on understanding how we perceive social information from individuals, and relatively little research has investigated the perception of third-party social interactions. The current paper sought to extend existing literature by investigating the perception of emotion in dyadic social interactions, and whether perception of emotion is moderated by emotional contexts. Across two studies (n = 119) participants were shown one individual followed by a brief presentation of a second individual before both disappeared. The stimuli were fully counterbalanced for emotion (neutral, happy and angry) and facing direction (presented either facing towards or away from each other). Participants were asked to rate to what extent the second individual was expressing happiness and anger. There was an effect of facing direction for happy targets across both studies: happy targets were rated as happier when facing towards the interactant compared to away from them. There was no difference in ratings of anger. There was also an effect of interactant emotion, such that the perception of the target's emotion was influenced by the emotional context in which they were presented. Our findings add to the small literature on perception of emotion in dyadic social interactions.

A-0442 CORRELATES OF FRUSTRATION IN THE ELECTROENCEPHALOGRAM OF DRIVERS

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Aim: Frustration as a widely prevalent emotion has been shown to influence cognitive processes such as decision making and attention. Thus, it affects human behavior reaching from shaping the human-technology-interaction to potentially causing traffic accidents. The numerous studies already conducted within the field of emotion recognition focus on replicable yet less ecologically valid induction methods for emotion elicitation such as

the presentation of emotional pictures and sounds. The present study was set up to find correlates of frustration in a more natural setting to pave the way for a physical measure of frustration in real-life situations. Eventually, this research facilitates the comparison of less intrusive but intentionally regulated behavioral signs of frustration to its unintentional physical manifestations. These behavioral signs can then be used to recognize frustration in more easily accessible data and enable the realization of subsequent interventions aimed at mitigating frustration right at onset. Method: 19 participants completed four different frustration-inducing and two baseline driving scenarios in a driving simulator study. Participants' brain activity was captured with the CGX quick-30 mobile EEG system. Subsequently, the participants continuously rated their frustration level based on an over-the-shoulder video of their drives. The resulting subjective measures were used to classify EEG time periods into episodes with or without frustration. Hypothesis: We expect to find hemispheric alpha band asymmetries in frontal electrodes corresponding to periods with vs. without frustration. In addition, further EEG patterns that have been found to correlate with frustration in previous studies will be investigated. Specifically, we will explore delta and theta frequency bands in the central electrodes, alpha bands in the posterior electrodes and beta bands in the frontal electrodes for a significant difference between episodes with and without a subjectively rated presence of frustration.

A-0443 RESPONSE TIME MODELLING REVEALS EVIDENCE FOR MULTIPLE, DISTINCT SOURCES OF MORAL DECISION CAUTION

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In everyday life, we often make moral judgments in dynamic information environments, in which we must revise our first impressions after learning new information. Further, overly harsh moral judgments may damage social relationships. For these reasons, we often need to be cautious in our moral judgments, yet how caution impacts moral decision-making processes remains poorly understood. We investigated the processes with which moral valence and contextual information expectancy drive caution in moral judgements. Across two independent experiments participants (N = 120) observed a variant of the dictator game in which a "Decision-maker" decided to share a proportion of $10 with another person (the "Receiver"). Participants were aware that, in each trial, Decision-makers either knew nothing about the Receiver, or they knew how 'deserving' the Receiver was, based on their past sharing behaviour towards another person. In each trial participants made moral judgements about the Decision-maker's sharing action. In half of the trials, after participants made this judgement they were presented with information about the receiver's deservingness and made a second judgement. We found that participants slowed their moral judgements when judging negatively valenced actions and when expecting contextual updates. Using a diffusion decision model (DDM) framework, these changes were explained by shifts in drift rate and decision bias (valence) and boundary setting (context), respectively. These findings demonstrate how moral decision caution can be decomposed into distinct aspects of the unfolding decision process: one aspect

increasing the widening of the boundaries in response to contextual update expectancy, which reflects slowing of judgements to reducing erroneous responding in general, and another related to decision bias shifts, which reflect additional guarding against erroneous judgements that are negative. These findings demonstrate distinct consequences of different aspects of moral decision caution, and provide a foundation for future research on neural mechanisms of moral decision-making.

A-0444 MANIPULATION OF COGNITIVE CONTROL DOES NOT INFLUENCE STATISTICAL LEARNING: EVIDENCE FROM A PROBABILISTIC SEQUENCE LEARNING TASK COMBINED WITH THE ERIKSEN FLANKER PARADIGM

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A competitive relationship between automatic, stimulus-driven processes and more controlled, internally-driven processes has long been suggested, such as between statistical learning and cognitive control. Previous studies investigating this relationship mostly focused on clinical populations or modulated the engagement of cognitive control-related processes in between-subject designs. Consequently, the question remains whether a competitive relationship is present when automatic and more controlled processes are required to operate simultaneously. To investigate this question, we combined a well-established statistical learning paradigm with the Eriksen flanker task using a within-subject design. Thirty-six healthy young adults completed a four-choice reaction time (RT) task where a response congruency manipulation was introduced using congruent, incongruent, and neutral flanker stimuli presented alongside the centrally-presented target stimuli. Participants were instructed to respond to the target stimuli. Unbeknownst to them, the order of target stimuli was predefined by a probabilistic sequence, yielding probable and nonprobable trials. Importantly, the probabilistic sequence did not define the order of flanker stimuli; hence, participants could not acquire and predict the flanker property of trials. We found that both RTs and accuracy were influenced by the probability as well as the flanker property of trials. Participants showed successful statistical learning measured as the difference between probable and nonprobable trials. In RTs, the magnitude of statistical learning was comparable across the three types of flanker trials. The magnitude of the conflict effect measured as the difference

of incongruent and congruent/neutral flanker trials was also similar across probable and nonprobable trials. Although accuracy data resembled this pattern, the combination of nonprobable and incongruent trial properties had a performance-deteriorating effect: participants performed poorly on these trials. Overall, the results indicate that instead of a competitive relationship, statistical learning and cognitive control do not influence one another. We propose that when these processes are simultaneously involved, they operate independently and in parallel.

A-0445 AGE-ASSOCIATED VARIABILITY IN EFFECTS OF INTELLIGENCE AND CREATIVITY ON THE SCHOOL LEARNING SUCCESS

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The effects of indicators of the relationships between creativity, intelligence and academic performance in 155 schoolchildren of the 5-7 grades of secondary schools are studied. To the assessment of cognitive abilities, different test of verbal and figurative creativity, the Raven's progressive matrices, and learning success in the school subjects were used. The indices of age, intelligence and creativity were found to explain 7-12% of the variability in academic performance. Seventh-graders were characterized by a decrease in academic performance compared to fifth-graders, but an increase in intelligence. A positive relationship between the indicators of fluency and originality is characteristic in schoolchildren of 11-12 years old only under conditions of creativity testing primarily demanding failure to the stereotyped thinking, but not found in the case of using wide variable stimuli, whereas at 13 years old this relationship is constant and does not depend on the method of testing. A decrease in the creativity indicators of 13-year-old schoolchildren in comparison with 11-year-olds may be the result of critical thinking development and / or acquired learning skills, which prevents thinking flexibility in the new conditions of cognitive activity. The research is supported by Russian Foundation for Basic Research, project No. 19-015-00412 and by Ministry of Science and Higher Education of Russian Federation, project No. FSUN-2020-0009.

A-0446 THE COWBOY EFFECT: ROBOT GAZE INFLUENCES HUMAN DECISIONS

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Many human decisions are made in a social context, thereby relying on the ability to anticipate and predict others' behavior. In such contexts, mutual gaze is a strong communicative signal which can inform individuals about others' intentions, goals and decisions. Although mutual gaze has been shown to have impact on a wide range of cognitive processes, its specific effect on social decision making has been rarely

addressed. Here, we investigated how mutual gaze established with a humanoid robot influences human decision making in an interactive setup. More specifically, participants played a strategic game against the robot iCub while we measured their behavior and neural (EEG) activity. During the decision time period, we manipulated the iCub's gaze to be either oriented towards participants' eyes (mutual gaze) or looking to the side (averted gaze). Participants were either mostly exposed to mutual gaze (70 % mutual gaze) or the averted gaze (70 % averted gaze). Results showed that participants were slower to respond in the mutual gaze, relative to averted gaze condition. The drift diffusion model suggested that this delay was driven by an increase of the decision threshold. This behavioral effect was paralleled by higher alpha synchronization during mutual gaze, thereby suggesting a higher cognitive effort related to suppression of the irrelevant salient mutual gaze signal compared to averted gaze. Analysis of participants' choice sequences showed that those, who mostly experienced the averted gaze were more likely to adopt a self-oriented strategy. In addition, their neural activity showed higher sensitivity to outcome processing, reflected in outcome-related ERPs. Altogether, these findings suggest that the robot's gaze, albeit irrelevant to upcoming decisions, acts as a strong social signal for humans, modulating response times, decision threshold, neural synchronization, as well as choice strategies and sensitivity outcomes. We expect our findings to be relevant to more complex, real-life contexts where dyadic interactions combine communicative gaze and social decision-making (funded by InStance project H2020 research: ERC-2016-StG-715058).

A-0448 GAZE FOLLOWING BEHAVIOUR: AN EYE TRACKING STUDY TO RE-EVALUATE THE AUTOMATIC AND GOAL DRIVEN INFLUENCE ON FOLLOWING ANOTHER'S GAZE

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Distracting gaze has been shown to elicit automatic gaze following. However, there are incongruencies in the literature about whether the effects of perceived gaze are automatic orienting responses or contextually sensitive (i.e. goal-driven). We investigated the top-down modulation of oculomotor behaviour in competing gaze orienting conditions using eyetracking and EEG techniques. Here, we present the eyetracking results. According to an instructional cue (orange or blue fixation dot) superimposed on a face shifting its gaze, participants made an eye movement (a goal-directed saccade) towards a peripheral target in the left or right hemi-fields over two SOAs (gaze shift preceding the instructional cue at -75 milliseconds or gaze shift following it at +75 milliseconds). The gaze shift occurred horizontally in the same direction as the instruction (goal congruent), in the opposite direction (goal incongruent), or vertically (no-goal orthogonal). We found that participants made few instructed gaze-direction errors when distracted by no-goal orthogonal gaze, regardless of SOA. This implies that distracting gaze shifts are disruptive

when contextually relevant. In the saccadic latency analysis, the participants showed a main effect of congruency and SOA with an increase in response time taken when the distractor preceded the instruction cue in goal-directed incongruent trials, suggesting a bottom-up influence of the distractor and its delayed inhibition over contextual relevance. These findings suggest a conflict monitoring mechanism, which operates at an early stage of attention orientation. We aim to elaborate on these findings using EEG, in which we expect to find larger conflict processing related evoked potentials in the goal incongruent trials compared with congruent and no-goal orthogonal conditions across both SOAs.

A-0449 IRRELEVANT ROBOT SOCIAL SIGNALS

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Understanding others' nonverbal behavior is essential for social interaction, as it allows, among others, for mental states to be inferred. While gaze communication, a well-established nonverbal social behavior, has shown its importance in inferring others' mental states, not much is known about the effects of irrelevant gaze signals on cognitive conflict markers. Moreover, it is unclear how, and if, cognitive-conflict mechanisms communicate with gaze-related attentional mechanisms. Here, we recorded EEG data while participants completed a color-based object categorization task with a robot on a screen. On each trial, participants observed the robot iCub grasping an object from a table and offering it to them to simulate a handover. Once the robot presented the object forward, they were asked to choose where to place the object according to its color. Before participants were allowed to respond, the robot made a head/gaze shift towards one of the sides. The gaze shifts were either congruent or incongruent with the object's color category. Since conflict stems from the activation of two responses or two actions, when only one should be selected, we expected that incongruent head shifts would induce more errors and elicit larger amplitudes in electrophysiological markers of cognitive conflict. We also expected that observing incongruent head shifts would evoke neural oscillations linked to cognitive conflict. The experiment results are in line with previous gaze following studies (i.e., slower response times for incongruent trials). We also show higher theta amplitudes overall for incongruent trials compared to congruent trials, which suggest a higher degree of unexpectedness. More importantly, we observed higher coherence values between mid-frontal electrode locations and posterior occipital electrode locations in the theta-frequency band for incongruent vs. congruent cues, which suggest that theta-band synchronization between the two regions allows for communication between cognitive conflict systems and gaze-related attentional mechanisms. In sum, the influence of irrelevant social signals during goal-oriented tasks can be indexed by behavioral, neural oscillation and brain connectivity patterns.

A-0450 MEETING ANOTHER'S GAZE SHORTENS SUBJECTIVE TIME BY CAPTURING ATTENTION

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Gaze directed at the observer (direct gaze) is an important and highly salient social signal with multiple effects on cognitive processes and behavior. It is disputed whether the effect of direct gaze is caused by attentional capture or increased arousal. Time estimation may provide an answer because attentional capture predicts an underestimation of time whereas arousal predicts an overestimation. In a temporal bisection task, observers were required to classify the duration of a stimulus as short or long. Stimulus duration was selected randomly between 988 and 1479 ms. When gaze was directed at the observer, participants underestimated stimulus duration, suggesting that effects of direct gaze are caused by attentional capture, not increased arousal. Critically, this effect was limited to dynamic stimuli where gaze appeared to move toward the participant. The underestimation was present with stimuli showing a full face, but also with stimuli showing only the eye region, inverted faces and high-contrast eye-like stimuli. However, it was absent with static pictures of full faces and dynamic nonfigurative stimuli. Because the effect of direct gaze depended on motion, which is common in naturalistic scenes, more consideration needs to be given to the ecological validity of stimuli in the study of social attention.

A-0451 THE IMPACT OF SOCIAL CUES ON THE COUPLING BETWEEN BRAIN OSCILLATIONS AND SPEECH RHYTHMS

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Within the nonverbal components of human communication, the face of the speaker plays an essential role, face-to-face communication being the most natural and standard in human interactions. In the present study, we used analysis tools based on Information Theory to probe whether the coupling between EEG and speech is affected by the mere presence of the speaker's face (as contrasted with a control, nonsocial stimulus). Specifically, we used Mutual Information to measure the dependencies between the speech signal and its encoding in brain oscillations, presumably reflecting the alignment of neuronal excitability in auditory and other cortical areas with acoustic structure. Two frequencies of the human electroencephalogram appeared of special interest: theta (3-7 Hz) and gamma (>30 Hz). Theta would be mainly entrained to the syllabic structure of speech, of equivalent frequency, and hierarchically shaping the properties of gamma. The latter would reflect the spike trains of the auditory cortex concurrent to the fine analysis of acoustic structure at subphonemic scale, of the type involved in determining formant transitions or the coding of voicing. Other frequencies were also of potential interest: delta

(1-3 Hz) has been linked to prosody at the phrasal level, while beta (12-30 Hz) seems related to the coding of prototypical vowel sounds carrying well-defined phonetic categories, though it can also couple to phrasal parameters. The phase of gamma frequencies (gamma low [30-50 Hz] and gamma high [50-100 Hz]) exhibited significantly higher Mutual Information values with the phase of speech under social conditions than under control conditions in frontocentral electrodes. Accordingly, social cues seem able to modify the neural processing of the subphonemic structure of speech. No differences could be found for the other explored frequencies. Given that other domains of language, such as semantics and syntax, have been proved to be affected by the mere presence of a face, it is concluded that this communicative context increases the listener's overall motivated attention to deeper linguistic processing.

A-0452 INVESTIGATING THE EFFECT OF GAZE CUES ON FOOD PREFERENCES: A BEHAVIORAL AND FMRI STUDY

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Previous studies show increased preference of objects that are attended by others compared to ignored ones (Bayliss et al. 2007; Bayliss and Tipper 2005; Ulloa et al. 2015). Specifically, a recent study reports increased preferences (willingness to pay – WTP) for food items that were looked at by others compared to the ignored ones (gaze cueing) (Madipakkam et al. 2019). In this study, we investigated the neural underpinnings of how gaze-cueing modifies participants' WTP for food items. Participants (n = 27, 19 female, mean age = 24.7 (sd = ±4.6)) indicated their WTP towards initially unknown food items before and after a gaze-cueing. Some food items were repeatedly looked at by the other person, while others were ignored by the other person. Results revealed that food items attended by others were associated with higher WTP compared to ignored ones (t(26) = 3.04; p = 0.005). Neuroimaging showed that amplified WTP was associated with higher brain activity in the left inferior frontal gyrus (IFG), in the left middle temporal gyrus (MTG), and the left caudate. Our results provide insight into a mechanism underlying the modification of the subjective value of rewards by social cueing and highlight the crucial role of social context in shaping individuals' preferences.

A-0453 MENTAL ATTRIBUTION TO ROBOTS MAY NOT ALWAYS BE BASED ON HUMAN-LIKENESS

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Prior research suggests that once a person attributes a mental state to another entity, they also endow that entity with many "human" qualities, including the ability to be a social partner. We readily attribute mental states to other people during social exchanges, but do we perceive robots similarly? Previous research shows that neural activity in regions associated with mentalizing increases with the human-likeness of game partner. Here, we aimed to replicate these findings. Forty adults underwent fMRI scanning while playing rock-paper-scissors with either another human, a humanoid robot, a mechanoid robot, or a random computer algorithm. Both robots have social features. The humanoid robot has a human-like form, speaks, and uses gestures with its arms. While the mechanoid robot has emotive eyes but no human-like form; it moves around on a table top, makes emotive noises, and uses some intelligible speech. Although participants believed they were playing games via a live-feed, pre-recorded videos were used to maintain equivalent wins and losses across participants and game partners. We only partially replicate previous findings. First, we found mentalizing regions of interest (ROIs) reliably deactivated during games with all partners. On the other hand, similar to previous findings, response in all mentalizing ROIs was significantly greater when playing against a human compared to playing with the robots or the computer. Surprisingly, however, brain response to the mechanoid robot either approached significance or was significantly higher than to the humanoid robot in nearly all mentalizing ROIs. Human perception of robots' mental states holds important implications for how we interact with them. Indeed, the more we attribute a mind to robots, the more likely we are to meaningfully engage with them. We found mental attribution to game partners was not based on human-likeness. Our findings have the potential to influence robotic design, especially for robots designed to engage with us in social settings (e.g., education, healthcare, and the service industry).

A-0454 YOUNG-AGE BIAS IN VALUATION OF FACES

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Faces of one's own-age are better recognized and remembered compared to the faces of other generations. This phenomenon, called own-age bias, has attracted researchers because it is considered to be rooted from in-/out-group bias and expertise of face perception through life. However, it remains elusive whether valuation of faces is affected by the own-age bias. Across the three fMRI studies (study 1: 52 young participants, Murakami et al., 2018; study 2: 32 young participants, Ito et al., 2016; study 3: 32 elderly participants), we investigated whether own-age bias occurs in 1) face pleasantness rating during fMRI, 2) evidence accumulation (or drift rate) revealed by a drift-diffusion modeling (DDM) in preferential choice after the fMRI, and 3) consistency between the face pleasantness rating and preferential choice (i.e., prediction score introduced in Lebreton et al., 2009). The studies 1 and 2 which employed young participants demonstrated that they showed higher rating, evidence accumulation, and prediction score for young faces than for elderly faces, supporting the idea of own-age bias. On the other hand, contrary to our expectation, study 3 which employed elderly participants showed that they demonstrated a similar tendency as the young participants did; they showed higher rating, evidence accumulation, and prediction score for young faces than for elderly faces. These behavioural results suggest that valuation of faces is affected by young-age bias but not own-age bias. The DDM using the percent signal changes of the ventromedial prefrontal cortex (vmPFC), fusiform face area (FFA), occipital face area (OFA) showed no notable effects of young-age bias, rather, it showed age-related change of the neural mechanisms associated with evidence accumulation; evidence accumulation in the young participants was exclusively supported by the vmPFC whereas that in the elderly participants was supported by the interaction of the vmPFC and visual area including FFA and OFA, suggesting age-related complementary system for valuation of faces.

A-0455 FORENSIC NEUROSCIENCE : NEW OPPORTUNITIES

Jean Langlois, Didier Bazalgette
Langlois (in charge of operational researches for Institut Polytechnique de Paris); Bazalgette (Agence Innovation Defense)

We propose a synthesis of the current operational researches in the field of Forensic Neuroscience. We start with an analysis of the methods that are highly criticized like polygraph and the EEG experiments of Larry Farwell. Then, several promising methods are dealt with. We focus on the use of neuroscience for two goals: finding new tools and methods for an investigation; detailing bias in the work of investigators.

A-0456 FORESIGHT METHODS INSPIRED BY COLLECTIVE INTELLIGENCE

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Jean Langlois (in charge of operational researches for Institut Polytechnique de Paris); Marc-Olivier Boisset (lecturer IHEDN)

The presentation briefly describes the concept of "collective intelligence". Based on a systematic analysis of the bibliography in foresight studies we show how collective intelligence is used for foresight. Examples are then detailed in the fields of strategic studies and finance.

A-0457 OLDER ADULTS' SENSITIVITY TO OWN AGE FACES: A VISUAL MISMATCH NEGATIVITY STUDY

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Previous studies demonstrated that the visual mismatch negativity (vMMN) component of event-related potentials (ERPs) is sensitive to facial emotions and gender. In the present study we investigated the possibility of a similar effect, the automatic registration of facial age. Pictures of young and older faces were presented to young (N = 20, mean age: 22.0 years) and elderly (N = 20, mean age: 68.4 years) participants. The faces were irrelevant, and appeared around the location of the stimulus field of a tracking task. In different blocks either young faces were presented infrequently (deviant) in a sequence of elderly faces (standard), or vice versa. In this study, vMMN emerged only in the older group to same age deviants. This finding is explained by the less effective inhibition of irrelevant stimuli in the elderly, and corresponds to the own-age bias effect of recognition studies. As the results show, photographs of facial age violating the regularity of sequences are detected automatically, but this deviancy is less salient than facial emotion or gender.

A-0458 ASSESSING EXECUTIVE FUNCTIONS IN PRESCHOOL AGE: A SYSTEMATIC REVIEW

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Executive functions (EF) are higher-order cognitive processes present in the prefrontal cortex, and are fundamental in planning, executing, and monitoring goal-oriented behaviors. Evaluating EF in early stages of developments is essential for identifying any cognitive alterations in young children, given that it allows for early intervention and minimizes future complications. Additionally, it contributes to a better understanding of this construct in this age bracket, as well as its operational model. Study of EF has recently been the focus of multiple researchers; however, there is still a serious lack of instruments and measurements validated towards children's age bracket. This systematic review's main goal is to evaluate instruments and/or tasks that serve to evaluate and analyze EF and/or their components in early ages. Forty nine studies were analyzed, containing multiple tasks and tools oriented towards EF and their constituent components. Results indicate the existence of various tasks that grade the different components independently from one another; however, they also confirm the lack of any global measurement instrument or method. Therefore, this systematic review presents itself as an important contribution in the study of EF, not only stressing the importance of further investing into constructing and validating new and better tools for evaluating the construct, but also the study of operating models of executive functioning, especially in an age bracket where comprehending it is notoriously difficult.

A-0459 THE ROLE OF EXECUTIVE DYSFUNCTION IN THE DIFFERENTIAL DIAGNOSIS BETWEEN NEUROCOGNITIVE DISORDER AND DEMENTIA

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Currently, the literature points to deficits in executive functions (EF) as a prodrome for the development of dementias. The detection of executive changes at an early stage is essential to differentiate the normative aging of the pathological and promote an early intervention in the pathology. This study aimed to explore and identify clinical profiles of changes in the cognitive and executive processes that can be found in an elderly population compatible with the process of normative ageing, with pre-dementia processes (Mild Neurocognitive Disorder, mNCD) and with dementia. A total of 78 participants were part of this study, with and without cognitive deficits, and age equal

to or upper 65 years. A neuropsychological evaluation was taken to test the measures relating to inhibitory control, working memory, abstraction, cognitive flexibility, judgment and problem solving, planning and organization and also memory, language, reasoning, attention, concentration and visuospatial capacity. The obtained results allowed to characterize and identify different executive profiles, distinguishing three groups: one without pathology (healthy) and two clinical groups: mNCD and Dementia. The results show a better performance at the executive level of the healthy group and the mNCD group and worse for the dementia group. The mNCD group deficits in visuospatial perception, verbal inhibitory control and short-term memory (STM) are highlighted. The group of Dementia demonstrated the existence of executive dysfunction at the level of inhibitory control, abstraction capacity, planning, organization and working memory. The identification of different profiles of executive dysfunction may help in the differential diagnosis between PNC and dementia.

A-0460 HOW PROSODY HELPS AUDITORY STREAM SEGREGATION AND SELECTIVE ATTENTION IN A MULTI-TALKER SITUATION

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To process speech in a multi-talker environment, listeners need to segregate the mixture of incoming speech streams and focus their attention on one of them. Potentially, speech prosody could aid either of these processes, but the contribution of prosody to the processing of one speech stream out of several is still largely unknown. For addressing these issues, in the present study, we extracted functional networks connecting brain regions from brain electric signals while participants listened to two concurrent speech streams. Prosody manipulation was applied on the attended speech stream for one group of participants and on the ignored speech stream for the other group. Prosody was synthetically flattened, naturally flattened, or intact. Our results showed that naturally flattened speech is difficult to focus on and highly susceptible to distraction from an unattended intact speech stream, while prosody manipulation on the ignored stream has no effect on target detection, although it disturbs remembering the content of the attended speech. The difference in brain electric activity between attending naturally flattened speech and intact speech was reflected in a frontoparietal attention network in the delta (0.5-4 Hz) and theta (4-8 Hz) bands. Further, suppressing naturally flattened vs. intact speech differed in a temporoparietal network operating in the high alpha band (10-13 Hz). Combining the behavioral and EEG data, it appears that speech prosody facilitates both attentional selection and stream segregation. These conclusions will be discussed in detail in the presentation.

A-0461 AUTOMATICALLY PROCESSED BUT NOT AUTOMATICALLY LEARNED: AN ERP STUDY ON IMPLICIT EMOTIONAL CROSS-MODAL ASSOCIATIONS IN FACE PROCESSING

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There is substantial evidence that both faces and emotional cues are highly relevant and therefore attract attention in a prioritized way. However, findings are mixed to which degree associating emotional valence occurs in a fully automatic manner or whether it requires at least a minimum of directed attention to the emotional quality of a stimulus. In the present associative learning study, we tested whether inherently neutral faces gain additional relevance by being coupled with either positive, negative, or neutral vocal affect bursts. During learning, participants were presented with face-burst pairs on which they performed a gender matching task but without explicit judgment of the emotional information. In the test session on a subsequent day, only the previously associated faces were shown and had to be categorized regarding gender. Event-related potentials (ERPs), pupil size, and response time data were collected in 41 subjects in both sessions. Emotion effects were found in auditory ERPs and response times during the learning session. This suggests that the task-irrelevant emotional information was automatically processed. ERPs to faces, however, were not affected by associated emotions but were modulated by task-relevant information, i.e. gender (in-)congruence of the face and voice. Importantly, this congruence effect occurred in both sessions, that is even after removing the auditory stimuli during the test session. With congruence effects present in both sessions and hereby across two tasks, we can rule out a lack of attention to the voice stimulus or an unsuccessful cross-modal integration of the face and voice to explain the absence of effects of emotion associations. These findings encourage further research on the boundary conditions for emotional cues to be integrated and learned, especially in the case of face perception, which should be highly context-dependent by nature due to the complexity of social situations.

A-0462 LONGITUDINAL ASSOCIATIONS BETWEEN MUSICAL ABILITIES AND PRECURSORS OF READING IN FIRST-GRADE CHILDREN

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A considerable amount of research indicates that musical abilities are associated with the precursors of reading. Moreover, there is growing evidence suggesting that formal music

instruction facilitates the development of early literacy skills in preschoolers and school-aged children. Yet little is known about the longitudinal changes in the associations among musical and linguistic skills in children starting formal school instruction. The present study explored whether the relationship between musical and literacy skills changes during the first school year and how improvements in linguistic and musical abilities are linked in 6- to 7-year-old children. We measured musical competencies (discrimination, auditory-visual connection) and several precursors of reading (phonemic awareness, rapid naming, working memory) in 85 first-grade students. Two assessments were carried out at the beginning and the end of the first school year. All participants received classroom music lessons as part of the primary school curriculum. Surprisingly, we did not observe any significant correlations between musical abilities and precursors of reading at the baseline and posttraining measurements. When calculating repeated measures correlations to test longitudinal associations between paired measures, we found specific intra-individual relations between the development of precursor skills and musical (rhythmic and melodic) auditory-visual connection abilities. Therefore, our findings did not confirm the results of previous studies that showed connections between reading-related skills and musical abilities in school-aged children. The current study sheds light on unique longitudinal relations between the development of literacy and musical auditory-visual skills in first-graders. These findings might indicate overlapping mechanisms underlying phonological and music-related multimodal processing at the beginning of reading development.

A-0463 INVESTIGATING THE IMPACT OF EXECUTIVE DEFICITS ON LANGUAGE PRODUCTION PERFORMANCE IN CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER

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Accumulating evidences have highlighted reduced verbal and non-verbal executive functions (EF) performance in children with Developmental Language Disorder (DLD), suggesting that EF may be particularly at risk in this population. Yet, the involvement of executive deficits on language performance in children with DLD remains highly controversial. In this study, we used an original experimental approach to investigate the occurrence of language production difficulties in DLD across different executive load task conditions. 26 children (8-11 years old) including 12 DLD and 14 typically developing (TD) children matched for age, sex, socioeconomic status and nonverbal IQ performed a set of non-verbal executive functions (i.e. working memory, inhibition and flexibility) tasks. To specifically assess the impact of the executive load on language production skills in our participants, children also performed a semantic fluency task including two executive load conditions triggered by low or high levels of selection demands among competing alternatives. Results revealed that, compared to TD children, DLD showed

poorer performance in working memory (p=.023) and inhibition (p=.002) but not in flexibility (p=.449). Regarding semantic fluency, a mixed ANOVA showed a significant main effect of Group (DLD<TD; p<.001) and Condition (high>low; p<.001) and a significant interaction effect (GroupXCondition; p<.001). Post hoc analyses revealed a significant difference between the DLD and TD children in the high (p<.001) but not in the low (p=.129) load condition. In addition, correlation analyses showed that inhibition difficulties were associated with lower fluency performance in the high load condition (=-.30, p=.042). This study revealed reduced semantic fluency performance only in high executive load condition in children with DLD as compared to TD children. In addition, semantic fluency difficulties were associated with lower inhibition performance. Together, our results suggest that language performance of children with DLD may be affected by their executive weaknesses and highlight the importance of considering the executive load level of language tasks in the context of DLD assessment and care.

A-0465 UNRAVELLING DIFFERENT FUNCTIONAL STATES IN WM-GUIDED NOVEL ACTION

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Information in working memory (WM) is crucial for guiding behavior. However, not all WM representations are equally relevant simultaneously. Current theoretical frameworks propose a functional dissociation between 'latent' and 'active' states, in which relevant representations are prioritized into an optimal (active) state to face current demands, while not immediately relevant information is maintained in a dormant (latent) state. In this context, task demands can induce rapid and flexible reformatting of information from latent to active state. Critically, these functional states have been primarily studied using simple stimulus material, with attention selecting and prioritizing relevant representations to serve as templates to guide subsequent behavior. It remains unclear whether attention directed to more complex WM representations, such as novel task sets, can also trigger this reformatting and effectively modulate how they concur to behavior. Across two preregistered experiments, we manipulated the task relevance of novel stimulus-response (S-R) mappings in a choice reaction task, involving the execution of condition-action rules. On each trial, participants encoded 4 novel S-Rs by associating 2 colors and 2 shapes to left and right responses. Next, a task cue signaled which stimulus feature would be relevant in two subsequent bivalent targets that could lead to compatible or incompatible responses. We predicted the effect of compatibility to interact with the state of the irrelevant S-Rs. Accordingly, we observed interference from the irrelevant S-Rs increase across three conditions, depending on whether they 1) could be entirely

dropped, 2) needed to be maintained but their potential relevance remained unknown, and 3) were explicitly cued for later use. Differences between conditions were also reflected in the drift rate parameter of a drift diffusion model, suggesting that active S-Rs enable the optimization of behavior-guiding representations. These results suggest that novel task sets can be maintained in WM with different levels of priority, and provide initial evidence of the computational differences between active and latent functional states of complex, action-oriented representations.

A-0466 IMPLICIT DIFFERENTIATION OF STRUCTURED AND UNSTRUCTURED STATISTICAL REGULARITIES: FMRI EVIDENCE

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Previous brain imaging studies have suggested that cortico-striatal circuits and medial-temporal areas underlie the implicit acquisition of statistical regularities. However, it has remained unexplored whether differently structured statistical regularities recruit the same or distinct brain areas. To investigate this question, during fMRI scanning, young adults (N = 30) completed a visual four-choice reaction time (RT) task that consisted of structured and unstructured blocks of statistical regularities. The structured blocks included an alternating sequence between nonadjacent trials, yielding more probable and less probable transitional probabilities. The transitional probabilities were three successive trials, referred to as triplets. In the unstructured blocks, the alternating sequence was absent, and each unique triplet occurred with equal probability. By creating either biased or equal probabilities of triplets, these were predictable in the structured blocks and unpredictable in the unstructured blocks. The structured and unstructured blocks alternated with one another for altogether 96 task blocks. All task blocks were visually identical at the surface level. Participants were unaware of the presence or absence of the alternating sequence and of the change in structure across the successive task blocks. Results showed that although RTs were faster to more probable than to less probable triplets in both the structured and unstructured blocks, this RT effect was larger in the structured blocks. Whole-brain random-effects analyses yielded larger activity for the structured than for the unstructured blocks in the early visual cortex. Therefore, although unpredictable transitional probabilities are automatically processed in line with the

predictable ones at the behavioral level, internal models on their actual predictability might still emerge. The resulting predictive signals might be integrated with the sensory input in the early visual cortex. Overall, we provide fMRI evidence that the implicit acquisition of predictive regularities can be detected already at the early stages of visual cortical processing.

A-0467 THE ROLE OF THE RIGHT INFERIOR FRONTAL GYRUS IN THE PERCEPTION AND EXPERIENCE OF EMOTIONS: A META-ANALYSIS ON ANGER.

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The ability to understand emotions in others plays a very important role in our interpersonal interactions, leading several studies to investigate this topic. However, fewer studies focused on the common brain activations that are involved in both the perception of emotions in others or their personal experience, when considering the same emotion. To shed light on this topic and on an emotion whose neural basis are still unclear, we performed an activation-likelihood-estimation meta-analyses of human neuroimaging studies on 61 previous papers on anger perception (n=35) and experience (n=26). While anger perception relied on the amygdala, the right superior temporal gyrus, the right fusiform and the right inferior frontal gyrus, anger experience relied on bilateral activations of the insula and the ventrolateral prefrontal cortex. Moreover, in line with literature evidence, the conjunction analysis between the perception of this emotion in others and its personal experience showed activation in a common brain area: the right inferior frontal gyrus. We propose that this region could be responsible of a first conceptualization of anger that is shared when the emotion is perceived in others or experienced in first person (Lieberman et al., 2007; Sorella et al., 2021). This process can be followed by other well-known mechanisms of the IFG, such as empathy processes or the modulation of the emotional experience (e.g. reappraisal) and behaviors (e.g. inhibition).

A-0468 OBSERVATION OF OTHERS' PAINFUL HEAT STIMULATION INVOLVES SPINAL CORD RESPONSES THAT ARE DISTINCT FROM FIRST-HAND PAIN PROCESSING

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Observing others' aversive experiences is central to identify dangerous for ourselves. Comprehensive research has shown that observation often elicits comparable behavioral and physiological responses as first-hand aversive experiences and engages overlapping

brain activation. However, while brain activation to first-hand aversive experiences relies on connections to the spinal cord, it is unresolved if merely observing aversive stimulation involves responses in spinal cord, as well.rnWe demonstrate that observation of others receiving painful heat stimulation involves neural responses in the spinal cord, located in the same cervical segment as first-hand heat pain. However, while first-hand painful experiences are coded within dorso-lateral regions of the spinal cord, observation of others painful heat stimulation involve medial regions. Importantly, dorso-lateral areas that process firs-hand pain exhibit negative responses when observing pain in others. rnOur results suggest that the spinal cord processes observation of pain full stimulation in others and reflects a distinction to first-hand pain, when integrating social information.rn

A-0469 GRIP AND GOAL PROCESSING INDEPENDENTLY AFFECTS THE ACTIVITY OF THE MOTOR NEURAL NETWORK DURING ACTION RECOGNITION: AN ELECTROPHYSIOLOGICAL STUDY

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Understanding others' actions is a core ability of human beings. It requires not only to recognize what people are doing such as the grip they use to perform the action, but also why they are doing it, their goal. The involvement of the motor system in this ability has been repeatedly reported. Yet it remains debated whether the motor system is rather involved in the processing of the grip or in the processing of the goal. Using mu-rhythm desynchronization as a marker of the involvement of the motor neural network, we evaluated the respective contribution of grip and goal processing to the activity of the motor system during action recognition. Thirty-one right-handed participants were required to judge the overall correctness of an action photograph according to the typical use of the object. The object-related action (e.g., grasping water bottle) could contain either grip violations (e.g., grasping upright bottle with incorrect grip), goal violations (e.g., grasping up-side down bottle with correct grip), both grip and goal violations (e.g., grasping up-side down bottle with incorrect grip), or no violations. The electroencephalographic activity was recorded from 128 channels and time-locked to photograph onset. Results showed that both grip and goal processing independently modulated mu-rhythm desynchronization. Incorrect grips increased mu-rhythm desynchronization when compared to correct grips. In contrast, correct goals increased mu-desynchronization when compared to incorrect goals. Importantly, the effect of grip processing was detected earlier (~ 400-ms from target onset) than the effect of goal processing (~800-ms from target onset). Overall, findings demonstrate that the motor neural network is more strongly involved in the recognition of others' actions when dealing with both incorrect grips and correct goals. However, the differences in the temporal dynamics of grip and goal influence suggest that grip information reaches the motor system earlier than goal information, which further constrain the place given to the motor system during action understanding.

A-0470 SIMILARITY AND MODULAR ORGANIZATION OF RESTING-STATE EEG NETWORKS

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A large number of fMRI studies have reported that large-scale brain networks are organized into separated but interacting modules, typically studied in resting-state. Modularity is assumed to reflect functional segregation within the integrated network and is thought to confer robustness and adaptability to brain connectivity networks. However, fMRI data capture functional relations among brain regions on a timescale of seconds, making it difficult to link networks with cognitive functions, while MEG data remains relatively scarce. The present study aims to explore the similarity and modular structure of networks as measured with resting-state EEG rhythms (0.5-80 Hz) on a large sample of young healthy adults (N = 202; mean age = 22.4 +/- 3.1). We tested whether stable resting-state networks could be identified with EEG on the individual and the group-level and if those networks could be characterized with a shared modular structure. Phase synchrony (PLV; iPLV) and amplitude envelope correlation (AEC) was calculated to estimate functional connectivity between reconstructed cortical signals in five frequency bands (delta 0.5-4Hz; theta 4-8 Hz; alpha 8-13 Hz; beta 13-30 Hz; gamma 30-80 Hz). Modularity was defined on the subject-level, with the structural resolution parameter estimated against randomized (null) data. Individual reliability was assessed by halving the resting state data and group-level reliability by randomized subgroups. Similarity of individual average networks was calculated using five metrics (correlation, Euclidean distance, adjacency spectral similarity, Laplacian spectral similarity, DeltaCon). Our results reveal a trade-off between spatial leakage correction and consistency of connectivity measures, uncorrected measures show higher consistency. Observed modularity of connectivity might play an important role in state and trait processes of cognitive functioning.

A-0471 THE HUNGARIAN VERSION OF AFFECTIVE NEUROSCIENCE PERSONALITY SCALES (ANPS): A VALID AND RELIABLE SELF-REPORT MEASURE RECOMMENDED TO USE IN AFFECTIVE AND PERSONALITY NEUROSCIENCE

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The 'Affective Neuroscience Personality Scales' (ANPS) is a self-report measure to investigate individual differences in primary emotional traits based on the neurobiological considerations of six affective systems in the brain (PLAY, SEEK, CARE, FEAR, ANGER, SADNESS). 155 healthy young people filled in the 112-item Hungarian version of ANPS

and the 44-item version of Big Five Inventory (BFI). Gender differences, psychometric properties, interscale correlations of the ANPS and its external validity with BFI were investigated. Compared to men, women had higher scores on FEAR, CARE, SADNESS and Spirituality scales. No gender difference was found on ANGER, PLAY and SEEK. Week to moderately strong positive correlations were found both among the positive scales (SEEK, CARE, PLAY) (0.38 – 0.42), and among the negative scales (FEAR, ANGER, SADNESS)(0.21 – 0.65). Spirituality correlated positively with SEEK, CARE and SADNESS. The inter-correlations between ANPS scales and the BFI are congruent with former ANPS findings from different cultures and language versions. The internal consistency was satisfactory and the factor structures were similar to the original version of ANPS. The Hungarian version of the ANPS has sufficient reliability and construct validity. We confirmed (1) the gender differences, and (2) the strong associations between primary emotions and the Five-Factor Model of Personality that was also found across different cultures. ANPS proved to be a valid and reliable self-report tool to measure emotional traits. Its use is recommended in fMRI studies from the field of affective neuroscience, social neuroscience, personality neuroscience, and cross-cultural neuroscience that investigate how subcortical brain emotional systems serve as foundations of personality. This work was supported by the National Research, Development and Innovation Fund of Hungary under Grant PD124964.

A-0472 PROACTIVE CONTROL IN INTERNET ADDICTION AND PROBLEMATIC SOCIAL MEDIA USE

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The relation between addictions and reduced inhibitory control is well known. Generally, it is assumed that people more inclined to addiction present exaggerate reactive control mechanisms that cause an automatic cascade of events, which eventually leads to specific maladaptive behaviours in the presence of an addiction-related cue. However, this account does not consider the dynamic component of addiction, that is the fact that the proactive mental representation of addiction-related objects or actions, which prepares people to undertake maladaptive behaviours even without the presence of addiction-related cues, is an important factor. Thus, we hypothesize that addiction may involve increased proactive control, in addition or in alternative to reactive control. In this study, participants perform the AX Continuous Performance Task (AX-CPT) that measures the individual tendency to adopt a more reactive or proactive control strategy. Moreover, the same participants fill in the Internet Addiction Test (IAT) and a modified version of the Problematic Facebook Use Scale (PFUS), which measure the level of internet addiction and problematic use of social media, respectively. The results indicate a robust correlation between internet addiction, problematic social media use, and the tendency to use proactive, but not reactive, control. In line with our hypothesis, these results point out, for the first time, the importance of active preparation in internet addiction and social media misuse, and suggest the possibility to implement new research and therapeutic intervention focused on proactive processes.

A-0473 INTENTION RECOGNITION, CONFIDENCE AND COMMITMENT IN SOCIAL COOPERATION

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Arranging commitments through contractual devices has been shown to promote cooperation in social dilemmas. Recent theoretical accounts suggest that commitment depends both on the confidence and accuracy of others' intention recognition, whereby humans should make costly commitments to cooperation predominantly if confidence in their prediction of the other's behavior is low (Han et al., 2015). In two experiments, we empirically tested these hypotheses. In experiment 1 (within-subjects design), 48 participants played an iterative version of the prisoner's dilemma game where they could signal their intentions to their co-player either for one or for two rounds by enduring a monetary cost. We show that lower confidence in one's prediction of the co-player's intentions is linked to higher probability of selecting costly commitment. Furthermore, participants are more likely to commit to cooperation when they cannot clearly predict the other player's intentions. In experiment 2, 31 participants had the option to signal their intention to cooperate for the current round but received feedback on the other's decisions according to three conditions: 100%, 50% or 25% of the time. Here, we replicated our previous findings, further establishing a causal link between intention recognition confidence and costly commitment. Less feedback (and by extent lower confidence in one's predictions) was linked to higher probability of selecting to commit, but only if the primary prediction was that the other party would cooperate. Taken together, our analyses revealed that participants possess metacognitive access to their predictions of others' behavior and that participants with higher metacognitive abilities tended to benefit more from the availability of commitment devices, in line with previous research highlighting the role of metacognition in optimizing individual choices. Our findings provide empirical support for theoretical accounts on the evolution of cooperation and highlight the role of metacognition in social decisions.

A-0475 REPRESENTATION OF SOCIAL INFORMATION IN DORSOMEDIAL PREFRONTAL CORTEX PREDICTS AGREEABLENESS TRAIT

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Agreeableness is one of the five major dimensions of personality, representing individual variations in empathy, altruism and cooperation. Previous work has linked agreeableness with socio-cognitive abilities and, particularly, with the ability to infer others' mental states, known as Theory of Mind (ToM) or mentalization. Indeed, individual differences in both agreeableness and ToM are related to variations in the same underlying neural network. Here we complemented and extended these findings by investigating how the

neural encoding of social information is related to agreeableness on a sample of 55 adults that underwent fMRI scanning. We expected individuals high in agreeableness to encode social and non-social information in a more dissimilar fashion compared to individuals low in agreeableness, primarily in brain regions commonly associated with mentalization. To test this prediction we adopted a representational similarity analysis (RSA) approach that derives the degree of similarity between patterns of activation for different stimuli. Since we were interested in assessing whether the degree of similarity between social and non-social content neural representation can predict the degree of agreeableness, we compared, on an individual basis, patterns of brain activation during a classic ToM animation task in which different shapes could interact in socially meaningful way, or randomly. Consistent with our predictions, we found more distinct encodings of social and random animations in the dorsomedial prefrontal cortex (dmPFC) of individuals scoring high in agreeableness compared to those with low scores. Importantly, no other personality trait showed a correlation with the social-random dissimilarity measure. This finding suggests that individual differences in agreeableness are associated with differences in processing of social information, which provides an important contribution in characterizing the neural determinants of this trait and in understanding the distinctiveness of social information in the dmPFC.

A-0476 ROLE OF LOW-LEVEL VISUAL FEATURES OF SYMBOLIC STIMULI IN ASSOCIATIVE LEARNING

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Salience association affects neural responses to a variety of stimuli, including abstract and symbolic stimuli. Previous studies demonstrated modulations of event-related brain potential (ERP) components, mainly reflecting influences on late stimulus evaluation (e.g., LPC). Moreover, salience associations have been shown to impact also earlier ERP responses as the P1 component, indicating a role of low-level visual features of symbolic stimuli during associative learning. However, previous evidence regarding the presence and extent of these early effects is still inconclusive, and only little is known about the scale at which the association may occur. In the present study, we aimed to investigate the role of low-level visual features of symbolic stimuli in associative learning and the different scales of their manipulation by conducting two parallel experiments (N=24 each, between-subject design), both having the same procedure. In the learning session, stimuli consisting in strings of consonants, which were presented in different fonts, were associated with a positive, neutral or negative monetary outcome. The experiments differed in the scale of manipulation of the visual features: In experiment 1, only the set of characters was relevant for the outcome assignment, while in experiment 2, the font of the string was relevant. A consecutive test session consisted in an old/new decision task, in which the new stimuli were obtained by manipulating the previously associated strings at either one or both scales. ERPs were recorded during both sessions in both experiments.

For both experiments we hypothesise 1) faster learning of the gain/loss compared to zero outcome associations; 2) enhanced P1 and LPC amplitudes to gain/loss associated stimuli during the learning phase; 3) enhanced P1 and LPC amplitudes to previously gain/loss associated stimuli (old) during the test phase; 3) enhanced P1 and LPC amplitudes to new stimuli retaining previously associated scale of visual features. We also investigate potential differences between the two experiments in the emergence and evolution of any effect of salience association during the learning process.

A-0477 ENHANCED PROCESSING OF DISTRACTORS AMONG ELDERLY DOES NOT LEAD TO BETTER UTILIZATION OF THIS INFORMATION

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Based on the load theory of attention, which assumes that distractors are processed to a greater extent in case of insufficient cognitive control, we investigated whether older adults were more likely to process task-irrelevant stimuli while a working-memory task was executed, and if so, whether they were able to use this information in a following task. In the study phase of our experiment the participants had to complete a reference-back task while task-irrelevant distractors ('faces' and 'scrambled faces') were presented in the background. The event-related potential (ERP) component N170 is a marker of face-processing that is automatic and unmodified by attention. We found an increased N170 amplitude in the older group for both types of distracting stimuli compared to the younger group. 'Faces' evoked a greater N170 amplitude compared to 'scrambled faces' in both groups, however the difference wave between these conditions were smaller in the older group. This implies that they invested more capacity in processing the 'scrambled faces' than the younger adults, suggesting that the discrimination between the two distracting stimuli was not effective. In the follow-up phase, an unexpected facial recognition task was completed, where the participants had to indicate whether the stimulus presented to them was seen in the study phase or not. This effect was validated by the late positive component (LPC) as this component shows a higher amplitude upon encountering an already seen stimulus. During the recognition phase both groups recognized the faces better than chance, however older participants did so to a smaller extent, and they made significantly more errors. Supporting these findings, the LPC only evolved in the younger group, indicating a diminished utilization of previously encountered information in the older group. In conclusion, the older group showed an increased processing of the distracting stimuli, reflected by the larger N170 amplitudes. Nevertheless, they could not apply this information effectively in the recognition-task, indicated by their responses and the lack of the LPC.

A-0479 THE MIRROR EFFECT - SYNCHRONY REDUCES DISTRESS IN FACE-TO-FACE INTERACTIONS

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Although it is increasingly acknowledged that social interactions may provide support at times of adversity, how such interactions can buffer distress remains unclear. Here we suggest that synchronizing with others' distress plays a key role in reducing their distress. Recent findings from our lab demonstrate that when aversive emotions of one (target) are mirrored by a partner (regulator) their negative intensity declined. Building on these highly promising findings, here we examined the mechanisms underlying the effectiveness of this 'mirror effect' in decreasing emotional distress. To this end, we used dual-functional near-infrared spectroscopy (fNIRS), and a video analysis algorithm to assess movement and Interbrain Synchrony (INS) during an emotional sharing paradigm. We hypothesized that behavioral synchrony and INS during EST would predict distress-regulation among targets following emotional sharing. Preliminary results show an increase in positive affect following emotional sharing, among the targets. In addition, we found that INS levels were higher during emotional sharing as compared to a control condition of sharing a neutral event. Notably, we found that the targets' first impressions from their regulators predicted movement synchrony during the EST. These findings indicate that emotional sharing is associated with increased INS and that first impression increases these effects. Investigating the behavioral and neurological response underlying the contribution of synchrony to distress regulation allows us to explore a brain model of social support that characterizes the contribution of inter-brain networks to distress regulation.

A-0480 THE INFLUENCE OF OVARIAN HORMONES ON MULTISENSORY EMOTION RECOGNITION

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Emotion recognition is the ability to decode emotional expressions, which play a crucial role in social interaction. Prior research indicates the endocrine system is involved in emotion recognition. In this line, some studies have attempted to investigate the impact of the menstrual cycle and ovarian hormones on facial emotion recognition. Ovarian hormones i.e. estradiol and progesterone fluctuate in a cycle pattern across the menstrual cycle and provide a natural model to examine the influence of endogenous hormones on cognition. Previous studies have demonstrated inconsistent results that might be due to differences between experimental paradigms, low statistical power, between-subject comparisons, or inaccurate measure of hormone levels. In this study, we aimed to overcome such shortcomings by incorporating hormonal measurements in a large-scale (N=134) within-

subject study. We hypothesized that 1) facial emotion recognition accuracy is enhanced during the late follicular phase comparing to the mid-luteal phase, 2) increased estradiol levels are related to improved emotion recognition in faces, 3) Increased progesterone levels are related to a negativity bias i.e. improved recognition of threat-related facial expressions. In an exploratory manner, we investigated the effect of ovarian hormones on recognizing emotions from visual, auditory, and audiovisual modalities, which is an unexplored area in the literature. Our findings showed no significant association between phases of the menstrual cycle or (within-subject) variations of ovarian hormones and recognition of facial expressions. The exploratory analysis on the effect of ovarian hormones on recognition of visual, auditory, and audiovisual emotional expressions revealed non-significant results. The results did not support the supposed relationship between ovarian hormones and emotion recognition ability in women. They follow a recent large-scale study but contradict some previous studies. This discrepancy might be due to the methodological strengths of our study (e.g., large sample size and precise hormonal measurement) and applying statistical analysis that prevents false-positive and pseudo-replication in results. Our findings suggest fluctuating ovarian hormones do not influence emotion recognition across the menstrual cycle.

A-0481 PREPARATORY INHIBITION IN DYADIC MOTOR INTERACTIONS

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Many daily activities involve responding to other people's actions. Despite the ever-growing interest in motor preparation and execution of social interactions, the functional connection between these two processes still needs to be clarified. The aim of the present study was to investigate this aspect from both a behavioral and a neurophysiological point of view. To this end, motor-evoked potentials (MEP) induced by single-pulse transcranial magnetic stimulation (spTMS), reaction times (RTs), electromyography (EMG) and 3-D motion capture data were simultaneously recorded. Participants were requested to observe a co-experimenter taking some sugar with a teaspoon, then stretching out the arm toward a mug full of coffee placed in front of the participant, as if to pour some sugar in it. Participants were then requested to either perform a precision grip (PG) on a sugar spoon inserted in the mug to stir the coffee or to grasp the mug and lift it with a whole-hand grasp (WHG). A non-interactive condition was also included, simply showing the co-experimenter taking some sugar and then coming back to the starting position. Participants thus performed identical actions in terms of motor goals, but driven by different (social) intentions. Observing the interactive gesture speeded motor preparation (RTs) and execution (wrist velocity, grasping time, time to maximum grip aperture) of the participants' actions. Critically, this effect was preceded by a greater reduction of MEP amplitudes in the interactive condition compared to the non-interactive

one. Our results suggest that observing an interactive gesture while aiming to socially interact leads to a substantial preparatory inhibition during action planning. Given that participants were waiting for a go signal ("on hold" status) throughout the experiment, a preparatory inhibition was always necessary to avoid untimely overt reactions. However, this corticospinal inhibition was greater when planning an interactive gesture, which was then associated with a more efficient action execution. Notably, tightly timed suppression of muscle activity is essential for skilled movement.

A-0482 EXPLORATION OF THE EFFECT OF VARIOUS PREPROCESSING OPERATIONS ON THE HEARTBEAT-EVOKED POTENTIAL

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The Heartbeat Evoked Potential (HEP) is an event-related neural response to heartbeats thought to be a neurophysiological marker of interoceptive processing. Despite extensive use of the HEP as a marker of interoceptive processes, and its widespread use in clinical populations, there remains no standardised protocol for characterising the HEP. The preprocessing and analysis of the EEG data used to derive the HEP have been shown to vary considerably across studies (Coll et al. 2020, Park et al. 2019), raising questions regarding the validity and reliability of the conclusions drawn in HEP studies. In studies of event-related potentials (ERPs), numerous decisions need to be made about data processing. When there is no agreed upon standard, researchers must make numerous arbitrary choices, creating variability in results, limiting comparison across studies, and potentially increasing the rate of false positive findings (Luck et al., 2017). The aim of the present study was to assess the effect of various preprocessing decisions on the HEP by performing a multiverse analysis of data processing choices. To this end, we used a dataset in which 40 participants were asked to 1) count their heartbeats, 2) count seconds, and 3) rest, while EEG was recorded from 61 scalp electrodes and ECG was recorded from 2 chest electrodes. We submitted the data to a large number of preprocessing and analysis pipelines, built by combining all possible reasonable parameters used in published studies for each EEG preprocessing and ERP analysis step. We assessed the effect of each operation and parameter on 1) the shape, time-course and scalp distribution of the HEP and 2) the difference in HEP amplitude across the experimental conditions. We conclude with recommendations regarding the preprocessing and measurement of the HEP for future research.

A-0483 AUTOMATIC PREDICTION OF EVENTS OF SIMULTANEOUSLY PRESENTED SEQUENCES: A VISUAL MISMATCH RESPONSE* STUDY

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Our cognitive system automatically detects and stores the sequential regularities of incoming visual events, it predicts the income of such regular events, and reacts to the violation of predictions. The electrophysiological index of this set of processes is an event-related potential (ERP) component, the visual mismatch response (vMMR). VMMR is sensitive to various visual events, from the simple visual features to complex stimuli like perceptual categories and facial emotions. However, relatively little is known, whether or not the system underlying vMMR is capable of dealing with more than one independent regularities simultaneously. In this study we applied a passive visual oddball paradigm to measure vMMR to simultaneously presented sequences with stimuli presented to the left and right hemifields, while participants performed a tracking task. The stimuli were checkerboards with two different stimulus sizes. One of them appeared frequently (standard), the other appeared infrequently (deviant). The standard checkerboard size of the left side was the deviant on the right side, and vice versa. We obtained data from 20 participants (aged between 18-30). Our results show that rare stimuli at both sides elicited deviant-related ERPs within the 130-170 ms latency range, but these components were different for the smaller and larger sized deviants. Furthermore, deviant-related difference potentials were clearly lateralized, depending on the stimulated hemifield. We obtained difference between standard and deviant stimuli at the C1 exogenous component component (50-60 ms), as deviants always elicited higher amplitudes than the standard ones, which may indicate stimulus-specific adaptation. The results show that the automatic system underlying the registration of visual sequential regularities and the violation of regularities is capable of processing two independent, lateralized sequences simultaneously.

A-0484 SEMANTIC KNOWLEDGE OF SOCIAL INTERACTIONS IS MEDIATED BY THE HEDONIC EVALUATION SYSTEM IN THE BRAIN

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Attaching semantic meaning to sensory information received from both inside and outside our bodies is a fundamental function of the human brain. The theory of Controlled Semantic Cognition (CSC) posits that the formation of semantic knowledge (i.e., concepts) relies on connections between spatially distributed modality-specific spoke-nodes, and a modality-general hub in the anterior temporal lobes (ATLs). This theory can also be applied to social semantic knowledge, though certain domain-specific spoke-nodes may make a unique contribution to the understanding of social concepts. The ATL has strong connections with the subgenual ACC (sgACC) and orbitofrontal cortex (OFC) that

provide hedonic evaluation of what outcomes personally mean to us (i.e. the evaluation system), which have previously been shown to play an important role in socioemotional behavior. We hypothesized that in addition to the ATL semantic hub, a social semantic task would also require input from hedonic evaluation structures. We used Voxel Based Morphometry (VBM) to examine structural brain-behavior relationships in 160 patients with neurodegeneration (Alzheimer's disease [N=15], corticobasal syndrome (N=11], progressive supranuclear palsy [N=12], behavioral variant frontotemporal dementia [N=44], and primary progressive aphasia (PPA) [N=55]) using the Social Interaction Vocabulary Task (SIVT), which measures the ability to correctly match a social term (e.g. "belittling") with a visual depiction of that social interaction. As predicted, VBM showed that worse SIVT scores corresponded with volume loss in the left ATL semantic hub region, but also in the sgACC, OFC, caudate and putamen (pFWE < 0.05). These results support the CSC model of a hub-and-spoke organization of social semantic knowledge, including the role of the ATL as a domain-general semantic hub, and the evaluation system as a domain-specific spoke-node that contributes to precision of social concepts. This points to a key mechanism behind social semantic knowledge, in that the formation and retrieval of social concepts may require emotional 'tagging' via a spoke from the evaluation system, a mechanism which may break down in neurodegenerative disease.

A-0485 NEGATIVE NEWS CONTENTS DOMINATE BRAIN RESPONSES AND SOCIAL JUDGMENTS EVEN AFTER SOURCE CREDIBILITY EVALUATION

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Remedies to counter the impact of misinformation are in high demand, but little is known about the consequences of untrustworthy social-emotional information and how they can be mitigated. In this preregistered study, we investigated how evaluating the trustworthiness of media sources can change the effects of emotional headline contents on neurocognitive information processing and social judgments. Participants (N=30) evaluated –and clearly discerned– the trustworthiness of news sources before they were exposed to person-related news. Despite this intervention, the subsequent explicit social judgments of persons relied on emotional headline contents and largely neglected source credibility. Neurocognitive evidence revealed differential effects of source credibility depending on headline valence. Electrophysiological correlates of fast emotional and arousal-related processing, as well as of slow evaluative processing were enhanced for persons associated with positive headline contents from trusted sources, but not when positive headlines stemmed from distrusted sources. In contrast, negative headline contents dominated fast and slow brain responses unaffected by source credibility. These results provide novel evidence for a bias towards negative social-emotional news that dominate social judgments even when they stem from distrusted sources. This bias is less pronounced for positive news. Our results demonstrate that explicit reflections about source credibility are limited in their effectiveness to guard against the impact of emotional misinformation.

A-0486 ABSTRACT THINKING IMPACT ON THE PROCESSING OF EMOTIONAL INFORMATION

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The identification of emotional facial expressions (EFE) may depend on high-level cognition such as semantic processing. However, previous works haven't manipulated directly general cognitive processes to investigate their ability to influence EFE identification. Here, we suggest that abstract thinking, defined as the identification process of invariable and central characteristics of different stimuli, could improve the emotional processing of facial expressions. In order to test this, 39 healthy adults (33 females, 6 males) performed an online emotion identification task. For each trial, before the presentation of EFE, we presented pictures depicting objects or animals colored in blue or red, abstract or concrete thinking was induced by asking participants to classify the pictures as being alive or not or as either red or blue. Following this, words and EFE were presented simultaneously, and participants had to indicate whether they reflected the same emotion or not. Emotions presented were happiness, fear, surprise, sadness, and neutral expressions. Repeated-measures ANOVAs were performed on accuracy rate and reaction times with induction and emotion as within-subject factors. The behavioral performance was high (91 % ± 4). Analyses did not confirm an induction effect on the accuracy rate (p = 0.77). The analysis revealed on the reaction times a principal effect of emotions ($p < 0,001$; $^2 = 0,42$) as happiness expressions were matched faster than other emotions (ps < 0.01). Critically to the present study, abstract thinking induction produced faster responses (abstract thinking: 1110 ms ± 0.17 vs. concrete thinking (M = 1130 ms ± 0.17; p = 0.03 partial $^2 = 0.12$). These results support the proposition that abstract thinking is a cognitive process improving the emotional identification of EFE. This research supports a growing literature describing emotional processing as shaped by the assignation of concepts and not as automatic as thought. In the future, EEG studies could clarify the neural correlates associated with abstract thinking induction and their influence on emotional processing.

A-0487 EGOCENTRIC BIASES ARE DETERMINED BY THE PRECISION OF PREDICTIONS REGARDING ONE'S OWN STATE.

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Processing of one's own and others' emotions appear to overlap, such that inference of another's emotion is facilitated by the induction (and impeded by the inhibition) of a congruent interoceptive/affective state in the self. This mechanism can be formalised by predictive processing theories, which suggest that emotional inference involves

minimising the discrepancy between predictions and sensory evidence simultaneously in both interoceptive (i.e., how it feels in the self) and exteroceptive (i.e., how it appears in another) modalities; this can be achieved by biasing perception of another's emotion to be more congruent with that of the self. Under this theory, predictions about one's own state should be weighted in perceptual inference according to their precision (inverse variance), such that more precise predictions bias perception of another's state to a greater extent. The present study aimed to test this key hypothesis using cues that afforded either precise (a narrow range of possible magnitudes) or imprecise (a wide range of possible magnitudes) predictions about the magnitude of upcoming painful electrical stimulations, in conditions of both low and high mean pain. 49 neurotypical participants judged the intensity of pained and happy facial expressions presented visually concurrently with the cued painful stimulations. As predicted, increased self-pain caused perception of increased pain in another's expression, and this effect was greater when self-pain was predicted by precise, relative to imprecise, cues. This effect of precision did not extend to happy expressions (i.e., expressions incongruent with participants' own states). These results provide initial empirical support for understanding interpersonal influence in terms of predictions and their associated precision. This could explain why increased interoceptive accuracy (if conceptualised as enhanced precision) is associated with greater sensitivity to others' emotions, while atypical interoceptive precision and/or atypical predictive models linking states of self and others may explain socio-emotional deficits (e.g., in autism). More generally, individual/cultural variance in these models may explain why individuals/groups similar to the self are understood better than others.

A-0488 MULTIPLE NEURONAL SOURCES GENERATING CONFLICT RELATED MIDFRONTAL THETA?

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Numerous studies on conflict processing have shown that midfrontal theta oscillations in the scal-recorded EEG are sensitive to response conflict. In the majority of studies, a single measurement index of midfrontal theta power was applied. However, there may be multiple different sources involved in conflict related processing all of which are combined into this single theta power index that we can measure at the scalp. Therefore, we used two different conflict processing tasks to examine whether we can distinguish different theta power sources within and across the tasks. We derived 32-channel EEG of 63 subjects completing a flanker task and an approach avoidance task. In both tasks, conflict was associated with a transient increase in midfrontal theta power. Interestingly, individual differences in these conflict modulations of theta power were not related between the two tasks, pointing to different theta sources. Furthermore, we identified multiple theta sources for each participant using generalized eigendecomposition. Again, these theta sources did not match across tasks. Our findings suggest that there may be different kind-of-conflict-specific midfrontal theta sources contributing to a single power index measured on scalp-level. This is in line with other recent evidence that conflict-related midfrontal theta is not unitary but rather a heterogenous electrocortical signature.

A-0489 MANIPULATIONS OF BODILY AND CONCEPTUAL SELF-REPRESENTATION REDUCE RACIAL BAIS

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This study compared the effectiveness of manipulating two different forms of self representation in reducing racial bias. Specifically, the effects of embodiment via the rubber hand illusion (bodily self) and imaginative perspective-taking (conceptual self) were compared. 64 white adults were assigned to one of the intervention groups with their level of bias measured before and after the intervention using the race Implicit Association Test. Results showed that both the embodiment and perspective-taking interventions led to significant reductions in implicit bias with no significant difference in their effectiveness for reducing implicit bias towards black people. These findings suggest that interventions targeting the plasticity of self representations may improve racial attitudes to a similar extent as well as highlighting the validity of manipulating self-representation as a form of prejudice reduction. Implementation of these interventions in schools or workplaces can potentially enhance inter-racial relations by mitigating discriminatory behaviours in different social settings.

A-0490 A NOVEL PARADIGM FOR INVESTIGATING THE SOURCE OF THE 'GENUINE' VISUAL MISMATCH NEGATIVITY (VMMN)

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The visual mismatch negativity (vMMN) is a component of the event-related potential (ERP) that reflects the recognition and processing of unattended changes in the environment. Whereas vMMN's temporal course is well-studied, its source is less certain. There is general agreement that it is generated in modality specific brain structures, but the involvement of anterior structures is still under debate. In the present study we investigated how a novel experimental paradigm could be applied in both EEG and fMRI studies. The vMMN is studied in the passive oddball paradigm in which a sequence of events (standard stimuli) interspersed with rare deviant events (deviant stimuli) is presented to the participants while they are executing an unrelated task. The vMMN is calculated as the difference between the ERPs elicited by the deviant and the standard stimuli. This difference, however, includes both low-level stimulus-specific adaptation (adaptation of the input structures in the visual cortex) and the 'genuine' vMMN (detecting a mismatch to the visual representation). A novel experimental paradigm previously showed that when the unattended standard and deviant stimuli are the vanishing and appearing parts of a constantly present object, only 'genuine' vMMN is elicited to the vanishing deviants. We

modified the paradigm so that it could be used in both EEG and fMRI studies. The ERP results showed that vMMN to the vanishing deviant stimuli was elicited in this adapted paradigm. The component could be observed in the ~100-200 ms time window at occipital and parieto-occipital electrode sites. VMMN emerged for the appearing deviant stimuli as well, but only in a later time window (~230-280 ms) at the occipital electrode sites, and in both time windows at the parieto-occipital electrode sites. The fMRI results showed larger activity for the deviant stimuli compared to the standard stimuli at posterior, modality specific brain areas, but no difference in the anterior activation. Thus, the source of vMMN is likely found in the pre-striate cortex.

A-0491 THREE PSYCHOLOGICAL DIMENSIONS OF THE PLACE VALUE AND THEIR NEURAL REPRESENTATIONS

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How do people assess a landscape? Even though previous studies in urban engineering and environmental psychology have identified various aspects of the value of places, there was little evidence of neurobiological underpinnings. Here, we combined online survey and functional magnetic resonance imaging (fMRI) to reveal the psychological and neural bases of the place value. First, to assess different kinds of place values (e.g., economic, biological, and recreational), we asked participants (n = 250) to rate pictures of neighborhood landscapes. Our principal component analysis revealed that 85% of the variance in ratings could be explained by three components: 'urbanization' (whether the place has natural or artificial elements), 'culture' (whether the place tells people's tradition), and 'enjoyment' (whether the place enables people to have fun). Second, during fMRI scanning, participants (n = 21) were presented with the same set of pictures and were asked to think about whether they wanted to visit each place. We used searchlight representational similarity analysis (searchlight RSA) to find which brain region represents each of the three components of the place value. The first component 'urbanization' was represented in extensive posterior cortical regions, including the occipital lobe and the medial and inferior temporal cortex. The second component 'culture' was represented in the fusiform gyrus. The third component 'enjoyment' was represented in the inferior occipital gyrus. These results indicate that these dimensions can be the core for our evaluation of the landscape.

A-0492 THE RELATION BETWEEN COGNITIVE AND EMOTIONAL FLEXIBILITIES

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Flexibility is a key feature to interact appropriately with the environment, indicating how

humans can adapt their reactions. Cognitive flexibility is the ability of shifting response behavior towards a stimulus regardless its changes. This affects directly how one's perceives the situation in an emotional level, indicating a better emotional flexibility, in case of appropriate response after emotional stimulus modification. Objective: The present study aims to discuss the relationship between cognitive flexibility and emotional flexibility among adults from 18 to 55 years old. Methodology: As measurement for emotional flexibility it was used the Emotional Shifting task (EST) and for cognitive flexibility, the Task-switching Task. Other questionnaires were also included for additional information of participants. The tasks' results were evaluated considering Reaction Time (RT) and correct answers in the following conditions: switching and non-switching in both tasks. For switching condition in EST, negative to positive and positive to negative stimuli pattern were utilized. Results: In total, eighty-five valid participants' data were analyzed. Cognitive flexibility revealed association only regarding to positive emotions, in non-switching condition. In switching condition this association is present only when the initial stimulus is negative. For trials where negative image was the last one, in switch and non-switch conditions, the RTs were higher and proportion of correct answers were lower, indicating poorer performance. Conclusion: The findings presented indicate that emotional flexibility is partially related with cognitive flexibility. Where correlation regarding positive emotion is visible and non-visible for negative.

A-0493 CHRONOTOPIC ENCODING OF EMOTIONAL DIMENSIONS IN THE HUMAN BRAIN

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Affect varies as a function of context, expectations, and motivations, all features that are intrinsically related to time. Indeed, the study of diachronicity is crucial for understanding emotional processing in the human brain. Still, few neuroimaging studies employed dynamic stimuli to explore how affect unfolds over time. Movies represent an optimal solution in this regard since they elicit strong affective responses over few hours and mimic everyday life situations. Here, we recorded brain activity and moment-by-moment affective ratings during movie watching (a total of 45h of behavioral reports and 38h of fMRI over two experiments). In the first experiment, participants watched 'Forrest Gump' in the fMRI (n=14, 6F). Brain activity was preprocessed and extracted from 1000 cortical regions (10.1101/2020.06.06.137851). Independent subjects (n=12, 5F) provided continuous ratings of their affective state during the same movie. Using PCA, we derived affective dimensions (polarity, intensity; 10.1038/s41467-019-13599-z) from behavioral ratings and

computed their association with the time-varying connectivity strength of each brain region. We found that connectivity strength of the right Temporo-Parietal Junction (TPJ) and fronto-polar cortex (Default Mode Network - DMN nodes), is positively associated with the pleasantness of affective experiences. In addition, polarity and intensity converge in the right TPJ, where adjacent areas preferentially map the stream of affect at different timescales ranging from ~3 to ~11 minutes. We confirmed these findings in a second experiment ('101 Dalmatians' movie), with independent participants (n=10, 8F fMRI, n=21, 13F behavioral), and alternative methods for behavioral and fMRI data analysis. In conclusion, we demonstrate that DMN connectivity dynamics track changes in subjective reports of the affective experience provided by independent individuals. Also, within right TPJ and fronto-polar cortex, the timescale of emotional experiences is mapped in a chronotopic manner. These findings provide novel insights on how the human brain represents the relationship between time and emotions and highlight the usefulness of naturalistic paradigms for the study of affect in healthy individuals and, potentially, in psychiatric patients.

A-0494 SOCIAL CONTENT REVERSES THE NEGATIVITY EFFECT WHILE ATTENDING EMOTIONAL SCENES.

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How emotional scenes engage human attention still remains unclear. Low level features - color, luminance, contrast or edges - are only partially able to explain the actual gaze paths; recent studies suggest that they play only a supportive role and the attention is guided mostly by the object's meaning. In our study we used eye-tracker to evaluate how the low-level perceptual saliency interacts with meaning in guiding visual attention through natural emotional scenes. We selected positive, negative, and neutral pictures (n = 120 each) from emotional pictures databases and manipulated brightness and contrast of the key object selected in preliminary study. Using Einhäuser and König (2003) algorithm we created 3 saliency conditions - lowered, unchanged, and increased. Pictures were presented in a free viewing procedure to 35 participants. Visual attention (measured as location of first two fixations) was impacted by both saliency ($F(2,68) = 4.19$, p =.019, p2 =.11) and valence ($F(2,68) = 22.15$, p < .001, p2 = .39). Lowered-saliency objects were attended less than unchanged, but the increased ones were not attended more, suggesting that manipulating low-level features impacts attention only to some extent. Moreover, only positive objects captured attention more than neutral, while negative even less than neutral. In a follow-up analysis we categorized images as 'social', i.e. depicting humans or social interaction; or 'non-social' – showing nature or objects. Categories had a strong impact on visual attention ($F(1,34) = 303.66$; p < .001, p2 = .90), and interacted with valence ($F(2,68) = 33.20$; p < .001, p2 = .49), but not saliency. Social content was more attended than non-social in all conditions. Moreover, while non-social negative objects captured attention more than neutral and positive, corresponding to well documented negativity effect, presence of social content changed the visual attention pattern, leading to prioritizing positive objects over neutral and negative ones.

A-0495 IS MOTHERHOOD A MODERATOR OF EMPATHY FOR PAIN? AN FMRI STUDY

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Social competencies such as empathy and understanding others' minds are vital for parents towards successful parenting allowing adequate reactions to a child's needs. To date, little is known about the modulating effect of motherhood on social understanding and specifically on the understanding of a child's mind versus an adult's mind. In this study, we used functional Magnetic Resonance Imaging (fMRI) to investigate empathy for pain in mothers and women without children. Our task used stimulus material depicting both adult and children. Women were recruited that were either i) mothers of a child between 4 and 10 years (corresponding to the age of the children shown in the stimulus material), or ii) had no children and did not interact with them on a regular basis (i.e., as a kindergarten teacher). We observed significant differences in activation patterns between the conditions empathy with a child versus empathy with an adult in the left SMG. Additionally, mothers compared to non-mothers showed significantly higher activation in core empathy areas such as the bilateral anterior insula when asked to imagine people in painful scenarios while viewing pictures showing these scenarios. This hints at differences in strategies in reacting to people in painful situations with mothers recruiting more strongly those areas traditionally related to empathy.

A-0496 THE EFFECT OF 1 HZ TRANSCRANIAL MAGNETIC STIMULATION OVER THE LEFT DLPFC ON THE RETRIEVAL OF IMPLICIT PROBABILISTIC SEQUENCE KNOWLEDGE

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Sequence learning is the cornerstone of many cognitive, motor, and social skills, like learning a language, acquiring different movements, or recognizing social habits. Previous studies have shown that sequence learning can be boosted via transient disruption of the dorsolateral prefrontal cortex (DLPFC) with non-invasive brain stimulation – possibly due to its mediating role between competitive memory processes. However, no study to date has examined whether already acquired sequence knowledge can be modulated

by stimulating the DLPFC before sequence recall. The present study aimed to test whether the retrieval of a well-established sequence knowledge can still be disrupted by inhibitory stimulation of the DLPFC. Participants practiced on a probabilistic sequence learning task (Alternating Serial Reaction Time Task) for approximately 25 min. After a 24-h offline period, we applied 1 Hz repetitive transcranial magnetic stimulation (rTMS) or sham stimulation for 10 min over the left DLPFC, then tested the sequence knowledge again. A similar level of sequence knowledge was measured following left DLPFC and sham stimulation. Here, we focused only on the left hemisphere, the examination of the right hemisphere is ongoing. The lack of difference between groups may be attributable to the robustness of the acquired probabilistic sequence knowledge.

A-0497 THE EFFECT OF INHIBITORY TRANSCRANIAL MAGNETIC STIMULATION OVER THE DORSOLATERAL PREFRONTAL CORTEX ON DECLARATIVE AND PROCEDURAL LEARNING AND CONSOLIDATION

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Memory systems can interact cooperatively but also competitively – better performance on one of them (e.g., procedural learning) can be associated with worse performance on the other (e.g., declarative learning). Previous research has shown that their balance depends on the dorsolateral prefrontal cortex (DLPFC). A few studies have shown that reduced functioning of the DLPFC during learning improves procedural learning or/and its consolidation processes. But it remains unclear whether this enhanced procedural performance interferes with declarative processes, indicating a potential competitive relationship. In our study, we tested the role of DLPFC in the interaction of the procedural learning of frequency-based patterns and declarative learning of associations between pairs of images. In this sham-controlled stimulation study, participants performed a probabilistic sequence learning task (Alternating Serial Reaction Time task) and a declarative recall task (Paired Associate Learning task). Over the course of learning (during the rest periods), we applied 1 Hz inhibitory repetitive transcranial magnetic stimulation over the left or right DLPFC. After 24 hours delay, the performance was tested again. We found that disruption of the left DLPFC prevented the forgetting of frequency-based patterns, but had a negative impact on the recall of paired associates. On the other hand, the inhibitory stimulation of the right DLPFC increased procedural performance after the 24 hours delay compared to the end of the first day while it did not affect significantly the

declarative learning performance. These results are in line with previous literature on the competition of memory systems. They also underpin the causal role of DLPFC in their interaction, indicating that lower functioning of the DLPFC shifts the balance of memory systems towards more procedural processes. We suggest that these results may be due to limited access to mental models, which might be beneficial for procedural learning.

A-0498 THE COMPLEX INTERPLAY BETWEEN PSYCHOPATHY PHENOTYPES, EMPATHY DOMAINS AND INTEROCEPTION

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Background: Empathy deficits are historically a hallmark of psychopathy, although the link between psychopathy phenotypes (boldness, meanness, and disinhibition) and empathy is still not consensual. This is critical as empathy is a multidimensional construct characterized by two major domains with distinct neurobiological substrates, namely cognitive empathy (inferring the mental states of others or cognitively take their perspective) and affective empathy (being sensitive to and vicariously experience the emotional states of others). The underlying mechanisms of empathy deficits in psychopathy are also largely unknown and interoception (perception of the body's internal states) may be a promising pathway, due to its shared neuronal substrates with empathic processing. Goal: To examine the association between psychopathy phenotypes, empathy domains, and interoception. Methods: A community-sample of 515 subjects (30.74 years; 59.6% female) completed an online survey encompassing several self-report questionnaires. The Triarchic Measure of Psychopathy was used to assess psychopathy phenotypes, while cognitive and affective empathy was measured by the Questionnaire of Cognitive and Affective Empathy. Interoception was operationalized by measuring interoceptive attention (Body Perception Questionnaire - Body Awareness subscale) and accuracy (Interoceptive Accuracy Scale). Hierarchical linear regression models were implemented to examine the associations between psychopathy, empathy, and interoception while controlling for the putative confounding role of age, sex, and alexithymia (Toronto Alexithymia Scale). Main Results: Meanness was negatively related to both cognitive and affective empathy. A positive association was found between boldness and cognitive empathy, as well as among disinhibition and affective empathy. Interoceptive accuracy was associated with cognitive empathy, while interoceptive attention was not related to either empathy domain. There was no significant association between any psychopathy phenotype and interoception measures, although there was a trend for a negative association between meanness and interoceptive accuracy. Conclusion: This study provides evidence for the differential association between psychopathy phenotypes and empathy domains. The contributing role of interoception in this relationship should be further explored using performance-based and neurophysiological measures.

A-0499 THE ASSOCIATION BETWEEN BELIEFS IN COVID-19 CONSPIRACY THEORIES, PSYCHOTIC-LIKE EXPERIENCES AND CONFINEMENT-RELATED FACTORS

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Background: The COVID-19 pandemic is a worldwide threat to public health and the global economy. The climate of fear and uncertainty has fostered the emergence of a wide-range of COVID-19 conspiracy theories that can shape public opinion and hinder the effective dissemination of valid information. Beliefs in conspiracy theories have been associated with maladaptive personality traits such as schizotypy and paranoia, as well as other vulnerability factors such as social isolation, stress, and low education levels. Goal: To examine the association between beliefs in COVID-19 conspiracy theories and psychotic-like experiences, while also addressing the role of sociodemographic variables, confinement-related factors, and other psychological outcomes. Methods: A community-sample of 438 Portuguese residents reporting full-confinement during the first COVID-19 pandemic lockdown was included for analysis. Participants completed an online survey encompassing a COVID-19 Conspiracy Theories Questionnaire developed by our team, a questionnaire to understand confinement-related behaviours (e.g., outings, online social contacts, telework), beliefs (e.g., confinement experience, health-related concerns, information levels about the pandemic), and conditions (e.g., confined alone, caregiver role, available outdoor spaces), as well as standardized instruments to assess psychotic-like experiences and other psychological constructs of interest (e.g., perceived stress, affective states, emotion regulation, loneliness, well-being). A regression model was implemented including as predictors all variables marginally or significantly associated with beliefs in conspiracy theories in preceding univariate analyses. Main Findings: Our results suggest that psychotic-like experiences are associated with beliefs in conspiracy theories, particularly perceptual abnormalities and persecutory ideation. Moreover, increased health-related concerns due to the pandemic and reduced education levels also seem to be liability factors for valuing these theories. These findings add important insights into how the adherence to illogical and erroneous disease-related arguments may be contingent on proneness to psychotic-like experiences. COVID-19 conspiracy theories are yet another major challenge that governments and policymakers must contemplate when defining strategic directions to manage the current and future pandemics.

A-0500 INSTITUTIONALIZATION IS ASSOCIATED WITH ALTERATIONS OF BRAIN REGIONS INVOLVED IN EMOTIONAL AND REWARD PROCESSING DURING ADOLESCENCE.

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According to the World Health Organization (WHO) nearly 300 million children worldwide suffer from some sort of maltreatment perpetrated by parents or caregivers. As defined by the WHO, child maltreatment comprises physical and/or emotional abuse or neglect that occurs to children under 18 years, resulting in actual or potential harm to the child's health. Child maltreatment is a global problem with severe lifetime consequences, including disruption in early brain development. The most common response adopted by policy makers to protect these children is institutional care. Institutionalization is characterized as a multilevel deprivation condition, which also seems to have a detrimental effect on child's brain development. A growing body of evidence has revealed alterations in brain regions associated with socioemotional regulation, and reward processing in such deprived children. Abnormal neural structure and function in the hippocampus, temporal and frontal cortices have been reported in previously institutionalized children. However, studies are scarce in currently institutionalized children, especially adolescents. At the neuromaturational level, adolescence is a vey challenging period involving great intracellular changes such as loss of overproduced synapses and increase of myelin sheaths, particularly in the prefrontal-striatal circuitry, and limbic system. These changes are linked with adolescent's proficiency in regulating their own behavior and emotions. Therefore, exploring the effects of current institutionalization in the brain morphology during this sensitive neurodevelopmental window -adolescence- is of particular interest. Thirty-six adolescents -18 institutionalized, and 18 family-reared- aged 12 to 20 years old, age and gender-matched underwent Magnetic resonance imaging. Findings derived from a whole-brain surface-based approach revealed reduced surface area on the inferior temporal gyrus, and smaller nucleus caudate and accumbens volumes, bilaterally, in the institutionalized adolescents when compared to their family-reared peers. No between-group differences in total intracranial volume were observed. These results suggest that institutionalized adolescents display morphometric alterations in key regions involved in emotional and reward processing eventually associated to a disruption of the typical neuromaturational trajectory occurring in this developmental period.

A-0501 HUMANS ARE SENSITIVE TO THE COMMUNICATIVE DIMENSION OF LANGUAGE AT BIRTH

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Newborns are born with a neural sensitivity and preference for structured linguistic

stimuli. They show enhanced neural activity to pseudowords with a repetition structure (ABB: "mufefe") as opposed to no repetition (ABC: "selagu"). In an fNIRS experiment we investigated whether newborns consider two voices communicating an even better occasion to learn about language. We presented them only repetition structured (ABB) pseudowords auditorily in three conditions: 1) a female and a male voice taking turns in producing different pseudoword tokens (ABB-CDD), which allows for the possibility of communicative information transmission; 2) a female and a male voice repeating identical pseudowords (ABB-ABB), "parroting" each other with no possibility of transmitting information; 3) a single speaker producing varying pseudowords (ABB-CDD), in a sequence comparable to the communicative condition, but alone. Newborns' bilateral fronto-temporal areas responded with greater activation to the communication condition than either to parroting or to the single speaker conditions. Some right hemisphere areas responded more to the parroting than the single speaker condition, others vice versa, but neither differed significantly from the communication. The results suggest, first, that humans at birth are sensitive not only to the physical properties and the abstract structure (i.e. repetition) but also to the communicative function of language and specifically the possibility that it could transmit information. The right hemisphere results suggest that the low-level physical properties of the input is processed, but the results are not possible to explain by such acoustic processing. An additional striking conclusion is that newborns apparently attend to interactions outside of the infant-mother dyad.

A-0502 "MIND THE PLEXIGLASS" - AN INVISIBLE BARRIER IS ENOUGH TO REDUCE NEURAL EMPATHIC RESPONSES TO PAIN AND TOUCH

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Empathy might be shaped by socio-affective relationships between individuals, such that neural empathic reactions are magnified for affectively close others compared to strangers. In a recent investigation, we demonstrated that the perceived physical distance between actors could shape people's empathic reactions towards a person in pain. However, the underlying mechanism through which manipulating the physical distance may interfere with empathic responses it is still to be understood. One such possible mechanism refers to the notion of 'interaction space', the shared reaching space of two individuals. Within this framework, the sharing of affective states might be sensitive to the physical distance between individuals. This study aimed at investigating whether the neural empathic reactions for observed faces, either gently touched or painfully stimulated, perceived within the interaction space could be modulated by the presence of a transparent physical barrier, which prevents the possibility to interact with the partner, without altering neither the quality nor the low-level characteristic of the observed stimuli.

We designed an ERP study in which participants were exposed to faces stimulated by either a needle or a Q-tip under both one condition in which they directly seated in front of the screen (no-plexiglass condition) and a second critical condition in which a transparent plexiglass was interposed between them and the screen (plexiglass condition). We expected to observe a moderating effect on ERP empathic reactions as a function of the presence of the barrier, such that when participants were under "plexiglass condition", they would show a lower magnitude of the neural empathic reactions. Further, given the plexiglass prevents the possibility of reaching the other person, we hypothesized that the plexiglass barrier would have impacted on the empathic reactions, regardless of the type of stimulation observed. Results confirmed our hypothesis showing that the presence of a physical barrier decreased the ERP amplitude, suggesting a reduction of the observer's neural emphatic reaction.

A-0503 A STRUCTURAL EQUATION MODEL OF SELF-REGULATION AND HEALTHY HABITS AS AN INDIVIDUAL PROTECTIVE TOOL IN THE CONTEXT OF EPIDEMICS - EVIDENCE FROM COVID-19

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The world has been recently facing a devastating social and economic crisis due to SARS-CoV-2 pandemic. Despite the experience of other pandemics in the past -e.g. the Spanish flu or the HIV pandemic- the efforts devoted to make people capable of facing another similar crisis seem to be insufficient, given the observed widespread detrimental impact of the SARS-CoV-2. The primary measure adopted by governments worldwide to contain the virus dissemination was social confinement. Besides the negative impact of the imminent treat of the disease, the obliged confinement has also proven to be associated with physical and psychological challenges, negatively affecting the individual's mental health and quality of life. While the psychological aspects associated with pandemics lockdown are well studied, the individual capacity to self-regulate in these situations is poorly explored. Evidence posits a key role of self-regulatory skills in the ability to counteract the effects of illness and engage or maintain healthy habits, which in turn have a positive impact on mental heath and general well-being. A group of 150 individuals from the community aged 18 to 68 years old filled an online survey assessing self-regulation, healthy behaviors, mental health, and well-being perception. Results derived from a structural equation model have shown that self-regulation was a good predictor of increased healthy habits -such as practicing physical activity-and lower levels of distress and mental disability. Specifically, individuals scoring higher on self-regulatory abilities were the ones that engaged more in healthy habits, and reported less psychopathological symptoms and stress levels, during the COVID-19 epidemic. Additionally, reporting more healthy habits and lower levels of stress/psychological symptoms as a whole, were good predictors of higher levels of perceived well-being, which was mediated by self-regulation. This study suggests that self-regulation was a good predictor of healthy habits and mental health outcomes in the context of COVID-19

pandemic. Interventions targeting self-regulation skills should be explored as a protective tool to effectively deal with pandemic events.

A-0504 SOCIAL TOUCH IN TIMES OF SOCIAL DISTANCING

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In this unique situation of pandemia, where most individuals experience social isolation, psychological distress and social pain are a common state. While previous work suggests that touch is essential to buffer feelings of social isolation, interpersonal touch experience has been affected due to physical distancing policies to control the spread of COVID-19. Thus, in this study, 1746 participants completed an online-survey to : (i) examine touch experiences during COVID-19-related restrictions, their impact on mental health and the extent to which touch deprivation results in craving touch; and (ii) assess whether vicarious touch can reduce anxiety and feelings of loneliness. Results on one hand suggest that intimate touch deprivation during COVID-19 is associated with worse psychological well-being; and on another hand, that vicarious touch, especially watching videos of human-pet interactions, can reduce anxiety. Moreover, results are mediated by individual differences such as attachment style. For instance, results show that the degree to which individuals crave touch during this period depends on individual differences in attachment style: the more anxiously-attached, the more touch is craved; with the reverse pattern for avoidantly-attached. These findings point towards the important role of touch, even vicarious, in times of social distancing and psychological distress.

A-0505 ASSOCIATIONS OF SLEEP PARAMETERS WITH COGNITIVE PERFORMANCE AND BEHAVIORAL PROBLEMS IN A PEDIATRIC SLEEP-DISORDERED POPULATION

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Studies showed that cognitive performance is impaired and behavioral problems are more prevalent in children with sleep disorders. Sleep can be particularly important in childhood when cerebral plasticity is expressed at high levels. However, it is yet to be known what mechanisms during sleep are associated with the cognitive and behavioral symptoms in children. Our study aimed to reveal these mechanisms by examining the working and declarative memory, executive functions, behavioral problems, and nighttime sleep parameters of children with sleep-disordered breathing (SDB). Thirty-two children with mild to moderate SDB completed an evening and a morning session of behavioral tests and underwent overnight polysomnography recording between the sessions. We computed sleep parameters of sleep macro- and microstructure as well as respiratory indices. Our results showed that cognitive performance and behavioral problems in children with SDB are related to sleep parameters, rather than respiratory indices. Within the sleep parameters, the microstructure of NREM sleep appeared to be more relevant, as behavioral problems and working memory were associated with the characteristics of sleep spindles, whereas verbal declarative memory and shifting executive function were associated with theta synchronization during NREM sleep. We did not find associations between sleep parameters and procedural memory, spatial declarative memory and inhibition executive function. This might indicate that these cognitive functions do not rely on sleep mechanisms, or that they rely on mechanisms not investigated in our study. Our results contribute both to refining the relationship of sleep with cognition and behavior and to better characterizing SDB in children.

A-0506 IMPACT OF TOTAL SLEEP DEPRIVATION AND RELATED MOOD CHANGES ON APPROACH-AVOIDANCE DECISIONS TO THREAT-RELATED FACIAL DISPLAYS.

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Study Objectives: Total sleep deprivation is known to have significant detrimental effects on general cognitive and socio-emotional functioning. Nonetheless, the exact mechanisms by which total sleep loss disturbs social decision-making are poorly understood. Here, we investigated the impact of a total sleep deprivation on decisions in a social context as well as the potential moderating role of mood. Methods: Participants (n = 34) made spontaneous approach/avoidance decisions between two alternative targets for action, in the presence of task-irrelevant angry or fearful individuals, while being rested or totally sleep deprived (27 hours of continuous awake). Changes in mood were assessed in rested and total sleep deprivation conditions, using the Positive and Negative Affective Scale. Participants regularly completed the psychomotor vigilance task during the testing sessions. Results: Rested participants avoided both fearful and angry individuals, with stronger avoidance for angry ones. On the contrary, totally sleep deprived participants favored neither approach nor avoidance of fearful individuals, while they still comparably avoided angry ones. Drift-diffusion models showed that this effect was accounted for by an influence of total sleep deprivation on the process of value-based evidence accumulation during the approach/avoidance decision. Finally, the reduction of positive mood after total sleep deprivation positively correlated with the reduction of fearful displays' avoidance. Importantly, this correlation was not mediated by sustained attention reduction induced by total sleep deprivation. Conclusions: Altogether, these findings support the underestimated role of positive mood-state alterations caused by total sleep loss on approach/avoidance decisions concerning ambiguous socio-emotional displays, such as fear.rn

A-0507 COVID-19 AND MORAL JUDGEMENTS IN TURKEY

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Humans have evolved behavioral strategies to avoid infections that might spread from

one person to another. This behavioral immune system is reinforced by feelings of disgust which may be expressed as moral judgments. Furthermore, moral judgments also enable cooperative strategies which may help manage fast-spreading diseases such as COVID-19. In this study, we examine the relationship between morality judgements, and emotions, particularly disgust and anger, directed at COVID-19 related prevention behaviors. In an online study, participants filled out a COVID-19 Prevention Measures scale including items such as "washing hands for at least 20 seconds" and a Perceived Vulnerability to Disease and Avoidance Scale including items such as "getting annoyed when someone sneezes without covering their mouth". We also presented participants with scenarios in which the participants imagined themselves, a close relative, a close friend, or a stranger encountering a COVID-19 positive (or negative) person who violates prevention measures. They then provided a moral judgment of the violation as well as how disgusted and angry they felt towards it. We predicted that the harshness of the judgment will scale with the participants' level of closeness with the person who encounters the violator. We also expected participants who have more awareness of and practice caution against COVID-19 to judge the COVID-19 positive person more harshly. Finally, because COVID-19 can spread through asymptomatic individuals, we might expect that violation of prevention measures may not trigger disgust but rather feelings of anger. This suggests that prevention violations do not activate the core disgust values of individuals which induce disgust first, anger second. Rather, it activates moral values related to harm and fairness which thus elicit anger not disgust. Additionally, this might be due to COVID-19's less alarming ways of spreading (e.g., coughing, fewer or no symptoms, compared to visible body anomalies). These results will help shed light on why compliance with preventive measures against COVID-19 is low in populations within morality.

A-0508 THE ROLE OF THE RIGHT TEMPOROPARIETAL JUNCTION IN SELF-OTHER CONTROL IN EMPATHY

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The ability to regulate neural representations of the self and of others, termed self-other control, is implicated in higher order processes such as imitation, perspective-taking and empathy. The right temporoparietal junction (rTPJ) has been identified as the brain region involved in self-other control in the imitation and theory of mind domains. However, there is evidence to suggest that self-other control in the empathy domain may utilise a distinct neural region than the rTPJ. The current study aims to test the involvement of rTPJ in self-other control in the empathy domain with a transcranial magnetic stimulation (TMS) paradigm. We also aim to test whether the rTPJ is exclusively involved in social cognition as compared to domain-general processes. Participants were provided 40 seconds of theta-burst TMS to the rTPJ and the vertex (control site) on two separate days, one week apart. Following stimulation on both days, participants performed computerised tasks to measure self-other control. Self-other control in the imitation and empathy domains was

measured with the imitation-inhibition task and the pain observation task, respectively. The imitation-inhibition task indexes imitative compatibility and spatially compatible responding, where the former is a social measure and the latter is a non-social measure. The pain observation task indexes social and non-social empathic interference effects, allowing us to test the specificity of rTPJ involvement in social cognition. While no main effect of TMS was found on imitative compatibility or the social empathic interference effect, a task-order effect was observed such that participants who performed the pain observation task first, following rTPJ stimulation exclusively, showed a larger social empathic interference effect. This suggests that rTPJ is involved in the regulation of emotional representations in a domain-specific manner. Regression analyses indicated that the effect of rTPJ stimulation on imitative compatibility and spatially compatible responding independently predicted the non-social empathic interference effect. Collectively, these findings indicate that the involvement of the rTPJ in self-other control is at least partially, socially specific.

A-0509 FACIAL KINEMATIC CHARACTERIZATION OF GENUINE AND SIMULATED EXPRESSIONS

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We often make facial expressions to convey an emotional message, but it does not mean that we sincerely feel this emotion. Sometimes, we pretend to express happiness, disgust or sadness as actors usually do. Available literature on genuine and simulated emotional facial expressions is, however, based only on qualitative indexes. The aim of this study was to address this topic from a quantitative point of view, in order to provide a full spatial and temporal characterization of six basic emotional expressions: anger, fear, surprise, sadness, disgust and happiness and to implement a mathematical tool for distinguishing Genuine Emotions (GE) from Simulated Emotions (SE) via facial cues. Ten naïve participants were requested to watch videos which triggered spontaneous GEs. Then, they were asked to deliberately reproduce the same expressions without video support (SE). For both GE and SE, kinematic profiles of facial movements were recorded by means of six infra-red cameras using a 3-D motion analysis system. We found a range of cues characterising and distinguishing GEs from SEs facial cues. For instance, a simulated smile entails larger distances between the angles of the mouth compared to a genuine smile. Crucially, this effect is also evident on the velocity profiles: the maximum speed, reached by the anatomical landmarks of interest upon the mouth, is higher for simulated than for authentic smiles. Overall, these findings indicate that SE are characterized by greater amplitude and velocity peaks within the same amount of time spent for authentic expressions. In practical terms, these results will provide a decisive step forward for the detection of facial deceptive cues and the creation of a well-established database of GEs and SEs for multi-disciplinary future studies.

A-0510 NEURAL CORRELATES OF MORAL SELF-CONCEPT IN ADULTS AND CHILDREN

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The "moral self concept" reflects the degree to which being moral is important to a person's self-concept. It is an important predictor of prosocial action: people with a strong moral self concept are more motivated to behave morally, since doing otherwise creates a conflict with their sense of self. According to the sociocognitive model, people with a strong moral self have chronically active moral schemas that are used for social information processing. Based on this framework, people with a strong moral self should process prosocial and antisocial actions differently compared to people with a weak moral self. In the first study, we used event-related potentials (ERPs) to test this hypothesis on adult participants. We measured ERPs elicited by antisocial and prosocial scenes, and we related their amplitude to the moral self of the participants. We measured both implicit and explicit moral self (respectively, how much one implicitly associates themselves with moral characteristics, and how much one explicitly thinks of themselves as a moral person). A higher implicit moral self was related to a lower EPN amplitude for prosocial scenarios. In addition, an enhanced explicit moral self was related to a lower N2 amplitude for prosocial scenarios. These findings indicate that adult people with a strong moral self, possibly as consequence of the chronically active moral schemas, need less attentional resources when processing prosocial actions. In the second study, we investigated whether we could find similar effects already in late childhood, by focusing on 10-year-olds. We found that children with a stronger explicit moral self showed a stronger differentiation between prosocial and antisocial scenes at the EPN level. The findings demonstrate that the moral self affects the neural processing of morally relevant stimuli already from childhood on. However, the time frame and direction of this effect changes with the course of the development, probably depending on the experience that people with a strong moral self cumulate through acting prosocially.

A-0511 EEG SPECTRAL POWER AND RECOGNITION MEMORY: EFFECT OF LONG LISTS

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Changes in the spectral power of EEG waves are significant for identifying the cognitive processes. Lists of different length ranging from 2 to 220 high-frequency Latvian colloquial nouns were visually presented randomly to 25 participants in 5 separate sessions. The number of presented words was equalized by participants and sessions. The words were divided into lists of different length, their presentation was followed by a two-choices recognition test. The inter-stimulus interval was 4 seconds. The power of the EEG wave spectrum was calculated for 3 seconds after the presentation of each stimulus using a pre-processed EEG. A nonparametric ANOVA was used to analyze the data of the following

ROI: F7, F3, P3, T5. The results of recognition of the target stimuli in the memory test were described in terms of the signal detection theory, the sequence of the recognized words in the learning lists being taken into account. The overall recognition accuracy was from 80% to 67.5%, depending on the length of the list. The items with serial numbers 2–9 within the learning lists corresponded to a significantly higher beta-power for "Hit" that the items 10–100. The contrary relation was observed for "Miss", for the same items, as well as for "Correct rejection", for the items 2–9 vs items 31–100. The power of the delta, theta, and alpha waves on the ROI region for the items 150+ at a statistically significant level exceeded the power of these waves for the items with serial numbers less than 150. The items 2–9 corresponded to a significantly higher theta power (F3) for "Hit" and "False alarm" than the items 10–31 and 61–150. The contrary was observed for these items at the learning stage. The results indicate a possible role of specific EEG frequency bands in the processes of information retrieval from memory as the memory load changes.

A-0512 INTEGRATION OF PREDICTIONS AND AFFERENT SIGNALS IN BODY OWNERSHIP

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We aim at investigating the contribution of visuotactile predictions triggered by the sight of an object moving towards the body for the sense of body ownership. We used a recently developed psychophysical discrimination task to assess body ownership in the rubber hand illusion. In this task, the participants had to choose which of the two right rubber hands in view felt most like their own, and the ownership discriminations were fitted to psychometric curves. In the current study, we occluded the visual impressions of the object moving towards one of the rubber hands (during the first two-thirds of the path) and only revealed the final third of the object's movement trajectory when it touched the rubber hand (approach-occluded condition). Alternatively, we occluded only the final part so that the main part of the movement towards the model hand was visible (touch-occluded). We compared these two conditions to an illusion baseline condition where the object was visible during the entire trajectory and contact (no-occlusion). The touch-occluded condition produced equally strong hand ownership as the baseline condition with no occlusion, while ownership perception was significantly reduced when vision of the object approaching the rubber hand was occluded (approach-occluded). Our results suggest that tactile expectations generated from seeing an object moving towards the body significantly contribute to the rubber hand illusion. This finding highlights the importance of multisensory predictions in peripersonal space, object permanence, and the interplay between bottom-up sensory signals and top-down predictions in body ownership.

A-0513 FEATURES OF BASELINE FUNCTIONAL CONNECTIVITY RELATED TO MAJOR DEPRESSIVE DISORDER AND REMISSION TO PHARMACOTHERAPY: A CAN-BIND REPORT

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Introduction: Numerous studies investigate the neural underpinnings of major depressive disorder (MDD) and antidepressant treatment success in the hope of finding brain characteristics that can predict treatment outcomes and improve patient outcomes. Despite promising developments, findings have been variable and large sample replications are scarce. Using a large, multi-site sample, we aimed to replicate and extend findings of altered functional connectivity in the default mode, salience and cognitive control networks (DMN, SN, and CCN respectively) associated with MDD and pharmacotherapy outcomes. Methods: Resting-state fMRI data were collected from 129 patients and 99 controls through the Canadian Biomarker Integration Network in Depression initiative. Patients received pharmacotherapy for 16 weeks (escitalopram with an add-on of aripiprazole after 8 weeks if symptoms improved less than 50%). Symptoms were assessed with the Montgomery-Åsberg Depression Rating Scale (MADRS). Connectivity was measured as correlations between four seeds (anterior and posterior DMN, SN and CCN) and all other brain voxels. Partial least squares was used

to compare connectivity prior to treatment between patients and controls, and between patients reaching remission early (MADRS ≤ 10 within 8 weeks), late (MADRS ≤ 10 within 16 weeks) or not at all. Results: We replicated previous findings of altered connectivity in the DMN, SN and CCN in patients compared to controls. In addition, baseline connectivity in these networks distinguished patients with different treatment outcomes. Specifically, connectivity of the anterior DMN seed characterized early remission; SN seed connectivity was related to late remission; and posterior DMN seed connectivity differentiated all three patient groups. The stability of these baseline patient differences was established in the largest single-site subsample of the data. Conclusion: Our analyses support previous findings of MDD-related alterations in connectivity within and between the DMN, SN and CNN, and highlight additional differences between patients with MDD and controls. In addition, they revealed baseline connectivity features associated with different treatment outcomes among patients, which might be predictive of remission to pharmacotherapy.

A-0514 NEURAL CORRELATES OF AGING-RELATED DIFFERENCES IN DUAL-TASK PREPARATION

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Background: In multi-tasking, a fixed order of sub-tasks can improve performance by promoting a time-structured preparation of sub-tasks. How proactive control prioritizes the pre-activation or inhibition of complex tasks in older people has received no sufficient clarification so far. Objective: To explore the effects of aging on neural proactive control mechanisms in a dual task. Methodology: The Psychological Refractory Period (PRP) paradigm was used, where two 2-choice reaction tasks with a predefined order (T1 and T2) had to be executed simultaneously or consecutively by young (mean age 25.1 years, n = 36) and old subjects (mean age 70.4 years, n = 118). Performance indices of dual task preparation were used to assess the focused preparation of T1 and T2. Multi-channel electroencephalogram was recorded and negative slow cortical potentials (SCPs) were analyzed as objective markers of the amount and localization of cortical pre-activation before T1. Results: Dual-task performance was significantly slower in old adults. Responses to T1 were facilitated in both age groups, but T2 processing in old adults was not optimized by the temporal structure as efficiently as in young adults. Only young adults manifested a stable pattern of focused increase of negative SCPs at medial frontal and right-hemisphere posterior regions, which was associated with a coordinated preparatory T1 pre-activation and T2 deferment. Old adults manifested a broad topographic distribution of negative SCPs associated with a pre-activation of sensory and motor processes. Conclusions: The proactive preparation for dual tasking is altered with aging. It is suggested that in young adults, attention-based pre-activation of working memory and inhibitory networks in the right hemisphere synchronizes the simultaneous preparation of the two sub-tasks, whereas in old adults, sensory and motor networks appear to be non-specifically pre-activated for subsequent deferred mode of

processing. Supported by the German Insurance Association (GDV) and by the National Research Fund, Sofia, Bulgaria (Project DN13-7/2017).

A-0515 LATERALIZED PATTERNS OF NEURAL SYNCHRONIZATION DURING MEDITATION

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Background: Although meditation has been increasingly integrated into different therapeutic interventions, the neuro-functional mechanisms of meditation states remain insufficiently elucidated. Also, to inform the evidence-based selection of specific meditation styles it is important to increase understanding of neural processes associated with different meditation practices. Objective: The objective of this research was to explore commonalities and differences in electroencephalographic oscillatory spatial synchronization patterns across three important meditation types (focused attention, open monitoring, and loving kindness meditation). Method: Twenty-two highly experienced meditators were involved to ensure that the meditation states were reliably established. Multi-channel electroencephalogram (EEG) was recorded during rest and the three meditation states in expert meditators and controls. Inter-regional synchronization in different EEG bands was evaluated using the imaginary part of EEG coherence as a measure of neural coupling. Results: The study revealed that all meditation conditions displayed a common connectivity pattern that was characterized by increased synchronization of (a) broadly distributed delta networks, (b) left-hemispheric theta networks with a local integrating posterior focus, and (c) right-hemispheric alpha networks, with a local integrating parieto-occipital focus. Furthermore, each meditation state also expressed specific synchronization patterns differentially recruiting left- or right-lateralized beta networks. Conclusion: These observations provide evidence that in addition to global patterns, frequency-specific inter-hemispheric asymmetry is one major feature of meditation, and that mental processes specific to each meditation type are also supported by lateralized networks from fast-frequency bands. Supported by the BIAL Foundation (Portugal) and by the National Research Fund Sofia, Bulgaria (Project KP-06-N33/11/2019).

A-0516 AFFECTIVE FACE PROCESSING UNDER A PREDICTIVE PROCESSING PERSPECTIVE

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Predictive Processing(PP) is an influential theory of brain function and has been

applied to a wide range of low- and high-level processes, including perception and emotional processing. The processing of facial expressions of emotion(FEE) involves not only perceptual mechanisms but also affective modulations, which may depend on the emotional category portrayed or the levels of valence and arousal of the input compared to the prediction. Previous literature with adults has shown that the arousal levels of a FEE is the main modulator of event-related potentials(ERP) related with face processing, namely in increased N170 amplitudes. This has been hypothesized to be a manifestation of prediction errors, generated by the mismatch between an input with high arousal features and the existent prior for that emotional category, an average of all previous experiences. However, this hypothesis has not been studied systematically. This work aimed to understand how ERPs are modulated by the violation of different affective aspects(emotional category, arousal, and valence), comparably to the predicted FEE. Using an adaptation paradigm, we induced a prediction by showing a specific FEE systematically, in this case an expression of happiness with low levels of arousal. After this adaptation period, the same face could appear 60% of the time(adaptation face), or five FEE that varied from the adaptation face in one or more affective aspects: happiness high arousal, neutral, anger low arousal, playful, or surprise/pleasant(probe faces). EEG activity was measured while 27 healthy adults passively viewed the FEEs, to extract N170 and P250 amplitudes and latencies. Preliminary analyses show robust differences between the activity to adaptation vs probe faces (prediction error generation), as well as increased N170 amplitudes for arousal mismatch and increased P250 amplitudes for valence mismatch. These findings suggest a differential modulation from each affective property as well as a temporal sequence for these modulations. The understanding of how emotional/affective processing may follow predictive rules and the implications of establishing this relationship will be discussed.

A-0517 RUMINATION AND ITS EFFECT ON ATTENTION TO EMOTIONAL STIMULI

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Rumination occurs when a person focuses their attention on their negative feelings in a maladaptive way. Previous studies have shown links between rumination and alterations to attentional control. More precisely, some authors argue that an impaired ability to disengage attention, especially from negatively-valenced information, characterizes rumination. Here, we aimed to study how rumination affects attentional control to emotional facial expressions with an original induction procedure. We hypothesized that inducing rumination would modulate the behavioral performance in an emotional flanker task by facilitating distraction from flanking negative facial expressions and reducing distraction from flanking neutral and positive ones. To test this, we randomly distributed 33 participants between two groups. In the first group (n = 16), we induced rumination by making the participants think about a recent negative event and presenting statements which simulated rumination (e.g., think about how you feel). The second group, used as

control, followed the same procedure, but had to think about their day and more genuine statements (e.g., think about the shape of an umbrella). Afterwards, the participants performed an emotional flanker task where they had to identify the emotional facial expressions (joyful, neutral, or sad) of central target faces while avoiding distractions from flanking emotional faces. We confirmed that the rumination was successfully induced as scores to the Brief State Rumination Inventory (BSRI) of both groups were equivalent before the induction and higher in ruminating group after (p < 0.001). Our hypotheses were partially confirmed as we found, specifically for the ruminating group of participants, that reaction times were increased when target faces were flanked by distractors, regardless of their valence, compared to when they were not flanked (p = 0.019). This suggests that attentional control impairments might not be valence-specific in the context of facial expressions. Rumination may increase sensitivity to distractions. Future projects will use electroencephalography to investigate the effects of rumination on the neural correlates of interactions between attentional and emotional processes.

A-0518 INDIVIDUAL DIFFERENCES IN SPATIAL PERSPECTIVE-TAKING: THE ROLE OF PERSONALITY TRAITS AND INTEROCEPTIVE ABILITIES

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Different spatial perspectives can be taken on tactile stimuli displayed on the body surface. Stimuli can be mentally projected out of the body surface, as if they were coming from external objects or thought of as being localized on the body. These various perspectives rely on different processes. Indeed, on the one hand, integrating different stimuli, across sensory modalities, from a self-centred perspective is crucial for the unity of the self. On the other hand, understanding external space and communicating spatial knowledge with others requires adopting other-centred perspectives. We thus have to constantly juggle these two requirements. Former research in our group showed that individuals differ in the spatial perspective they spontaneously adopt, but also in their ability to flexibly change perspectives. Our aim in the two studies reported here was to investigate the role of personality traits and interoceptive abilities on spatial perspective-taking. To do so, we used a graphesthesia task in which ambiguous tactile symbols (e.g., the letters 'b', 'd', 'p', and 'q') can be interpreted from different spatial perspectives (trunk-centred, head-centred, or other-centred). The task allows identifying the spatial perspective individuals spontaneously adopt and assessing the ability to change between natural and unnatural perspectives. Overall, participants demonstrate a cost of switching to an unnatural perspective and a benefit of returning to their natural perspective. A first study showed differences as a function of personality traits, suggesting that a strong grounding in one's natural spatial perspective is associated with lower anxious attachment and higher social intelligence. A second study investigated the links between spatial perspective-taking and interoception, as a multidimensional construct. The results showed differences as a function of whether we consider interoceptive accuracy, sensibility, or awareness.

Further research is needed to clarify the possible causal relationships between spatial perspective-taking, interoceptive abilities, and the different facets of social perspective-taking.

A-0519 FEELING IN THE SPOTLIGHT: A NEUROCOMPUTATIONAL INVESTIGATION OF PROBABILISTIC LEARNING IN SOCIAL CONTEXT IN HIGH AND LOW SOCIALLY ANXIOUS INDIVIDUALS

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Performing under social scrutiny is paramount for adaptive social functioning, yet such performance situations are feared by socially anxious individuals. It is argued that socially anxious individuals display information processing biases that increase the processing of external and internal threat cues in such social contexts. Recent evidence suggests that such information processing biases hamper the ability to differentiate between positive and negative performance feedback in socially anxious individuals which can lead to suboptimal decision making in social contexts. This impairment seems more prominent when performance is observed by others. To date, however, we lack a mechanistic understanding of this biased learning from performance feedback in socially anxious individuals. The current study employed EEG measures and computational modeling of trial-to-trial behavior during a well-validated reinforcement learning paradigm. In this task, participants were presented with three pairs of Hiragana characters and were asked to learn which character is correct based on performance feedback. Probability of receiving correct feedback differed for the three stimulus pairs (80%; 70%; 60%). Healthy participants (n = 104; age = 18-25 years; 86 females) with different levels of social anxiety performed this task in an observed (social) and a non-observed (standard) condition. We examined feedback-related frontal theta power as a neural index of performance monitoring and behavioral adaptation. Based on evidence suggesting that high socially anxious individuals focus more on negative than positive evaluative cues, we hypothesized that high socially anxious participants would learn better from negative than positive feedback. This feedback-learning bias was expected to be reduced in the social vs. standard condition due to impaired processing of external cues in socially anxious individuals. It was furthermore hypothesized that frontal theta would be a neural correlate of this biased learning from negative feedback in socially anxious participants. Results of this study should provide insights into the importance of social context in feedback-based learning and how performance observation biases socially anxious individuals in their decision-making.

A-0520 ENHANCING FACE-SENSITIVE N170 RESPONSE THROUGH AN IMMERSION EXPERIENCE IN A DIFFERENT ETHNIC SOCIAL ENVIRONMENT

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Several informal reports from western labs consistently indicate a larger face-elicited N170 ERP component in East-Asian than in Caucasian participants. Since the N170 is modulated by perceptual experience, these findings - if replicable - may be accounted for by (1) perceptual experience with logographic versus alphabetic scripts (script account) (2) exposure to a large number of novel faces during immersion into a new social environment (social immersion account) or, more specifically, (3) immersion into a different ethnic environment (other-ethnicity immersion account). Two experiments tested these accounts by recording ERPs in a series of one-back tasks with face stimuli from same and other ethnicities in upright and inverted orientation and with doodles. Experiment 1 was conducted in Hong Kong by recruiting local Chinese (LC) participants and non-Chinese (NC) visitors who could not read any logographic script. Experiment 2 was conducted in Berlin, Germany, with groups of long-term Berlin residents (LB), short-term Berlin residents (SB), and short-term Chinese visitors (SC). The LC group of Experiment 1 showed significantly smaller face-elicited N170 amplitudes than NC group, ruling out the script account for the informal observations in western labs. Experiment 2 indicated larger N170 in the SC group relative to both German groups (LB and SB), supporting the other-ethnicity immersion account; in contrast, the N170 was indistinguishable between LB and both short-term immersion groups (SB and SC) ruling out the general social context immersion account. The group difference on N170 in both experiments was absent for inverted faces, suggesting the N170 difference might reflect a difference in configural processing. Together these results indicate that a novel and substantial confrontation with other ethnicity faces, known to challenge the face processing system, may activate the face processing system, resulting in enhanced face-sensitive N170 responses.

A-0521 RELATIONSHIP BETWEEN INTER– INDIVIDUAL VARIABILITY IN EXERCISE AND PERSPECTIVE-TAKING UNDER STRESS.

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Intro: Difficult social interactions are an important source of everyday stress (Shahrestani et al., 2015), but the impact of acute stress on social cognition remains poorly understood. Empirical evidence suggests a relationship between low emotional/stress reactivity and improved socio-cognitive skills (Ballespí et al, 2018; Hare, 2017). Combined with studies demonstrating that exercise promotes better regulation of the physiological stress response (Hamer et al., 2006), the present study aims to investigate the relationship

between exercise and social cognition under stress. A separate fMRI study is underway to investigate the effect of stress on social cognition at the neural level, while considering inter-individual differences in physiological reactivity & exercise. However, preliminary results cannot be presented due to insufficient sample size as recruitment was impacted due to Covid-19. Method: Participants underwent four separate blocks of a ball detection task measuring spontaneous mentalizing (Kovács et al., 2010) that were preceded by either a stress induction (solving math equations under a timer) or control task (solving scrambled words). An index of spontaneous mentalizing using reactions times from the ball detection task was averaged across blocks that preceded the stressor and non-stressor respectively; ToM-stress and ToM-control. Exercise was measured by self-report. Results. Spontaneous mentalizing was higher in the stress (ToM-stress,18.98) relative to the non-stress condition (ToM-control, 4.92), however this difference was not statistically significant, t (58) = -.993, p= .325. Moreover, further analyses found no significant moderating influence of exercise on either ToM-stress or ToM-control (p > .05). Interestingly, one sample t-tests revealed that ToM-stress, but not ToM-control, was significantly higher than the population mean, t (58) = .441, p = .047. Conclusion: Our findings do not support a relationship between stress, exercise, and social cognition. Nevertheless, the result of the one-sample t-test suggests that stress-induced arousal, linked to improved attention (Lee et al., 2014), may have positively impacted task-related cognitive processes on the ball detection task rather than social cognition per se.

A-0522 SOCIAL INTERACTION PERCEPTION IN THE DEVELOPING BRAIN

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Humans are inherently social and our understanding of the world is shaped from the very beginning by the social interactions we observe and engage in. As a consequence, we excel at extracting information from social scenes. Social interactions are multifaceted and subtle, yet we can almost instantaneously discern if two people are cooperating or competing, and flirting or fighting. We swiftly learn a great deal about people from observing their interactions with others – even a brief interaction gives us important clues about their personality, their social abilities and their current mood. Here, we explore the brain basis of this remarkable ability, in particular looking at the role of various structures in the "social brain" across development. Recent evidence demonstrates that a region of the posterior superior temporal sulcus (pSTS) is selectively engaged by visually observed social interactions in adults. In contrast, we know comparatively little about neural responses to social interactions in children. Here, we used fMRI to ask whether the pSTS would be 'tuned' to social interactions in children at all, and if so, how selectivity might differ from adults. This was investigated not only in the pSTS, but also in socially tuned regions in neighbouring temporal cortex: extrastriate body area (EBA), face-selective STS (STS-F), fusiform face area (FFA), and temporo-parietal junction (TPJ-M). Both children and adults showed selectivity to social interaction within right pSTS, while only adults showed selectivity on the left. Adults also showed both more focal and greater selectivity

than children (6–12 years) bilaterally. Exploratory sub-group analyses showed that younger children (6–8 years), but not older children (9-12), are less selective than adults on the right, while both groups of children show less selectivity than adults on on the left. These results suggest that, over development, the neural response to social interactions is characterized by increasingly more selective, more focal and more bilateral pSTS responses, a developmental process that likely continues into adolescence.

A-0523 DEEP BRAIN STIMULATION CHANGES FUNCTIONAL BRAIN NETWORK FEATURES IN PATIENTS WITH TREATMENT RESISTANT DEPRESSION

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In the last two decades, deep brain stimulation (DBS) has shown important therapeutic benefits for treatment resistant depression (TRD). Stimulation to the subcallosal cingulate (SCG) aims to alter dysregulation between hyperactive ventral paralimbic regions and hypoactive cortical regions (e.g., dorsolateral prefrontal cortex). However, despite investigations of SCG-DBS effects on local brain activity, the effect of SCG-DBS on functional brain networks is still unclear. Here, we used resting state electroencephalography (EEG) data from eleven patients with TRD that were recorded at three timepoints: before DBS-surgery, and at 3-months and 6-months post-surgery. Post-surgery, EEG was recorded both with DBS stimulation on and off. We used graph theory analysis to reveal short-term and long-term alterations of functional brain networks. We calculated clustering coefficient, global efficiency, eigenvector centrality, energy, and entropy of networks to investigate topological/dynamical features of functional brain networks. Then, we examined network changes over time (long-term effects) as well as with DBS stimulation on and off (short-term effects) using nonparametric permutation t-tests, with p-values adjusted for false discovery rate. We found no difference in network features with DBS stimulation on versus off. However, the comparisons between post-conditions (3- and 6- months) and pre-condition showed altered centrality of BA 4, 17, 24, and 35. Significant increases of topological and dynamical brain network features were also observed in delta band between pre-condition and 6-months condition. The results of this study show that SCG-DBS increases segregation, integration, and synchronizability of functional brain networks, suggesting that information processing becomes faster and more efficient. The centrality results suggest these changes occurred via altered connectivity in specific brain regions including anterior cingulate cortex, and surprisingly, also primary motor and visual, and perirhinal cortex. Results confirm the influence of SCG-DBS on cingulate cortex and suggest that SCG-DBS has widespread effects including sensory and motor processing in early stages.

A-0524 RELATIONSHIP BETWEEN ATTACHMENT ANXIETY AND SOCIAL PERIPERSONAL SPACE - AN EMPIRICAL APPROACH VIA A MULTISENSORY INTEGRATION TASK

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Peripersonal space (PPS) refers to the space immediately surrounding the body where interactions between the body and the environment occur and multisensory processing is facilitated. This term came to be after the discovery of specific populations of multi-sensory neurons that are selectively responsive to somatosensory, visual, or auditory stimuli occurring close and not far from the body. This space representation is dynamic, expanding and shrinking depending on environmental specificities and individual differences such as attachment style. Attachment style is of interest as it could relate to standard learning processes as part of intrapersonal biases impacting one's perceptions, attitudes, and expectations. Specifically, attachment anxiety might be a relevant factor as its characterized by hyperactivation of attachment behaviour, involving worrying about rejection/abandonment and persistent checking of signals of support from others. As such, in this study we explored the links between social PPS and attachment anxiety. Using a well-validated visual-tactile multisensory integration task to measure changes in PPS, we investigated the hypothesis that individual differences in self-reported anxious attachment style would predict PPS particularly in a social condition (i.e. facing vs not facing another person) during the task. We recruited 68 females grouped by high and low attachment anxiety score. Our results showed: i. a greater differentiation between close and far space for the high attachment anxiety group (irrespective of social context); ii. lower attachment anxiety is related to less differentiation between close and far space in a non-social when compared to a social setting; iii. participants expanded their PPS in the non-social compared to the social condition, independent of attachment anxiety. These results seem to indicate a link between social PPS and attachment anxiety. However, future studies are necessary to clarify its intensity and direction, as well as potential modulating factors including perception of the individual by the participant during the social condition.

A-0526 RESPIRATORY- AND CARDIAC INTEROCEPTIVE SENSITIVITY AND ITS RELATION TO EMPATHIC CONCERN IN 9-MONTH OLD INFANTS

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In recent years theoretical proposals have highlighted the importance of interoception, the sensing of internal bodily signals, such as heartbeat or respiration, for social cognition and early development. Humans differ with regard to their interoceptive sensitivity, the degree to which they can perceive their internal bodily signals. However, empirical results regarding the development of interoceptive sensitivity in infancy and its relation to the development of early social cognitive skills are lacking. In fact, to date, only one published study has explored cardiac interoceptive sensitivity in 5-month-old infants. Here, we aim at providing insights into early interoceptive sensitivity and its relation to early social cognitive skills. We report preliminary results of an ongoing, preregistered study investigating cardiac and respiratory interoceptive sensitivity, as well as empathic concern in 9-month old infants. We measured cardiac interoceptive sensitivity by replicating the iBeat task, the only published interoceptive measure in infants. In the iBeat task, infants are presented with images pulsating synchronously or asynchronously to their own heartbeat. Further, we created the novel iBreath paradigm to measure respiratory interoceptive sensitivity, which, for the first time, allows quantifying whether infants already show sensitivity to their own breathing. In the iBreath paradigm infants are presented with images expanding in synchrony or out of asynchrony with their own breathing tempo. To measure empathic concern, we used a task in which infants are presented with distress simulations of their mother. Preliminary looking time data indicate that both in the iBeat and the iBreath paradigms infants are able to distinguish between synchronous and asynchronous conditions suggesting that 9-month-old infants show cardiac and respiratory interoceptive sensitivity. Data collection is still ongoing following our preregistered protocol. Data will be visualized in a dashboard that allows the viewer to directly engage and inspect the data during the poster session.

A-0527 HOW TO INCREASE HEART RATE VARIABILITY BASED ON BREATHING EXERCISES? AN EXPLORATORY STUDY OF INDIVIDUAL DIFFERENCES

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Heart Rate Variability (HRV) has gained interest for several years in medical and psychological studies as elevated HRV has been associated with better indicators

(e.g., better emotional regulation, survival, and recovery). Research has also examined whether it was possible to increase HRV based on breathing exercises. However, most of these studies show contradictory results partly due to large methodological variabilities regarding the frequency (e.g.,0.1 vs 0.07 Hz), the pattern (e.g., inhalation/exhalation ratio) the duration of exercises, and the design of studies (e.g., independent or repeated measures). Therefore, our study aimed to compare for the first time the effect of different breathing exercises on HRV by manipulating frequency and pattern. In addition, we explored the impact of individual differences (e.g., emotion regulation) on their effectiveness. The study included 108 participants randomly assigned to one out of 9 breathing exercises, regrouped into 3 frequencies (0.1Hz, 0.08 Hz, and 0.07Hz). The task lasted 15 min during which participants had to breathe normally (pre-test, 5 min), make one of the breathing exercises (5 min), and then breathe normally again (post-test, 5 min). Heart rate and breathing pattern were recorded during the whole task. Individual differences in terms of emotion regulation abilities were measured by the Cognitive Emotional Regulation Questionnaire (CERQ), the Cope Inventory (COPE), and the Difficulties in Emotion Regulation Scale (DERS). Preliminary results suggested that each frequency significantly increases HRV. In addition, there is a positive correlation between HRV improvement and maladaptive emotion regulation strategies (e.g., CERQ and COPE deny and distraction factors). These findings suggest that participants with difficulties in regulating their emotions may benefit from breathing interventions on HRV. More broadly, this research contributes to provide evidence-based arguments to develop interventions based on breathing exercises in physical and mental health care by focusing on individuals who may be particularly responsive to this intervention.

A-0528 CARDIOVASCULAR ACTIVITY PROMPTS INHIBITION WITHIN THE PRIMARY MOTOR CORTEX.

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Physiological fluctuations in internal state associated with the phasic cardiovascular activity profoundly affect the activity of the central nervous system through variations in the baroreceptor inputs conveyed to the brainstem nuclei. During cardiac contraction (systole) the phasic firing of arterial baroreceptors seems to trigger strong and widespread inhibitory effects on the activity of the brain, including the cortex. At behavioural level, this widespread inhibition affects sensorimotor functions, hindering the efficiency of action initiation, selection, and inhibition. Specifically, individual motor inhibition capacities vary throughout the different phases of the cardiac cycle, increasing during cardiac systole, while decreasing during cardiac diastole. Despite the converging lines of evidence supporting the global inhibitory effects triggered by the cardiac-driven variations in

baroreceptors activity, to date it is still not clear whether the cardiac cycle influences the neurophysiological pattern of GABAergic-mediated intracortical inhibition within the primary motor cortex (M1). Hence, the present study was designed to examine modulatory effects of phasic cardiovascular activity on the levels of intracortical inhibition in M1. We employed real-time co-registration of individuals' electrocardiogram (EKG) and electromyography (EMG) activity of the right First Dorsal Interosseous (FDI) while delivering TMS double pulse-stimulation over the left M1. As an index of intracortical inhibition in M1 we measured Short-interval Intracortical Inhibition (SICI) and Long-interval Intracortical Inhibition (LICI) in 18 healthy participants. Crucially, in this experiment the TMS was triggered by the R-peak, in order to lock the TMS stimulation either at systole or diastole (250 and 500 ms after the R-peak, respectively). Overall, we found that intracortical inhibition was significantly stronger in systole than in diastole. These results shed new light on the effects of interoceptive information on brain activity, and particularly on inhibitory process conceived as a mechanism that allows to modulate impulses and dominant behavioural responses to stimuli.

A-0529 ERROR MONITORING IN PERFECTIONISM: AN EVENT-RELATED POTENTIALS STUDY

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Perfectionism is a multidimensional personality trait that describes strong internal motivation to flawless performance (which is captured by dimension called personal standards perfectionism) and fear of failure and negative emotional reaction to errors (described by evaluative concerns perfectionism dimension). The aim of the present study was to investigate the relationship between these two main dimensions of perfectionism and error monitoring as reflected by error-related brain potentials: error-related negativity (ERN) and error positivity (early Pe and late Pe). ERN amplitude is associated with the motivational significance of errors for ongoing behavior, whereas Pe amplitude is thought to reflect error awareness and affective evaluation of errors. Based on previous studies, we expected to find (1) a positive correlation between evaluative concerns perfectionism and late Pe amplitude, (2) a significant interaction effect between the two perfectionism dimensions on the ERN. A total of 171 young adult participants (120 female, mean age 22.8 years) performed a Go/No-Go task, while EEG was recorded. Participants were given feedback regarding the speed of their response after each Go trial. Perfectionism was measured with the Frost Multidimensional Perfectionism scale. We did not replicate findings from previous research. However, our exploratory analysis revealed that the association between personal standards perfectionism and early Pe is moderated by the number of errors committed by the participant. The observed moderation effect may result from differences in strategies of task performance adopted by participants, a so-called speed-accuracy tradeoff. Among participants who focused on accuracy, there was a positive association between personal standards perfectionism and early Pe. This suggests that perfectionism can be associated with enhanced error monitoring activity

related to error awareness, however aspects such as task performance strategy can influence this association. The fact that results from previous studies did not replicate in this large sample study could suggest that statistical significance of previously reported effects could have been influenced by a small sample size.

A-0530 A STRONG TEST OF CONTENT-SPECIFIC PATTERN SEPARATION VIA DISTINCT MEDIAL TEMPORAL PATHWAYS

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Memory specificity is a crucial component of episodic memory: an event is recalled in its uniqueness even if it shares multiple features with other events. One hypothesized neural mechanism supporting memory specificity is hippocampal pattern separation, a process reducing interference by orthogonalizing similar inputs to the dentate gyrus and CA3 hippocampal subfields. It is an open question whether this interference reduction operates in an invariant manner across domains in the medial temporal lobe (MTL). The two processing streams view holds that distinct pathways through the perirhinal and parahippocampal cortex are involved in content-specific interference reduction of objects and spatial information, respectively. However, evidence for these dissociated pathways in humans remains scarce. Additionally, extant studies have exclusively used everyday stimuli, confounding path-specific pattern separation measures with prior knowledge induced effects. In this study in progress, we use high-resolution structural and functional magnetic resonance imaging and behavioral measures to investigate functional divisions of the MTL in healthy young adults (n=30). In a novel version of the mnemonic similarity task we assess memory specificity in both object and spatial domains using abstract images (fractals), to reduce prior knowledge effects. We predict a dissociation between the two pathways as reflected in uncorrelated contentwise mnemonic discrimination, as well as pathway-specific univariate (repetition suppression based) and multivariate (representational similarity based) estimates of pattern separation. Further, we expect within-pathway connectivity to predict discrimination of content-specific memories. Testing these predictions will contribute to the critical assessment of the two processing streams view of the human MTL.

A-0531 RESPIRATORY PHASES MODULATE HEARTBEAT-EVOKED CORTICAL RESPONSES

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Heartbeat Evoked Responses (HERs) are EEG event-related potentials time-locked to the heartbeat that reflect the cortical processing of cardiac activity. HER amplitude has been related to various behavioural measures of interoception, but the reliability of such findings is controversial, given possible confounding effects driven by the electric cardiac field, as well as by other somatosensory or interoceptive factors. One of such interoceptive factors may be the respiratory phase. In fact, despite recent studies demonstrating optimized neural processing of incoming exteroceptive (sensory) information during inhalation, virtually nothing is known about mechanisms through which respiratory activity influences incoming interoceptive (cardiac) information. We simultaneously recorded 64-channel EEG, cardiac and respiratory activity in 20 healthy volunteers during an eyes-open resting state. We extracted HERs detected during inspiratory (when respiratory activity is at maximum) and post-expiratory (when respiratory activity is at a minimum) phases. In order to reduce cardiac field artefacts, HERs were time-locked to the T-peak and pruned with ICA-based procedures. HERs were compared performing a repeated-measures, two-tailed cluster mass permutation test (10 000 permutations), including all time points between 80 and 350 ms post T-peak. We found that respiratory phases modulate HER amplitude, which was significantly higher during post-expiratory phases as compared to inspiratory phases, in a time window ranging from 176ms to 254ms post T-peak. This "respiratory HER effect" was detected in central and parietal areas known to be involved in various experimentally-induced HER modulations. Present finding indicates an often-unnoticed influence of respiration on cardiac interoception, suggesting increased neural processing of the heartbeat during post-expiratory phases, when respiratory interoceptive afference is at a minimum, as compared to inspiratory phases. Finally, starting from recent studies that independently showed that cardiac interoceptive accuracy increased during breath-holding and is predicted by HER amplitude, we conducted another study investigating if: i) the performance on the heartbeat tapping task changes depending on the specific respiratory phase, and ii) these changes correlate with the "respiratory HER effect".

A-0532 LEFT MEDIODORSAL THALAMIC INFARCT CAUSES RECOLLECTION IMPAIRMENT DUE TO DECREASED CONNECTIVITY IN THE DEFAULT MODE NETWORK: A RESTING STATE FMRI STUDY

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Recognition memory impairment after antero-medial thalamic infarct has been observed in several studies displaying an impairment of both recollection and familiarity after mediodorsal (MD) damage. In a previous research, using recognition memory tasks we showed an impairment in recollection exclusively, confirming recent findings in the literature. If the link between MD and recollection is now definitively established, the initial hypothesis as assumed by Aggleton and Brown's model was an exclusive involvement of the MD nucleus in familiarity. A possible explanation may be that the MD is involved in recollection because of its functional connectivity with the medial prefrontal cortex. In order to test this hypothesis we recruited 12 patients with a single unilateral left ischemic thalamic stroke (11 whose the lesion reached the MD) along with 12 healthy matched controls. They underwent three experimental recognition tasks estimating the contribution of recollection and familiarity (RKG, ROC, PDP), a morphological 3D MRI scan and a functional connectivity resting-state fMRI scan. For functional connectivity analyses at a group level, a ROI-to-ROI method was chosen. Functional connectivity was measured across selected networks from the Willard-Stanford atlas (ventral and dorsal default mode network, salience network, posterior salience network, left and right executive network, language network). Patients showed lower performance than controls in all the recognition tasks. Contrast analyses displayed a significant (FDR corrected) lower functional connectivity in the ventral and dorsal DMN. Correlation analyses between functional connectivity in these areas and recognition processes exhibited a positive correlation between recollection and ventral DMN. We observed no correlation with familiarity. Ventral DMN functional disconnection caused by MD lesion impairs recollection.

A-0533 THE HEART IS DECEITFUL ABOVE ALL THINGS: ILLUSORY PERCEPTION OF HEARTBEAT INDUCED BY PAIN EXPECTATION.

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Our interoceptive states and the perception of them are thought to be heavily shaped by interactions between expectations and interoceptive information. Surprisingly, previous research mostly investigated the impact of expectations on interoceptive states themselves (i.e. cardiac activity), rather than the perception of these states (i.e. heartbeat

perception). This study investigated whether expectations of pain induce illusory perception of heartbeat frequency, so that heartbeat perception reflects expectations about how the heartbeat will change, rather than only the actual change. Participants were instructed to report continuously their cardiac frequency, by tapping along with their felt heartbeat (i.e. heartbeat tapping task), while ECG was recorded. Crucially, while completing this task, subjects were presented with two types of cues, which provided valid predictive information about the intensity of an upcoming cutaneous stimulation, that is: a painful or non-painful stimulus. Results showed that, whenever participants were exposed to cues that signalled the upcoming painful stimulation, they reported a higher number of heartbeats compared to when they were anticipating a non-painful shock. Importantly, the perceived increase was not mirrored by the real cardiac frequency, which showed no difference in the predictive-painful condition compared to the anticipation of the non-painful shock. These results were replicated in a second experiment, in which participants did not tap along but counted their heartbeats (i.e. heartbeat counting task), confirming that this interoceptive illusion could also be observed in a task without motor components. Together, the findings reveal, for the first time, a perceptual illusion of heartbeats associated to pain expectation. This study offers some important insights for understanding how inferential processes can actively generate interoceptive perception, emphasizing its pivotal role within the predictive aspects of the processing of bodily signals and of physiological regulation.

A-0534 MENTAL HEALTH FORCE: A COMPREHENSIVE APPROACH TO WORK-RELATED PSYCHOSOCIAL RISK FACTORS IN PORTUGUESE POLICE FORCES

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Police officers are continuously exposed to different stress sources, involving unpredictable, dangerous and potentially traumatic situations, that threaten these professionals' mental health and increase their likelihood of developing mental health problems (e.g., depression, anxiety, post-traumatic stress). In this regard, organizational stressors, such as the perceived lack of support, are one of the most well documented risk factors. Although there has been a growing interest from governments and the scientific community to characterize and intervene with the police, Portugal is still lacking information and solutions concerning this topic. Therefore, we aim to assess what are the most prominent psychosocial risk factors inherent to the work of Portuguese police. For this purpose, we established a partnership with the head of the PSP Psychology Department and will apply COPSOQ (Copenhagen Psychological Questionnaire) to a sample of 100 PSP officers (Polícia de Segurança Pública). We will use COPSOC, as this instrument offers a comprehensive and multidimensional approach to psychosocial risk factors regarding work environment, consequently contributing to preventive and

decision-making processes on an organizational level. The results of this study will be used to support a subsequent program named Mental Health Force (MHF). MHF proposes to develop, validate and implement a program to improve police's mental health, targeting stress resilience, effective emotional regulation and adaptive coping strategies in order to improve police performance in critical situations. Moreover, MHF stands out due to its innovative methodological approach, combining self-report with neurophysiological correlates. The latter will be used to measure, assess and provide biofeedback to stress and emotional reactivity, during exposure to work-related stressful situations in a virtual reality context. In conclusion, knowing organizational stressors play a central role in police forces' wellbeing, we will include the COPSOC results in the program's design, not only addressing the main risk factors resulting from this study, but also providing tools to the police organization that can be applied in the future.

A-0537 THE FEATURE OF THE SUBLIME DURING MUSICAL EXPERIENCES

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The experience of the sublime is often characterized by an intense, complex, and mixed (i.e., presenting both negative and positive aspects) affective state. It seems to involve specific features such as an immersive experience and a diminished sense of the self (Arcangeli et al. 2019). From this, we hypothesized that music is an interesting and good elicitor of sublimity experiences. In this study we investigated the affective and cognitive features of the sublimity experience that characterizes and differentiates it from experiences of beauty in musical contexts. A self-report questionnaire assessing the aesthetic experience through 50 items was administered to a large sample of French adults (N = 277) in order to describe a musical experience corresponding either to an experience of the sublime or to an aesthetic experience related to the beauty. Using an exploratory factor analysis, we defined eight specific dimensions along which an aesthetic musical experience can be characterized. Interestingly, we observed that the musical experiences of sublimity and beauty differed on some dimensions. Thus, the results indicated that, compared to the experience of beauty, the experience of the sublime generated (i) a higher presence of negative affect (associated to positive affect), (ii) a higher feeling of grandeur, (iii) a higher experience of self-expansion, probably due to the blurred distinction between the self and the world, (iv) a higher experience of self-retraction associated to a diminished sense of self, and finally (v) a higher feeling of being moved. These findings suggest that the experience of the sublime elicited by music is characterized by a special form of experiential immersion in which the distinction between the self and the world tends to disappear, and a diminished sense of the self.

A-0538 REAPPRAISAL VS ACCEPTANCE: A META-ANALYSIS STUDY TO INVESTIGATE NEURAL DIFFERENCES AND SIMILARITIES BETWEEN EMOTION REGULATION STRATEGIES

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In the emotion regulation literature, neuroimaging studies on the emotional control strategies such as reappraisal led some authors to propose a dual-process model by which a prefrontal "top-down", control system modulates subcortical "bottom-up" emotional reactivity. Interestingly, this emphasis on the involvement of high-executive processes to modulate emotional responses have been questioned in recent neural investigations on acceptance-based strategies. Indeed, acceptance-based strategies, still relevant in clinical practice, seem to rely mostly on the posterior cingulate cortex and subcortical areas and less on executive-related areas. In order to provide evidence on this claim, here we sought to summarize and contrast the existing neuroimaging literature on reappraisal and acceptance to investigate similarities and differences in the neural bases of these two emotion regulation strategies. In the current study, the Activation Likelihood Estimation technique was used to obtain a quantitative summary of previous fMRI (functional Magnetic Resonance Imaging) studies of acceptance and reappraisal to compare the brain mechanisms of both strategies. The meta-analysis of the contrast between reappraisal (> control) versus acceptance (> control) and the conjunction analysis between reappraisal (> control) and acceptance (> control) was conducted. The results of the former analysis revealed two clusters of significant brain activity: (i) in the left cerebrum, frontal lobe, superior frontal gyrus and in (ii) in the left cerebrum, frontal lobe, and middle frontal gyrus. The result of the later analysis showed 2 clusters of significant brain activity in the left cerebrum, frontal lobe and superior frontal gyrus. These results are in line with previous studies and support evidence of a different involvement of "top-down", executive processing in reappraisal and acceptance emotion regulation strategies, with a major role, played for the former.

A-0539 DEFAULT MODE NETWORK ABNORMALITIES IN CURRENTLY INSTITUTIONALIZED CHILDREN

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Institutional rearing is a commonly adopted alternative care for children exposed to early-life maltreatment or neglect. Despite the wide evidence of the detrimental impact institutionalization has on child's development, approximately 3 million children worldwide are living in institutions. This type of caregiving deprivation has been associated with neurodevelopmental alterations in key circuitry involved in emotion regulation and reward response. Analysis of resting-state (rs) connectivity has proved to

be a valuable contribution in exploring the network-level disturbances associated with many psychiatric and developmental disorders, Accordingly, brain maturational changes on functional connectivity (FC) have been proposed as important biomarkers for detection of abnormal neurodevelopmental processes and socioemotional disturbances. The Default Node network (DMN) includes nodes in the posterior cingulate cortex, precuneus, medial prefrontal, and inferior parietal cortices and seems to be activated during internal mental-state processes and autobiographical memory retrieval. A few maltreatment-related network studies have emerged in the past few years, and although the findings are sill controversial, there is an overall agreement that maltreatment is associated with altered development of the DMN. These results associated with the DMN contribution to emotional processing makes the study of this network particularly relevant in the field of institutional rearing. To the best of our knowledge this is the first study assessing the rs DMN connectivity in a group of 18 currently institutionalized children and 18 family-reared, aged 12 to 20 years old, age and gender-matched. An independent component analysis was implemented to identify functionally connected clusters over time. Statistical significance was determined by non-parametric permutation testing with threshold-free cluster enhancement (TFCE), controlled for family-wise error rate. In comparison to non-institutionalized, the institutionalized group displayed an increased FC between the DMN and a cluster located in the right nucleus accumbens. These results suggest that institutionalized adolescents display FC alterations in key circuitry involved in emotional regulation and response to rewards, eventually associated to a disruption of the typical neurodevelopmental pathway occurring in this period.

A-0541 LATERALIZED PREFRONTAL CORTICAL RESPONSES TO VISUAL STIMULI PROVOKING NEGATIVE EMOTION

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Grief is a psychobiological response for the loss of dear ones characterized by a blend of yearning and sadness, along with thoughts, memories and images of the deceased person. The number of studies has investigated on the neural mechanisms associated with grief; however, the results are inconsistent and not conclusive. In this study, we examined neural correlates of grief in the prefrontal cortex (PFC) of healthy adult subjects. Twenty-one participants watched non-emotional (neutral) images, negative international affective picture system (IAPS) images, and images and video clips about people expressing grief and rated their emotional elicitations at the three dimensions (Arousal, Pleasure, and Dominance) in the emotional state model. While watching the images and videos, oxy- and deoxy-hemoglobin (Hb) dynamics in the PFC were measured using near infrared spectroscopy. The participants exhibited significantly stronger arousal, displeasure, and dominance for IAPS images and grief images and videos than those for neutral images. Significant oxy-Hb decreases were selectively observed in the right dorsolateral PFC in responses to grief images and videos and IAPS images, but not neutral images. Comparing across the conditions, no difference was found between the oxy-Hb

decreases with grief images, grief videos, and IAPS images, suggesting that such oxy-Hb decreases may not be specific to the process of grief stimuli, but rather associated with stimuli provoking general negative emotions. Deoxy-Hb was also decreased in the right dorsolateral PFC, but in responses to neutral and grief images, and not IAPS images and grief videos, suggesting that such deoxy-Hb change may be associated with processes of stimuli other than negative emotions. These results suggest that strong negative emotional stimuli may attenuate cognitive control (inhibition) of emotion processed in the right dorsolateral PFC, which could partly be consistent with the valence asymmetry hypothesis.

A-0542 INCREASED EYE CONTACT WITH INGROUP MEMBERS RELATED TO PERCEIVED NATIONALITY

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Ingroup favouritism is described as a bias favouring members of one's own group over the others, which can manifest itself across a variety of social and cultural divisions. Preferential treatment of ingroup members is connected to an increased tendency to attend to their eyes when compared to outgroups. As eye contact is a basic form of human interaction facilitating social bonding, it is therefore an important facet of intergroup research. In our study, we examined the attentional bias of Polish nationals (N = 33) towards the ingroup members based on their subjective "Polishness" rating. We asked participants to view 300 multinational (all White) faces obtained from several photo databases and assess how "Polish" these faces appeared on a rating scale between 1 and 7. During the rating process eye movements were recorded. The study confirmed the effect of attentional bias towards ingroup members. Participants fixated more often on the eye region of faces rated as more Polish - regardless of the actual ethnic identity of the models. Furthermore, this process was almost instantaneous, as we detected a significant increase in the percentage of the first two fixations to the eye region as a function of perceiving the models as "appearing Polish" (F(2,64) = 7.32, p = .001, p2 = .19) and an opposite effect in the proportions of fixations in the mouth region (F(2,64) = 4.54, p = .018, p2 = .12). No effects regarding attention to other facial regions were observed. Interestingly, we discovered an effect of "more inclusive" treatment of women in sharing in the ingroup identity as the female models were rated as appearing more Polish than men (F(35,46) = 4.54, p <.001, p2 = .526). We therefore demonstrate that the attentional bias towards the eyes is not only related to race (or arbitrary ingroup/outgroup tagging in the minimal group paradigm) but can also be triggered by more subtle cues such as subjectively perceived ingroup membership.

A-0543 EFFECTS OF INDUCED RUMINATION ON EXECUTIVE FUNCTIONS IN AN EMOTIONAL CONTEXT

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Rumination is the act of repetitively focus its attention towards its negative feelings in a maladaptive way. It has been linked to impairments in cognitive processes, such as inhibition and emotional information processing. However, these links were mostly studied in depressed individuals using self-report measures of rumination. Thus, we investigated how, in a healthy population, induced rumination affects response inhibition within emotional context. We hypothesized that rumination induction would lead to impaired inhibition's capacities, especially for negative information. Therefore, 23 participants were recruited and randomly assigned to one of two groups. In the first one (n = 11), rumination was induced by asking participants to think about a recent negative event and statements which simulated rumination (e.g., think about how you feel). In the control group (n = 12), participants had to think about their day and benign statements (e.g., think about the shape of an umbrella). Participants then performed an affective Go/NoGo task, they had to respond to frequent target stimuli and inhibit their responses to rare distractors depending on the expressions' nature (neutral, joyful, or sad). Brief State Rumination Inventory (BSRI) scores for both groups were equivalent pre-induction, but higher for the ruminating group afterwards (p < 0.001), confirming successful rumination induction. Our hypotheses were partially confirmed as inducing rumination slowed overall reaction times of participants (p = 0.052), suggesting that it may lead to cognitive impairment by overloading limited executive resources. Participants showed no deficits on behavioural measures of inhibition (i.e., commission error rate). They even made fewer errors when inhibiting their responses to sad stimuli following neutral Go trials (p = 0.024). Thus, induced rumination might facilitate the discrimination of sad faces by increasing individual susceptibility to direct their attention toward negative emotions. Follow-up projects will use electroencephalography to investigate the effects of rumination on the neural correlates associated with executive functions and emotional processing.

A-0544 SEMANTIC CONTENT AFFECTS EEG FUNCTIONAL CONNECTIVITY IN NARRATIVE COMPREHENSION

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In speech processing, EEG/MEG functional connectivity (FC) is often treated as the correlate of dynamic network representations, that is, it is assumed to reflect the spatially distributed processes carried out by the node regions in concert. According to this view, FC is determined by basic comprehension processes and should remain "blind" to detailed content over longer timescales. However, there is evidence from at

least one fMRI study that FC networks are partly specific to the narrative content of the input in ecologically valid situations (Simony et al., 2016). The current study addressed the question whether EEG FC within the network underlying narrative comprehension is sensitive to the semantic content of the narrative. We recorded EEG from 26 participants while they listened to four speech recordings from the same actor. Speech recordings were matched for length (~ 6 mins), content type (news articles) and acoustic features. We estimated source-space FC using phase-based methods (PLV, iPLV) over long epochs (8 secs) for each subject, thresholded against surrogate data. We found that FC maps were different across the four recordings, both on the group and the individual level. Edge-level analysis identified a stable set of bilateral long-range connections, mostly fronto-parietal and fronto-temporal, differentiating across stimuli the most. Our results suggest that EEG FC estimated over long epochs is affected by semantic content in narrative comprehension.

A-0545 AUDITORY FIGURE-GROUND SEGREGATION IS IMPAIRED BY AGING AND AGE-RELATED HEARING LOSS

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Listening in noisy environments relies on the ability to extract structure from noisy sensory input while integrating sounds elements into a meaningful object (Figure-Ground Segregation - FGS). To assess whether aging is accompanied by impairments in FGS event-related brain potentials were recorded from normal-hearing young, older adults and hearing-impaired elderly during auditory recognition. The FG stimuli consist of a figure (rising sound stream) in a spectrotemporal overlapping background. The listener's task was to report whether they detect a figure within either high or low background noise level (signal-to-noise ratio-SNR). An adaptive threshold detection method was used for determining the high and low SNR levels corresponding to 80% and 60% figure detection accuracy for each participant. Relative to the young and normal hearing elderly a higher number of coherent Figure tones was needed for the hearing-impaired group to reach the same performance level in low and high SNR conditions. Generally, correct Figure perception elicited object-related negativity (ORN), followed by a P600 response. Source localization revealed that ONR generated in the auditory, parietal, and midline frontal cortices while P600 linked with lingual and cingular cortices activity. Compared to the young, in the normal-hearing elderly group, the latency of ORN was delayed (200 ms) with decreased P600 amplitude which indicates that older adults may be able to compensate for hearing loss using more time for perceptual evaluation with higher decision criteria. Hearing-impaired elderly shown even more delayed ORN activity and especially in low SNR conditions relative to young and normal hearing elderly, which indicates that for elderly with hearing impairment, regardless of the less noisy sensory input the perceptual evaluation may take a longer time with a less certain outcome. Our results may provide

evidence that age-related difficulty in listening in adverse conditions caused by impaired FSG processes in aging.

A-0546 BRAIN-HEART INTERACTION AS A POTENTIAL VNS BIOMARKER AND ENDPOINT

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Coupling between frontal EEG and ECG signals (neuro-cardiac coupling, NCC) has been recently proposed as a new marker for autonomic status, in particular, central nervous influence on autonomic tone. In our recent study (doi 10.1016/j.brs.2021.01.001), we have shown that NCC predicts cardiac effects (heart rate variability changes) of transcutaneous auricular Vagus Nerve Stimulation (taVNS), suggesting that it might be a promising taVNS biomarker. The talk will present the findings from our study, give an overview about taVNS biomarker research and why those markers would be so important for the further progress of clinical taVNS research. In the second part of the talk, first results from follow-up analyses will be presented, where we tried to gain a better understanding of NCC. In particular, we were asking what exactly the strength of NCC reflects, what its physiological correlates are, and how to overcome methodological challenges and potential confounding variables. In the last part of the talk, the role that NCC might play in future taVNS biomarker research is outlined, and potential clinical study / treatment designs are sketched.

A-0547 ENHANCED MOTIVATION AND HEDONIC REACTIONS TO SOCIAL TOUCH UNDER STRESS FOLLOWING MORPHINE ADMINISTRATION

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Physical social contact, such as grooming in primates or touch in humans, is fundamental to create and maintain social bonds. The Brain Opioid Theory of Social Attachment postulates that μ-opioids play a central role in social connection. Accordingly, pharmacological studies in isolated animals indicate that μ-opioid agonists reduce, and μ-opioid antagonists increase distress responses and motivation for social contact. Despite the abundance of animal studies, human evidence is still lacking. Here, we investigated the neurochemical basis of social motivation under stress in healthy human volunteers (N = 80), following either 10 mg morphine (μ-opioid agonist) or placebo administration. After undergoing a stress induction procedure, participants were administered with gentle skin-to-skin caresses on the forearm, at different speeds (6, 21 and 27 cm/s). By adopting a translational approach, real physical effort and facial hedonic reactions, together with self-reports of wanting and liking for social touch, were assessed. Preliminary results revealed greater adverse response to stress following morphine administration, characterized by higher negative

mood, compared to the placebo group. In line with animal models and previous evidence in humans, this enhanced stress response led to increased motivation for the slow CT-optimal social touch. Moreover, participants administered with morphine also reported general higher liking for all social touch stimuli. Overall, despite the opposite effect of morphine administration on stress response compared to previous animal studies, the current findings are in line with enhanced social motivation during negative states.

A-0548 NEURAL DIVERGENCE BETWEEN POLITICALLY DISSIMILAR INDIVIDUALS VIEWING REAL-WORLD POLITICAL MESSAGES

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People tend to interpret political information in a manner that confirms their prior beliefs, a cognitive bias that contributes to rising political polarization. Here, we combined functional magnetic resonance imaging with semantic content analyses to investigate the neural mechanisms that underlie the biased processing of real-world political messages. We scanned American participants with conservative-leaning or liberal-leaning immigration attitudes while they watched news clips, campaign ads, and public speeches related to immigration policy. Despite watching the same videos, conservative and liberal participants exhibited divergent neural responses during video watching. The neural divergence between groups occurred in a brain area associated with the interpretation of narrative content and intensified in response to threat-related and moral-emotional language. Furthermore, divergent neural responses predicted attitude change in response to the videos. Our work introduces a multimethod approach to study the neural basis of political cognition in naturalistic settings. Using this approach, we show how biased processing in the brain drives divergent interpretations of political information and subsequent attitude polarization.

A-0549 THE INTERPLAY BETWEEN AFFECTIVE TOUCH AND BIOLOGICAL, PSYCHOLOGICAL AND SOCIAL FACTORS: AN INFORMED DISCUSSION OF THE SYMPOSIUM CONTRIBUTIONS

Uta Sailer
University of Oslo

During this discussion, I will evaluate and integrate the findings presented in this symposium, providing an updated outlook of the last achievements reached in affective touch research and highlighting the future challenges of this field.

A-0554 ALTRUISM UNDER STRESS: CORTISOL PREDICTS LOWER CHARITABLE GIVING AND NEURAL VALUE REPRESENTATIONS IN MENTALIZERS

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Altruism, defined as costly other-regarding behavior, varies considerably across people and contexts. One prominent context, in which social decisions are frequently made, is acute stress. How stress affects altruistic decision-making, however, is only incompletely understood at the behavioral and in particular at the neural level. To address this gap, we assessed neural responses associated with charitable giving under stress. Participants completed a charitable donation task before and after a psychosocial stress or control manipulation and while we measured brain activity via functional magnetic resonance imaging (fMRI). We observed reduced charitable giving with increases in cortisol in participants with high baseline mentalizing performance, but not in low-performing individuals. At the neural level, an analogous interaction was expressed in multivariate activity patterns in the right dorsolateral prefrontal cortex (DLPFC), which were less predictive of donation values, but only for participants with higher mentalizing performance and cortisol. Together, this might indicate a cortisol-dependent impairment of mentalizing-related processes, thereby decreasing altruism. These findings also extend previous research that suggested a contribution of the DLPFC in mentalizing and prosocial behavior, which appears to interactively depend on participants' traits and context.