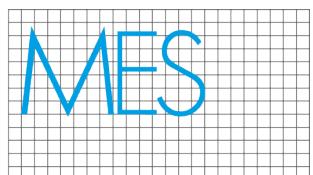


# Sponsors

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# Welcome to Hamburg

Dear colleagues, or simply put: Moin!

It is with great pleasure that we welcome you to the 49th Annual Psychologie und Gehirn (PuG) Conference, which will be held at the Universität Hamburg and the Bürgerhaus Wilhelmsburg from May 29 to June 1, 2024. The PuG is jointly organized with the Fachgruppe Biologische Psychologie und Neuropsychologie (FGBNP) der Deutschen Gesellschaft für Psychologie (DGPs) und der Deutschen Gesellschaft für Psychophysiologie und ihre Anwendung (DGPA).

We are positively surprised (one might even say overwhelmed) by the huge interest in this year's PuG conference, and proudly present a program that features a rich set of scientific and networking events, including pre-conference workshops (organized by the Early Career Researchers), 35 scientific symposia with about 150 talks, two poster sessions with over 400 posters, poster flash talks, a Buddy program as well as general assemblies of the organizing societies (DGPs, DGPA) and the Special Interest Group of Open and Reproducible Research (IGOR). Opening and social evenings at the Universität Hamburg and on the historic cargo ship Cap San Diego round off the program. The three keynote lectures given by Karin Roelofs, Katharina von Kriegstein, and Nils Kroemer will certainly be highlights of the conference.

We are thrilled to gather an international community of researchers to explore developments and foster collaborations in biological psychology, neuropsychology and adjacent fields. We especially look forward to facilitating meaningful dialogues and collaborations among researchers at all stages of their careers. Hosting this year's conference in Hamburg offers a unique setting known for its dynamic intersection of tradition and innovation. As a city that has long been a gateway to the world, Hamburg mirrors the spirit of discovery and connectivity that we aim to promote in our scientific discussions.

Looking forward to welcoming you to Hamburg for an inspiring assembly of minds and ideas!

Best regards, the local organizing team of PuG 2024:

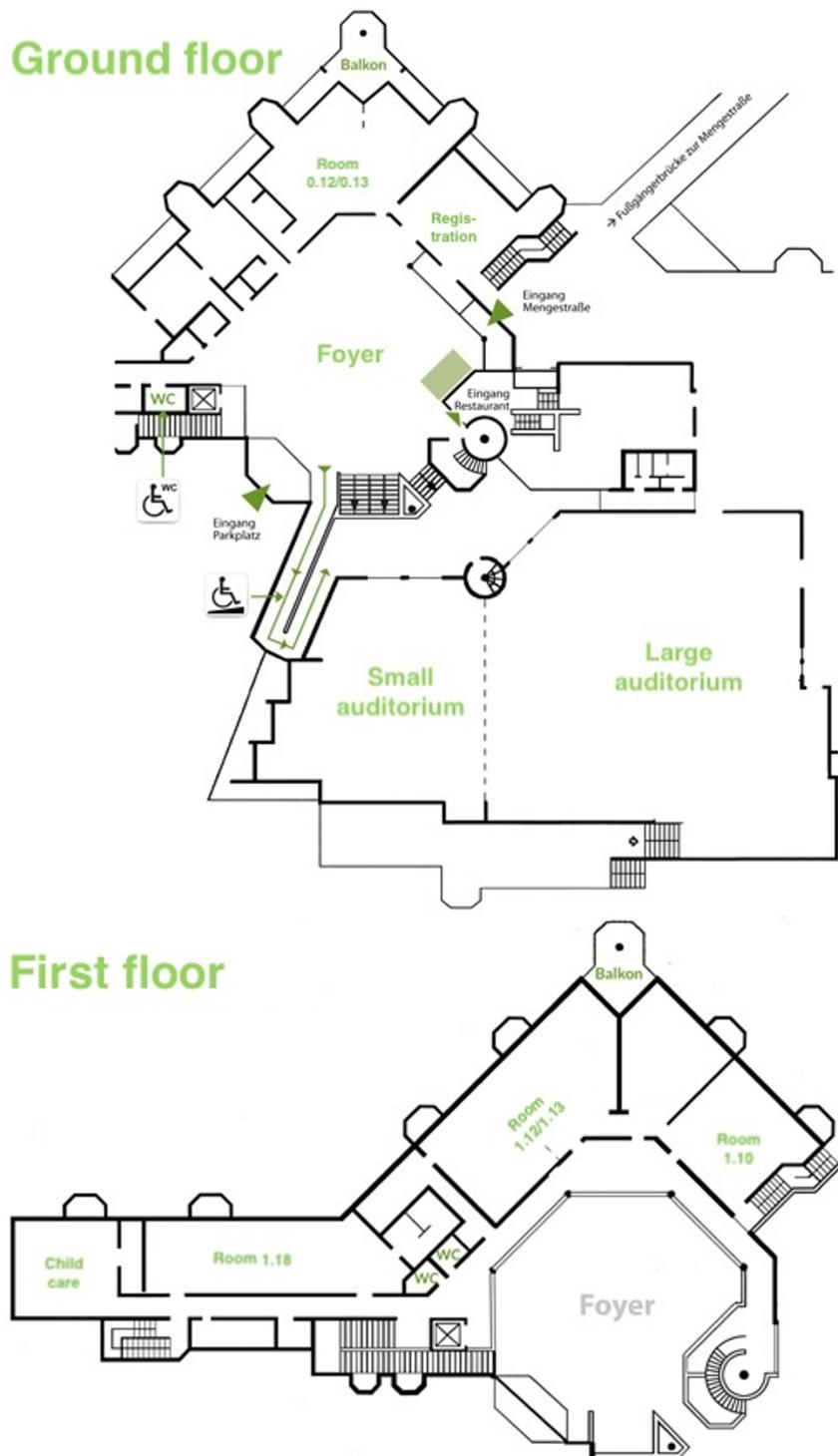
Helen Blank, Patrick Bruns, Sebastian Gluth, Tina Lonsdorf, Anja Riesel, Brigitte Röder, Nico Schuck, Lars Schwabe, Jan Wacker

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# Useful Information

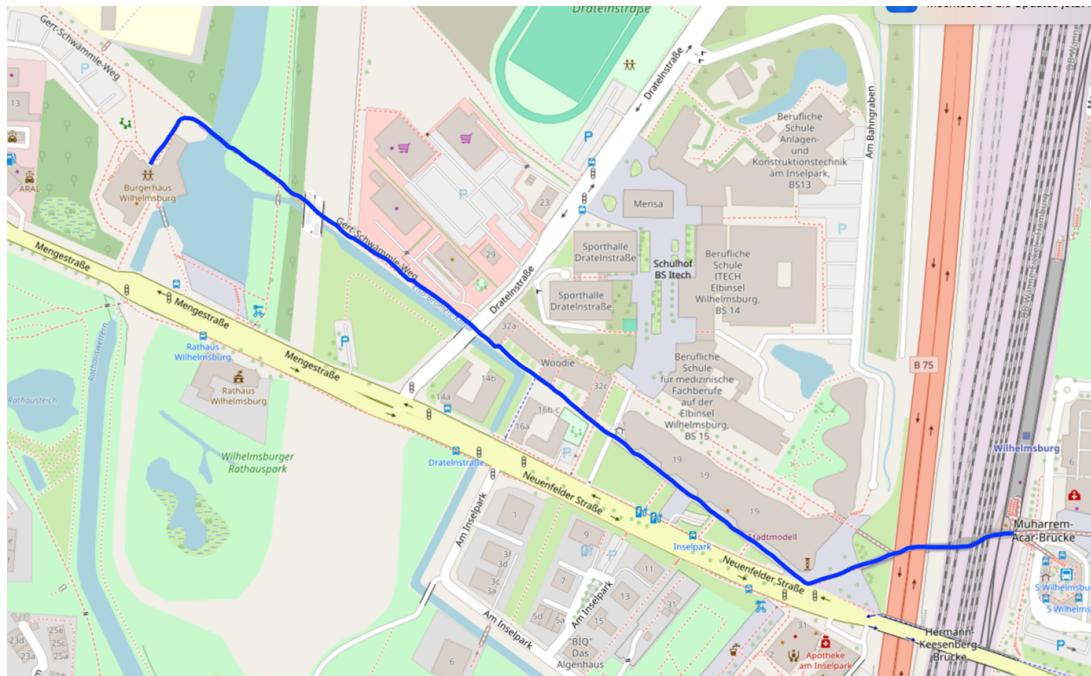
## Conference site plan



## How do I get to the venue?

The Bürgerhaus Wilhelmsburg (Mengestraße 20, 21107 Hamburg) is just a 5-min walk from Wilhelmsburg train station that can be reached via S-Bahn lines 3 and 5 (from the city center in the direction of Hamburg Neugraben and Stade/Buxtehude, respectively). Trains leave every 5-10 minutes. The bus station Rathaus Wilhelmsburg is right next to the venue. Limited free parking is also available.

We recommend the HVV- and Stadtrad-Apps for getting around in Hamburg.



## Accreditation

## Childcare

**How do I get to the social evening? And how do I get home later at night?**

**What is a good place to eat and drink in Hamburg?**

**And if I need money?**

We hope that this information will make your stay as pleasant as possible and that you will enjoy the PuG in Hamburg to the fullest!

# **Timetable**

## Keynote

# Human defensive reactions and their role in approach-avoidance decision making

**Karin Roelofs**

Donders Institute for Brain Cognition and Behavior, Radboud University Nijmegen

**Thursday 09:15 - 10:15 | Large Auditorium**

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Behavioural scientists often assume that automatic defensive threat reactions, while essential in explaining animal behavior, only have limited value when it comes to understanding human behavior. There is, however, increasing evidence that defensive reactions, such as freezing, have an impact on subsequent approach-avoidance decisions under acute threat in humans. Understanding the mechanisms that drive such decisions is particularly relevant for patients with anxiety disorders, whose persistent avoidance is key to the maintenance of their anxiety. In recent years, computational psychiatry has made substantial progress formalizing the mechanisms through which we make (mal)adaptive decisions. However, most current models simply ignore the transient psychophysiological state of the decision maker. Here, I argue that the balance between para-sympathetic and sympathetic activity is instrumental in driving the psychophysiological state of freezing, and that it influences approach-avoidance decisions under acute threat in different ways. To illustrate, I first explore the effects of freezing on different kinds of human action decisions under threat. Next, I discuss recent translational (rodent-human) work that has helped to characterize the neural mechanisms implicated in animal and human defensive freezing. Finally, through two prospective longitudinal studies, I show that individual differences in susceptibility to freezing are predictive of the development of anxiety symptoms. Overall, this work suggests that defensive threat reactions and associated psychophysiological states not only affect acute decision making, but also predict long-term symptom development. As such, these factors have great importance for resilience research, and should constitute an integral part of any theory of human decision making.



# Symposia session 1

## S01 - Exploring new approaches to increase utility of psychophysiological markers for clinical psychology

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**Donnerstag 10:30 - 12:00 | Large auditorium**

**Session chair(s): Julia Klawohn, Hannes Per Carsten**

University of Hamburg

In recent years, biological markers have increasingly been incorporated into clinical research, showing they can further our knowledge of pathophysiological mechanisms underlying mental health problems and help identify new vantage points for interventions. Yet, despite these advances, limitations regarding robustness and effect sizes of associations between biological processes and clinical phenotypes remain and hamper practical utility of existing findings. This symposium will cover several studies that all attempt to improve bridging this gap by applying innovative experimental approaches or interventions, combining measures or methods, exploring underlying dimensions, or incorporating individualized materials. Kai Härpfer will present a large study spanning clinical and subclinical individuals, highlighting the importance of familial risk and lifetime diagnoses for variations in error-monitoring ERPs. Rosa Grützmann will show effects of a novel cognitive training aimed at reducing overactive error-processing in obsessive-compulsive disorder. She further demonstrates that a combination of several ERP markers can help improve diagnostic classification of mental health issues, like problematic internet use. Hannes Per Carsten extends the modification approach showing that VR-induced checking behavior may increase error-processing. Mareike Bayer presents a study combining EEG and fMRI to investigate emotional face processing in autism spectrum conditions, with results highlighting the importance of individualized stimuli. Finally, Julia Klawohn will show results indicating that emotional reactivity, as captured with both ERP and cardiac measures, can contribute to predictions of individual psychotherapy success in obsessive-compulsive disorder. Together, these findings capture the complexity of links between psychophysiological markers and psychopathology and propose leverage points for translational research strategies.

**Härpfer K.** Enhanced performance monitoring within the anxiety and obsessive-compulsive spectrum: A transdiagnostic and dimensional perspective Kai Härpfer (1), Hannes Per Carsten (1), Franziska Magdalena Kausche (1), Anja Riesel (1) | 10:30

**Grützmann R.** Utility of psychophysiological markers of executive functions: Examples from clinical application in obsessive-compulsive disorder and problematic internet use | 10:45

**Carsten H.** [TitlePlaceholder] | 11:00

**Bayer M.** Temporal and spatial characteristics of emotional face processing in Autism Spectrum Conditions | 11:15

**Klawohn J.** Employing psychophysiological markers to predict treatment effects in obsessive-compulsive disorder | 11:30

## **S02 - Leveraging Single-Trial Electrophysiological Data in the Cognitive Neurosciences: Implementations, Insights, and Challenges**

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**Donnerstag 10:30 - 12:00 | Room 1.12/1.**

**Session chair(s): Norman Forschack**

Max Planck Institute for Human Cognitive and Brain Sciences, Max Planck Institute for Human Cognitive and Brain Sciences

Electrophysiological recordings have been instrumental in unraveling the brain's functional dynamics, offering insights into neural processes underlying perception, cognition, and behavior. In recent years, there has been a growing interest in the analysis of single-trial electrophysiological data, which holds the promise of unveiling the brain's intricate temporal dynamics on a trial-by-trial basis. The symposium aims to explore the wealth of knowledge that can be derived from investigating single-trial data and to address the unique challenges that researchers face in harnessing its potential. Specifically, the symposium asks how utilizing single-trial data helps to characterize and conceptualize general principles of neural processing and what we can learn about general neural mechanisms underlying perception, cognitive functions, and behavior. The work discussed in the symposium will focus on the analysis of neural measures such as 'traditional' event-related potentials (ERPs), oscillatory activity, and 'new' measures like signal entropy as well as single-trial behavioral measures. By showcasing recent experiments, we will explore emerging technologies and computational tools that can aid in the analysis of single-trial data, such as spectral decomposition, denoising procedures, information theoretic measures, and Bayesian statistical modeling approaches. We present how these novel methodologies are implemented to explicitly probe and uncover general neural mechanisms underlying perception and cognitive functions. In a joint discussion, we will deepen our understanding of the advantages, limitations, conceptual assumptions, and prerequisites as well as the obstacles of analyzing single-trial data to advance our understanding of the dynamic processes of the brain and their relationship to human cognition and behavior.

**Studenova A.** On the relevance of oscillations in generation of evoked responses | 10:30

**Gundlach C.** Alpha-band fluctuations and their role in behavioral performance in a probabilistic spatial cueing design: Attentional resource allocation or consequence of top-down guided shifts of spatial attention? | 10:50

**Kopcanova M.** Time-on-task explains variability in oscillatory brain-behaviour relationships; | 11:10

**Kloosterman N.** Leveraging trial-to-trial neural dynamics to understand human cognition; | 11:30

## S03 - Cognitive Brain States from a Network Neuroscience Perspective

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**Donnerstag 10:30 - 12:00 | Small auditorium**

**Session chair(s): Kirsten Hilger**

Würzburg University

Brain states are recurring patterns of distributed brain activity. Such states originate from the brain network's structural scaffold and offer insight into the complex operations enabling human cognition. Understanding their spatio-temporal properties, their occurrences as well as their transitions holds promise for deciphering the neurobiological bases of cognitive processes, individual differences and disease-specific alterations. This symposium focuses on brain states arising from specific cognitive demands and discusses their potential influence on behavior. We showcase five contributions that employ experimental paradigms to explicitly trigger brain states of active cognition or provide an environmental context for interpreting the behavioral implications of brain state changes. All contributions utilize techniques from network science or artificial intelligence (AI) as common methodological framework. We explore various aspects of brain states, beginning with states emerging from effortful cognitive processing during an established intelligence test. Next, the utilization of recurrent neural networks to simulate brain state dynamics during different cognitive tasks will be explored and the "complexome" will be introduced. Finally, memory-related brain states and their alterations during cognitive aging will be presented, and the examination of changes in brain states following cognitive training interventions will be outlined in the context of clinical applications. Following these individual contributions, we will conclude the symposium with a podium discussion. This discussion will focus on opportunities and challenges induced by the study of brain states with techniques of network science and AI by considering conceptual and methodological boundaries.

**Thiele J.** The neural code of human intelligence: A multi-modal exploration of brain states during the Ravens matrices test | 10:30

**Frank O.** Common principles of cognitive functions in human brain and artificial networks | 10:45

**Krohn S.** The "complexome" – a spatiotemporal complexity architecture of human brain activity | 11:00

**Richter A.** Unveiling neurocognitive aging through comprehensive fMRI scores | 11:15

**Valk S.** Structural and functional network re-organization following social mental training | 11:30

## S04 - Perception under uncertainty

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**Donnerstag 10:30 - 12:00 | Room 0.12/0.**

**Session chair(s): Franziska Knolle**

University of Marburg

In recent years, there has been a growing understanding of the brain as a predictive entity (Friston, 2010; Clark, 2013; Yon & Frith, 2021). Given the often noisy and ambiguous nature of sensory input, coupled with its indirect accessibility, our perception of the environment is covered in uncertainty. Consequently, the brain must construct a model of the world to anticipate or predict future events and infer their causes. Formalised in the Bayesian brain hypothesis, prior knowledge is combined with sensory likelihood to generate percepts, and prediction error - the difference between what has been expected based on the prior and the sensory input - are used to update the model and minimise prediction errors in the future (Rascola & Wagner, 1972). However, due to the probabilistic nature of the prior knowledge and sensory likelihood, the model must be flexible enough to tolerate inaccuracies and yet adaptable to change, despite the relative uncertainty of prediction errors. Interestingly, imbalances between precision of prior knowledge and precision of sensory likelihood may result in false percepts and may even explain the emergence of clinical symptoms, such as hallucinations or delusions. While this may explain how the brain reacts to uncertainty, the underlying mechanisms still remain poorly understood, requiring empirical evidence. With this symposium, we are, therefore, bringing together recent evidence from different experimental studies using behaviour, TMS, EEG, MEG, and computational modelling in clinical and non-clinical samples to investigate how uncertainty impacts perception within different modalities in clinical and non-clinical populations.

**Eckert A.** Cross-Modality Evidence for Reduced Choice History Biases in Psychosis-Prone Individuals | 10:30

**Peylo C.** Oscillatory signatures of predictions in social and sensory perception | 10:45

**Haarsma J.** Shared and diverging neural dynamics underlying false and veridical perception | 11:00

**Sterner E.** Alterations in predictive language processing are associated with schizotypal and autistic traits | 11:15

**Knolle F.** Alterations in the use of prior semantic knowledge relative to sensory information from acute psychosis to psychotic remission: a longitudinal approach | 11:30

## **S05 - From Brain Mapping to Behavior: Multimodal Insights into TMS Effects**

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**Donnerstag 10:30 - 12:00 | Room 1.18**

**Session chair(s): Ole Numssen, Sandra Martin**

MR Center of Excellence, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna

This symposium on transcranial magnetic stimulation (TMS) addresses the urgent need to deepen our understanding of TMS effects on the brain, particularly given the substantial intra- and inter-individual variability in responses. This variability underscores a critical challenge in optimizing TMS for both neuroscience research and clinical applications. We will explore TMS from several complementary angles: its integration with fMRI and EEG, advances in electric field modeling to refine TMS focality and dosage, and assessments of its effects on cognitive function using behavioral and statistical methods.

Maria Vasileiadis will highlight the use of interleaved TMS-fMRI to elucidate how individual differences, cognitive states, and stimulation parameters influence TMS effects and offer ways to improve treatment efficacy. Sybren van Hoornweder will discuss the application of advanced forward models in TMS-EEG to improve our understanding of cortical excitability and the neural basis of TMS responses. Sandra Martin will critically evaluate the differential effects of different TMS protocols on cognitive control and executive functions, highlighting the strategic importance of protocol selection. Ole Numssen will present personalized approaches to TMS, using electric field modeling to tailor interventions based on individual neurophysiological profiles, addressing the need for individualized treatment strategies.

By weaving together insights from EEG, MRI, electric field considerations, and behavioral and statistical analyses, the symposium aims to promote a holistic understanding of TMS. This collaborative approach is critical to advancing TMS research and clinical practice, reducing response variability, and improving the precision and efficacy of neuromodulation techniques.

**Vasileiadis M.** Variability in interleaved TMS-fMRI responses related to individual factors and cognitive state | 10:30

**Hoornweder S.** Investigating TMS-Induced Electric Fields and Subsequent EEG Source Fields: Analysing the N15 TMS-EEG Peak Considering Dose and State Effects | 10:50

**Martin S.** Beyond Motor Effects: The Impact of TMS Protocol Selection on cognitive functions | 11:10

**Numssen O.** Beyond One-Size-Fits-All: Advancing TMS with Personalized Electric Field Modeling | 11:30

## Symposia session 2

### S06 - Facets of (a)motivation: effort-based decision-making in health and disease

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**Donnerstag 13:00 - 14:30 | Room 1.12/1.**

**Session chair(s): Mario Bogdanov**

University of Hamburg

Motivation constitutes an essential requirement for any form of goal-directed behavior. Yet, people's willingness to perform actions for desired outcomes varies substantially and can be affected by a plethora of intra-personal and environmental factors, such as the individual's affective state or the presence of psychiatric or neurological conditions. However, many of the behavioral and biological mechanisms governing motivated behavior remain elusive. To investigate motivational processes more formally, recent work has started to employ effort-based decision-making tasks grounded in the (neuroeconomic) assumption that individuals modulate effort investment based on a cost-benefit analysis that weighs anticipated task demand against potential rewards. In this symposium, we will present data from recent studies on effort-based decision-making in clinical and healthy populations, highlighting specific motivational deficits observed in current and remitted psychopathology, diverse modulatory influences of stress exposure on motivation, and novel avenues to treatment of amotivation. First, Matthias Pillny presents meta-analytic findings on effort-based decision-making in patients with depressive disorders and schizophrenia, showcasing the transdiagnostic nature of these symptoms. Then, Manuel Kuhn provides evidence for impaired decision-making processes in patients with remitted depression based on computational modeling of choice behavior. Mario Bogdanov will link both recent stress exposure and early-life adversity to reduced effort exertion for reward in the present. In contrast, Kristína Pavlíčková and Dennis Hernaus showcase how acute stress may increase effort expenditure to avoid punishment. Finally, Corinna Schulz will present how manipulations of the body-brain axis may help to increase motivation in patients with major depression.

**Pillny M.** Effort-Based Decision-Making in psychopathology - A transdiagnostic multilevel meta-analysis | 13:00

**Kuhn M.** Computational Phenotyping of Effort-Based Decision Making in Unmedicated Adults with Remitted Depression | 13:15

**Bogdanov M.** Recent stress and early life adversity shape effort-based decision-making in healthy adults | 13:30

**Pavlíčková K.** Balancing the costs and benefits of avoiding threats | 13:45

**Schulz C.** From Gut to Goals: Boosting Effort via Modulation of the Body-Brain Axis | 14:00

## **S07 - Exploring Methodological Challenges and Solutions in Psychophysiological Research: The case example of EEG**

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**Donnerstag 13:00 - 14:30 | Room 1.18**

**Session chair(s): Johannes Rodrigues**

Johannes Gutenberg University

This symposium delves into challenges around validity, reliability, and interpretability of findings while analyzing psychophysiological data. A range of methodological issues will be explored using electroencephalography (EEG) as an illustrative example. First, Mareike Hülsemann discusses the approach of mass univariate analysis with cluster-based permutation testing (Groppe et al., 2011). The advantages and pitfalls of this data-driven approach are illustrated using the example of event-related and time-frequency analysis in the auditory and visual domains. Second, Mario Reutter investigates the influence of analysis decisions on the trade-off between effect size and reliability of the N2pc component in a Dot Probe paradigm. The results are integrated into a multi-level perspective on signal-to-noise ratios and related to the reliability paradox (Hedge et al., 2018). Third, Johannes Rodrigues will present the impact of quantification methods and reference schemes (CSD, linked mastoids, average) on feedback-related negativity (FRN) amplitudes in a trust game paradigm: In addition, the data questions the quality criterion SME provided by Luck et. al., 2021. Fourth, Sven Lesche will introduce a template matching algorithm that can automatically extract ERP component latencies and provides a fit statistic quantifying the degree of certainty in measurement. Results from a simulation study aiming to validate this new approach will be discussed. In summary, this symposium fosters dialogue and innovation to overcome methodological challenges in psychophysiological research.

**Hülsemann M.** Chances and pitfalls of mass univariate analysis with cluster-based permutation testing for exploratory and hypothesis-driven psychophysiological research | 13:00

**Reutter M.** The trade-off between effect size and reliability: Insights from a multiverse-analysis of electroencephalographical data within a Dot Probe paradigm. | 13:20

**Rodrigues J.** Questioning the suitability of the quality criterion SME for EEG data: Exploration of the influence of the quantification method and reference scheme on FRN and SME of FRN amplitudes. | 13:40

**Lesche S.** Automatically Extracting ERP Component Latencies Using a Dynamic Template Matching Algorithm | 14:00

## **S08 - Unraveling cognitive and executive functions using human single-neuron recordings**

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**Donnerstag 13:00 - 14:30 | small auditorium**

**Session chair(s): Jonathan Daume, Stefanie Liebe**

Netherlands Institute for Neuroscience

Single-neuron recordings provide unparalleled insights into neural mechanisms underlying human behavior at cellular resolution. This symposium showcases several lines of research from intracranial recordings in humans that reveal the critical role of single-neuron activity in cognitive and executive functions. Our studies span the dynamic neural underpinnings of language comprehension, the processes underlying memory encoding and control, and the neural disruptions of motor and cognitive aspects in movement disorders. The first talk reveals how pronouns reactivate specific neuron representations of nouns, emphasizing a dynamic semantic memory network crucial for efficient language comprehension. The second presentation challenges a traditional view on the neural implementation of temporal order memory and provides a novel link between sequential memory and stimulus timing using recurrent neural network modeling. The third study explores the regulation of working memory through theta-gamma phase-amplitude coupling, demonstrating how cognitive control and hippocampal single-neuron activity converge to enhance memory fidelity. The final talk uncovers the critical role of a cognitive-motor basal ganglia interface in locomotion control in Parkinson's disease. Through these diverse yet interconnected studies, the symposium demonstrates the unique contributions of human single-neuron recordings to our understanding of the brain's capability to process complex cognitive tasks in language, memory and movement control, and advances our fundamental knowledge of the neural underpinnings underlying human cognition.

**Dijksterhuis D.** Pronouns activate concept cells in the human hippocampus | 13:00

**Liebe S.** Theta-based spike-phase coding supports temporal-order working memory in the human MTL and recurrent neural networks | 13:20

**Daume J.** Control of working memory by phase-amplitude coupling of human hippocampal neurons | 13:40

**Gulberti A.** Neuronal signals from deep brain areas related to the freezing of gait phenomenon in Parkinson's disease | 14:00

## **S09 - The focused mind: neural signatures of selective attention in perception and memory**

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**Donnerstag 13:00 - 14:30 | Large auditorium**

**Session chair(s): Melinda Sabo**

University of Lübeck

Selective attention plays a crucial role in shaping both perception and memory. Here, we present recent studies that investigate this role at the levels of perception, working memory and long-term memory using different neuroimaging approaches. Thereby, we aim to characterize selective attention and its neural signatures at different stages of information processing, and how they relate to goal-directed behavior. In the first talk, Sarah Tune will provide evidence for the neural implementation of auditory attention via neural speech tracking and its functional relevance to attentive listening behavior in a longitudinal cohort of aging individuals. Next, Niko Busch will discuss whether alpha power lateralization (10 Hz) plays a causal role in attentional orienting in the context of perception and working memory. The following two talks will address the topic of distraction during working memory storage. First, Philipp Deutsch will show how unattended and attended distractors interfere with neural representations of auditory content held in working memory captured via decoding of fMRI signals. Subsequently, Daniel Schneider will demonstrate how oscillatory EEG correlates of selective attention can be used to investigate the resumption of a working memory task after an interruption. Finally, based on EEG findings, Melinda Sabo will discuss whether the principles of attentional selection obtained in the perceptual and working memory domain can be transferred to long-term memory. This presentation will conclude the symposium by examining the similarities and differences in selective attention for various instances of goal-directed information processing.

**Tune S.** Can neural attentional filters predict listening behaviour dynamics in healthy aging? | 13:00

**Busch N.** The role of lateralized alpha oscillations in visual exogenous attention and short-term memory | 13:15

**Deutsch P.** Distraction Disrupts Working Memory Decoding in Auditory Cortex | 13:30

**Schneider D.** Interrupting working memory: A self-paced resumption phase facilitates primary task performance following an interruption | 13:45

**Sabo M.** The spotlight of memory: attentional selection of internal long-term memory representations | 14:00

## **S10 - Towards the Study of Interacting Emotional and Cognitive Processes and Their Neurophysiological Basis**

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**Donnerstag 13:00 - 14:30 | Room 0.12/0.**

**Session chair(s): Katharina Lingelbach**

Department of Psychology, Bielefeld University,

In the past, cognitive and emotional processes were often investigated separately, ignoring their interdependence in human nature. However, there has been a recent shift towards studying how these processes interact. Nevertheless, the underlying neurophysiological basis and mechanisms remain unclear. The symposium aims to integrate new insights from various approaches and paradigms. It will be organised around three research questions. How and in what circumstances do cognitive states, like attention or load, modulate emotional processing (R1)? How do emotional stimuli affect cognitive processes, such as memory, attention or executive functioning (R2)? Utilizing intracranial recordings of the amygdala and parallel scalp recordings, Enya Weidner shows how attention to valence tunes emotion processing in the face processing network and amygdala and how this interaction changes over time. Katharina Lingelbach presents spatiotemporal and oscillatory signatures of simultaneous and sustained dual-task interactions of emotional face processing and working memory load. Anya Dietrich introduces temporal and frequency-specific signatures of emotional interference inhibition and emotion-cognition integration. How does the brain regulate emotional processing or alter the meaning of emotional stimuli (R3)? Christoph Scheffel discusses the role of cognitive effort in emotion regulation. Effects of effort and emotion regulation in different task phases and post-regulatory effects will be addressed on a subjective and physiological level. Maren Bertheau talks about error potentials and their link to emotion regulation when monitoring moral decisions made by autonomous cars in a dilemma situation. We close the symposium with an open discussion on the implications, challenges, and future directions of the research.

**Weidner E.** How Attention to Valence tunes Widespread Emotion Processing: Insights from Intracranial EEG and Scalp Recordings | 13:00

**Lingelbach K.** Spatiotemporal and Oscillatory Signatures of Emotional Face Processing and Working Memory Load in a Dual-Task | 13:15

**Dietrich A.** Understanding the Neural Mechanisms of Emotion-Cognition Interaction in Space, Time, Frequency, And Information Transfer | 13:30

**Scheffel C.** The Role of Cognitive Effort in Emotion Regulation | 14:00

**Bertheau M.** The Moral Machine in the EEG Lab | 14:15

## Symposia session 3

### S11 - Bridging the gap: a translational perspective on memory related sleep oscillations across species.

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**Donnerstag 14:45 - 16:15 | Room 1.12/1.**

**Session chair(s): Fabian Schwimmbeck, Jacqueline van der Meij**

University of Tübingen

Sleep is thought to support memory consolidation, with particular sleep oscillations, such as cortical slow oscillations, thalamic spindles and hippocampal sharp-wave ripples, facilitating interregional communication and plasticity. Animal electrophysiology has traditionally spearheaded work on the neural scaffolding of memory consolidation. However, rare invasive recordings in humans now facilitate translating and extending these findings across species. Following a translational perspective, this symposium will present the latest findings on ripples and sleep oscillations from animal and human research to provide a forum for cross-species discussion. The first two talks will focus on sleep oscillations in rodents. Niels Niethard (University of Tübingen) will talk about the role of sleep oscillations in mediating network dynamics within local hippocampal and cortical circuits during SWS and subsequent REM sleep. Jacqueline van der Meij (Radboud University Nijmegen) will present behavioural and electrophysiological results of a newly developed task to study the development of cognitive maps in rats. In a translational approach, Frank van Schalkwijk (University of Tübingen) demonstrates a functional division between archicortical ripples promoting hippocampal-neocortical communication and neocortical ripples facilitating local cortical processes in both humans and rodents. Finally, Fabian Schwimmbeck (University of Munich) will provide evidence for a ripple-triggered hippocampal-neocortical information flow by leveraging single-neuron recordings along the hippocampal output network during human sleep. Together, this symposium showcases how sleep oscillations shape neural dynamics in rodents and humans, fostering discussions on converging evidence for their pivotal role in memory consolidation across species."

**Niethard N.** Sleep oscillations and synaptic plasticity: A circuit perspective | 14:45

**Meij J.** Learning evoked brain activity at a local and global scale during sleep | 15:05

**Schalkwijk F.** An evolutionary conserved division-of-labor between archicortical and neocortical ripples organizes information transfer during sleep | 15:25

**Schwimmbeck F.** Single-neuron activity in the human MTL shows directed hippocampal-neocortical information flow during sharp-wave ripples during sleep | 15:45

## **S12 - Uncovering lifespan signatures: A multimodal perspective at the interface of development, aging, and disease risk**

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**Donnerstag 14:45 - 16:15 | small auditorium**

**Session chair(s): Christina Stier**

nan

The emergence of various disorders often coincides with specific age windows, indicating alterations in developmental or aging pathways. Efforts to quantify biological aging and establish normative modeling using brain imaging have gained considerable momentum, mainly driven by big-data initiatives and MRI methods. This symposium aims to demonstrate the utility of such approaches and integrate evidence from functional modalities for a comprehensive understanding of the human lifespan. Dominik Kraft (University of Tübingen) will focus on the variability of brain-puberty interactions and the problem of high-dimensional data and embedding. Then, Philippe Jawinski (Humboldt University Berlin) will present results from the largest genome-wide association study of structural brain age gaps to date, linking accelerated or decelerated aging to mental and physical health. Similar prediction analyses and age-related studies utilizing M/EEG have often been limited by methodological constraints in the past, resulting in rare or inconsistent findings. Christina Stier (University Hospital Münster) will address this gap by discussing conventional and novel markers of neural dynamics that are informative of individual age across adulthood. Related to this, Elena Cesnaite (University of Münster) will then elaborate on brain-cognition relationships in old age using a large EEG repository, focusing on (non-) rhythmic activity. Deniz Kumral (University of Freiburg) will close the circle by discussing the contributions of age-related signal variability obtained with fMRI and EEG and the interplay with the brain's structural architecture. Overall, a panel of emerging experts will provide multimodal perspectives on the lifespan, incorporating machine learning and imaging, genetics, cognition, and structure-function relationships.

**n n.** Investigating brain development through the lenses of pubertal maturation | 14:45

**Jawinski P.** Genome-wide analysis of brain age identifies 25 associated loci and unveils relationships with mental and physical health | 15:00

**Stier C.** Time-series phenotyping across the adult lifespan: age prediction using MEG and massive feature extraction | 15:15

**Cesnaite E.** Alterations in rhythmic and non-rhythmic resting-state EEG activity and their link to cognition in older age | 15:30

**Kumral D.** Linking structural and functional changes during aging | 15:45

## **S13 - Exploring emotional dynamics: Physiological and subjective insights from clinical and experimental perspectives**

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**Donnerstag 14:45 - 16:15 | Large auditorium**

**Session chair(s): Janine Wirkner, Maike Hollandt**

University of Greifswald

In this symposium, we explore research on threat reactivity, fear extinction, and emotion regulation, providing valuable insights from both clinical and experimental perspectives to enhance our understanding of the complex biopsychosocial factors associated with mental disorders. The first contribution investigates threat reactivity in patients with primary anxiety or depressive disorders within the Research Domain Criteria (RDoC) framework. It highlights diverse threat reactivity patterns associated with clinical characteristics, emphasizing the necessity of comprehensive assessments in clinical settings. Utilizing an event-related approach, the second study explores fear extinction in patients with anxiety disorders compared to healthy controls. It suggests increased uncertainty among patients during extinction training, shedding light on potential mechanisms underlying fear extinction deficits. The third study investigates extinction generalization in exposure-based treatments, employing mental imagery to promote the updating of extinction memory. This approach shows promise in enhancing extinction for specific stimuli, offering new avenues for treatment development. Building on the defense cascade model, the fourth study examines autonomic defensive responses to social threat. It identifies similar dynamics in response to approaching social threat, while also uncovering specific response patterns not previously observed in research. In the final contribution, a novel paradigm combining emotional conflict paradigms with multimodal measurements is presented. This innovative approach underscores the potential for advancing our understanding of emotional regulation processes. Together, these studies contribute to a deeper comprehension of the mechanisms underlying mental disorders, offering insights that may inform both clinical practice and future research.

**Hollandt M.** Individual differences in threat reactivity among patients with anxiety and depressive disorders based on the RDoC framework | 14:45

**Droste K.** Exploring the multimodal dynamics of threat expectancy change during fear extinction: Insights from a novel event-related approach | 15:00

**Scheuermann D.** Enhancing extinction generalization in a category-based fear conditioning paradigm | 15:15

**Szeska C.** Dynamic organization of autonomic defensive responses to social threat | 15:30

**Yang Y.** Multimodal measurement of Affective Expressive Flexibility (AEF) – Evaluation of a new experimental paradigm | 15:45

## **S14 - Double the trouble, twice the fun: interactions between multiple mental representations across the cortical sheet.**

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**Donnerstag 14:45 - 16:15 | Room 0.12/0.**

**Session chair(s): Thomas Christophel**

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As we navigate daily life, our senses are subject to a merciless onslaught of incoming stimulation only a tiny subset of which is relevant for future behavior. Working memory enables us to retain these relevant inputs for subsequent use. But our cortical representational resources are limited and consequently we are tasked with encoding, updating, selecting, removing, and refreshing the right information using these resources. Work focusing on individual mental representations and their cortical instantiation has revealed that both anterior and posterior regions can represent working memory contents. Here, using data from humans and nonhuman primates, we investigate the interactions between multiple mental and neural representations using multivariate pattern analysis. Rosanne Rademaker will show how incoming sensory information interacts with items held in working memory, and what happens when visual input becomes task relevant. Thomas Christophel will demonstrate how load effects in delayed recall can be explained by altered recruitment of cortical regions as the number of retained items increases. Polina Iamshchinina will talk about how attending to a sensory input and selecting a mental representation from working memory relies on a shared mechanism. Surya Gayet will interrogate bidirectional interactions between memory representations and perception during naturalistic search. Finally, Christoph Blezdowski will demonstrate that even item from previous trials that are inadvertently represented can alter currently relevant mental representations and behavior. Thereby we shed light on the manifold of interactions between concurrently represented mental representations and how they jointly guide our interactions with the world around us.

**Rademaker R.** Manipulating attentional priority creates a trade-off between memory and sensory representations in human visual cortex | 14:45

**Christophel T.** Independent representational roles for sensory and anterior regions under working memory load | 15:00

**Iamshchinina P.** Neural ensembles within prefrontal cortex generalize across attention and working memory | 15:15

**Gayet S.** Bidirectional interactions between memory representations and perception during naturalistic search | 15:30

**n n.** A direct neural signature of serial dependence in working memory | 15:45

## **S15 - Psychobiology of Treatment Expectation**

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**Donnerstag 14:45 - 16:15 | Room 1.18**

**Session chair(s): Lieven Schenk, Stefanie Brassen**

University Medical Center Hamburg-Eppendorf

This symposium will delve into latest advances in research on individuals' treatment expectations as important modulators of health outcomes. Understanding the psychobiological mechanisms of this influence has the potential to capitalize on these effects, optimizing treatment strategies and improving health outcomes. Early career researchers from the Collaborative Research Center "Treatment Expectation" (CRC 289) will provide novel neurobehavioral insights into the effects of positive (placebo) and negative (nocebo) expectations on pain and the affective system. The presented studies used controlled induction protocols and a rich variety of methods, including neuroimaging, psychophysiology, behavioural measurements, and machine learning approaches. First, Lieven Schenk will present data on the amplification of treatment expectations and placebo analgesia through negative side effects, indicating a strong involvement of the descending pain modulatory system. Second, Jana Aulenkamp will address the differences in expectation effects on visceral and somatic pain perception, emphasizing the role of negative instruction and experience. Next, Christoph Wittkamp will present the influence of positive and negative expectations on pain perception using EEG-fMRI, highlighting distinct neural representations during pain processing. Afterwards, Daniela Marrero Polegre will demonstrate how positive expectations can improve mood and emotional processing in older individuals, with a special focus on prefrontal-limbic regulation. Finally, Raviteja Kotikalapudi will utilize machine learning approaches on large neuroimaging datasets to predict individual differences in treatment expectations, underlining the potential for personalized medicine and clinical interventions. This symposium aims to promote interdisciplinary discussions about the principles and potential benefits of expectations in health and disease.

**Schenk L.** How side effects can improve treatment efficacy | 14:45

**Aulenkamp J.** Nocebo modulation of pain perception across pain modalities | 15:00

**Wittkamp C.** The neural dynamics of pain-related expectation generation: A combined EEG-fMRI study | 15:15

**Polegre D.** Expectation effects on emotional processing in late life | 15:30

**Kotikalapudi R.** Exploring the neurobiological signatures of treatment expectation | 15:45

# Poster session 1

## Attention and Perception

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### **P.009 - The Influence of Gain and Loss Instruction on Feedback-Processing**

A. Kläser, *Bergische Universität Wuppertal*

### **P.125 - The interplay of sustained attention and cognitive performance in a Go-NoGo task**

L. Stagneth, *Universität zu Kiel*

### **P.129 - Interaction of attentional and learning processes during fear acquisition and extinction**

E. Tavacioglu, *University of Würzburg*

### **P.151 - The effect of temporal predictability on defensive dynamics during threat anticipation**

A. Merscher, *Universität Würzburg*

### **P.153 - Neurophysiological Mechanisms of Flexible Integration of Priors in Visual Decisions**

G. Iwama, *Hertie Institute for Clinical Brain Research, University of Tübingen*

### **P.157 - "Are squirrels as fluffy as they look?" A study of the emergence and relevance of mind wandering in cockpit applications**

A. Hamann, *Deutsches Zentrum für Luft- und Raumfahrt e.V. DLR*

### **P.193 - Causal inference can explain postdictive multisensory illusions**

G. Günaydin, *Charité - Universitätsmedizin Berlin*

### **P.197 - Confirmation bias through selective readout of evidence in human cortex**

H. Park, *Universitätsklinikum Hamburg-Eppendorf*

### **P.231 - Dependence of eye movement-related eardrum oscillations (EMREO) on current sensory input and recent sensory experience**

H. Abbasi, *Biological Psychology and Neuropsychology, University of Hamburg, Hamburg, Germany*

### **P.311 - Neural correlates of reward-driven attention deployment**

T. Feldmann-Wüstefeld, *Technische Universität Berlin*

### **P.339 - Causal contributions of prefrontal and intraparietal cortices to audiovisual causal inference**

T. Rohe, *Tim Rohe (Institut für Psychologie, FAU Erlangen-Nürnberg)*

**P.347 - Variation in neural activity in individuals experiencing minimal and mild-moderate visually induced motion sickness (VIMS)**

S. Berti, Stefan Berti (Johannes Gutenberg-Universität Mainz)

**P.389 - Differential effects of self-initiated, externally triggered, and passive movements on action-outcome processing: Insights from EEG and behavior**

Y. He, Yifei He (Philipps University Marburg)

**P.447 - The role of motor representations for working memory when dealing with interference: New evidence by neural oscillations**

S. Ozdemir, Sahcan Ozdemir (Leibniz Research Centre for Working Environment and Human Factors)

**P.449 - Resuming after interruptions, to hurry up or to take your time?**

S. Ülkü, Soner Ülkü (Leibniz Research Centre for Working Environment and Human Factors)

**P.451 - Examining visuomotor expectations in a virtual-reality based hand movement and eye tracking task**

F. Quirmbach, Felix Quirmbach (Technische Universität Dresden)

**P.457 - Temporal Prediction in Non-Deterministic Continuous Environments: investigating the role of oscillatory entrainment and interval learning**

E. Hosseini, Elmira Hosseini (Max Planck Institute for Biological Cybernetics)

**P.467 - Effects of reward-based attentional bias modification are unspecific for experimental group and explained by habituation**

S. Kang, Susan Kang

## Cognition

**P.011 - Anticipatory eye movements accompanying prevention and avoidance actions**

S. Tonn, Universität Trier

**P.017 - Functional segregation of hemispheric asymmetries in EEG across different cognitive domains**

P. Reinke, Medical School hamburg

**P.049 - Mechanisms of Training-Related Change in Processing Speed: A Drift-Diffusion Model Approach**

A. Reinhartz, Medical School Hamburg

**P.079 - Individual affective space (Individueller affektiver Raum)**

F. Horn, *Universität Regensburg*

**P.099 - Exercise-induced Effects on Neural Correlates of Cognition and Emotion Regulation**

L. Wallenwein, *Universität Konstanz*

**P.105 - Implicit and explicit emotion regulation and response inhibition in adult ADHD**

A. Sebastian, *Universitätsklinikum Mainz*

**P.113 - Motivational Context and Error Processing in Impulsivity and Compulsivity**

R. Overmeyer, *TU Dresden*

**P.143 - Effects of Cortisol on Path Integration**

O. Akan, *Osman Akan*

**P.159 - Exploring the Influence of Catecholaminergic Modulation on Event Segmentation: Insights from Pharmacological Manipulation**

A. Prochnow, *Universitätsklinikum Dresden*

**P.161 - Modulation of Neural Correlates of Model-based Performance with Impulsivity and Compulsivity**

K. Dück, *TU Dresden*

**P.183 - Heuristic pruning of the decision tree at low probabilities and probability discounting in three-step planning in young and older adults**

S. Sass, *TU Dresden*

**P.189 - Reward morphs non-spatial cognitive maps in humans**

N. Moneta, *Universität Hamburg*

**P.199 - Memory effects of visual and olfactory landmark information in human wayfinding**

M. Schwarz, *Justus Liebig Universität Gießen*

**P.205 - Mid-Frontal Brain Signal Variability Predicts Auditory Discrimination Performance**

N. Kloosterman, *Universität zu Lübeck*

**P.207 - Does affective self-other distinction require cognitive resources?**

K. Döhr, *Universität zu Lübeck*

**P.219 - Neural phase reset as a mechanism of predicting time across different sensory modalities**

R. Burke, *Rebecca Burke*

**P.229 - Is rest simply the best? An Investigation of the effectiveness and acceptance of a rest break and a motor task regarding the reduction of Mental Fatigue**

V. Rubahn, *Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)*

**P.235 - Alterations of Functional Network Topology Underlying Cognitive Flexibility and Stability in Schizophrenia**

A. Zahedi, *University of Muenster*

**P.237 - Anyplace, Anywhere, Anytime- Investigating the Pe and its Narcissism-Related Variations Using Cluster-Based Permutation Testing**

M. Kückelhaus, *Maya Kückelhaus*

**P.242 - The cerebellum is involved in processing reward prediction errors - evidence from patients with cerebellar stroke**

D. Huvermann, *Dana Huvermann*

**P.265 - FEEDBACK MONITORING DURING ACTIVE AND OBSERVATIONAL LEARNING IN OBSESSIVE-COMPULSIVE DISORDER: AN ERP STUDY**

J. Vahedi, *Julian Vahedi*

**P.269 - The influence of cardiorespiratory phase locking on voluntary action initiation and sense of agency: preliminary results**

M. Gerosa, *Max Planck Institute for Human Cognitive and Brain Sciences*

**P.271 - Negative anticipation leads to a preference for experiencing intense pain earlier rather than later in time**

M. Habermann, *Marie Habermann*

**P.277 - Prediction of individual cognitive test performance based on imaging and non-imaging data in older adults**

C. Krämer, *Camilla Krämer*

**P.291 - Is task similarity of functional connectivity across tasks related to modality-specific dual-task interferences?**

M. Mückstein, *Marie Mückstein*

**P.297 - It's about time: Specific and unspecific effects of future simulation on farsighted decisions**

H. Schultz, *Heidrun Schultz*

**P.305 - Beyond Expectation: A Novel Paradigm Disentangling Semantic Processing and Predictive Coding**

A. Petukhova, *Translational Neuroimaging Group, Department of Psychiatry and Psychotherapy, Philipps-Universität Marburg*

**P.319 - The functional form of context-dependence in perceptual multialternative decisions**

M. Tohidimoghaddam, *Department of Neurophysiology and Pathophysiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

**P.325 - An inductive bias for slow features in human reinforcement learning**

N. Hedrich, *University of Hamburg*

**P.327 - Dopamine's role in visual imagery: Pilot data from an experimental pharmacological study**

J. Karneboge, *Universität Bonn*

**P.375 - Walk-n-talk: Gait patterns and verbal communication under changing environmental conditions**

J. Herrmann, *Jessica Herrmann*

**P.385 - Pupil dilation offers a time-window on prediction error**

O. Colizoli, *Olympia Colizoli (Radboud University)*

**P.395 - Neural dynamics of predicting others' decisions**

E. Stuchlý, *Erik Stuchlý (University of Hamburg)*

**P.409 - Prefrontal Cortex and Hippocampus Jointly Guide Flexible Working Memory**

M. Fernandez, *Mariana Lomeli Fernandez*

**P.431 - Tracking Representational Dynamics across Brain States during Actions**

P. Wendiggensen, *Paul Wendiggensen*

**P.439 - Context-Dependent Choice Biases in Human Reinforcement Learning**

B. Wagner, *Ben Jonathan Wagner (Technische Universität Dresden, Professur für Kognitive Computational Neurowissenschaft)*

**P.459 - On the trail of the Hot Hand effect in 500 million online card games**

M. Guggenmos, *Matthias Guggenmos (Health and Medical University Potsdam)*

**P.461 - Hierarchical representations in flexible planning**

R. Bayramova, *Rena Bayramova (Max Planck Institute for Human Cognitive and Brain Sciences)*

**P.471 - The Differential Impact of Gaze Direction and Mouth Expressions on Social Inclusion Perception**

Y. Yang, *Yu Fang Yang (Freie Universität Berlin)*

**(Brain) Stimulation**

**P.013 - Using neurostimulation to improve communication in reading networks in dyslexia**

S. Turker, *Universität Leipzig*

**P.139 - The role of stimulation order in transcutaneous auricular vagus nerve stimulation: Novel insights from a sustained attention task.**

C. Wienke, *Christian Wienke*

**P.179 - Exploring the impact of transcutaneous auricular vagus nerve stimulation (taVNS) duration and stimulation type on the P300**

M. Giraudier, *Universität Potsdam*

**P.245 - Cerebellar transcranial magnetic stimulation impairs the processing of reward prediction errors – a combined EEG-TMS study**

J. Peterburs, *MSH Medical School Hamburg*

**P.419 - Evaluating Stimulation Efficacy of Temporal Interference Stimulation using Motor Thresholds and Electrophysiological Activity**

C. Thiele, *Carsten Thiele (Otto-von-Guericke Universität Magdeburg)*

**P.465 - Deep transcranial ultrasonic brain stimulation during decision-making in changing social-emotional environments**

J. Algermissen, *Johannes Algermissen (University of Oxford)*

**Brain and Periphery, Neuroendocrinology, and Stress**

**P.015 - Post-retrieval stress impairs subsequent memory depending on hippocampal memory trace reinstatement during reactivation**

H. Heinbockel, *Universität Hamburg*

**P.029 - OpenTSST – An open web platform for large-scale, video-based motion analysis during acute psychosocial stress**

M. Kurz, *Miriam Kurz*

**P.089 - Sex-specific associations between acute cortisol and neural stress responses: The Regensburg Burnout Project**

G. Henze, *Charité Universitätsmedizin Berlin*

**P.103 - Mapping the Brain's Stress Response: Network Interactions in Functional Cortical Gradients**

A. Patyczek, *Max-Planck-Institut für Kognitions- und Neurowissenschaften*

**P.117 - Effects of emotion regulation on repeated exposure to stress**

K. Langer, *Ruhr-Universität Bochum*

**P.121 - Salivary testosterone predicts self-dislike in women with borderline personality disorder**

E. Kulakova, *Charité Universitätsmedizin Berlin*

**P.133 - Non-genomic and genomic cortisol effects on the return of fear after contextual extinction generalization**

J. Caviola, *Lehrstuhl Kognitionspsychologie, Ruhr-Universität Bochum*

**P.137 - Determining the direction of the relationship between burnout symptoms and social support: A cross-lagged panel analysis**

M. Wekenborg, *TU Dresden*

**P.141 - Neural correlates associated with cortisol effects on face recognition**

L. Poetzl, *Ruhr University Bochum*

**P.145 - Creating strong and context-independent extinction memories with physical exercise vs. psychosocial stress**

L. Wolsink, *Ruhr University Bochum*

**P.169 - (f)MRI-based variables as predictors for the identification of cortisol stress response trajectories**

R. Lipka, *Charité - Universitätsmedizin Berlin*

**P.191 - Empathic stress in the mother-child dyad: Multimodal evidence for empathic stress in children observing their mothers during direct stress exposure**

J. Blasberg, *Universitätsklinikum Jena*

**P.247 - Human vs. AI: The Impact of Simulated Medical Consultations on Individual Subjective Stress and Salivary Cortisol Levels**

C. Mayer, *Carlotta Julia Mayer*

**P.273 - Investigation into the relationship between long-term cortisol output and acute stress reactivity**

S. Vogel, *Susanne Vogel*

**P.299 - The influence of glucose on the neural, cardiovascular and endocrine response to stress - an experimental study with near-infrared spectroscopy (fNIRS)**

M. Meier, *Universität Konstanz, UPK Basel*

**P.337 - Oscillatory Brain Activity Related to Evoked Phantom Limb Pain**

A. Serian, *Angela Serian (Institute of Cognitive and Clinical Neuroscience, Central Institute of Mental Health, Medical Faculty Mannheim, Ruprecht-Karls-University Heidelberg, Mannheim, Germany)*

**P.355 - Habituation of the biological response to repeated psychosocial stress: a systematic review and meta-analysis**

M. Barthel, *Marie-Christin Barthel*

**P.359 - Stress associated epigenetic changes in saliva (STEPS): a conceptual replication pilot study.**

N. Reinsberg, *Nele Reinsberg*

**P.369 - Examining the impact of open-label-placebos on anxiety, stress and cortisol concentration in the context of a real-life stressor**

C. Liedtke, *Carolin Liedtke (MSB Medical School Berlin)*

**P.387 - The relevance of individual differences in coping styles for cortisol stress reactivity and habituation during repeated psychosocial stress**

S. Illius, *Sabrina Illius*

**P.397 - The Gut Microbiome: A Common Factor in Obesity and Depression**

L. Kubin, *Luca Celina Kubin*

**P.399 - The Romantic Partner's Chemosensory Presence Increases Psychological and Autonomic Stress Responses**

F. Spengler, *Franny Spengler*

**P.405 - Unraveling the neuronal mechanisms of Exercise-Induced Hypoalgesia: Insights from High-Intensity Interval Training**

M. Geisler, *Maria Geisler*

**P.443 - Study Protocol: Maternal Prenatal Distress, Infant Difficult Temperament and Cortisol as Prenatal Mediator, a Systematic Review and Meta-Analysis**

F. Sörensen, *Ferdinand Sörensen (Universitätsklinikum Tübingen)*

**Affective Neuroscience**

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**P.031 - Examining the Relationship Between Heart Rate Variability and Frontal Alpha Asymmetry: Do Heart and Brain Align?**

A. Sahm, *Universität Konstanz*

**P.081 - Influence of interstimulus variability on processing of selectively attended emotional facial expressions**

J. Schmuck, *Universität Bonn*

**P.085 - ERP effects of SOA-modulated spatial pre-cueing of emotional distractors**

V. Shivani, *Universität Bonn*

**P.095 - The Impact of Aversive Contexts on Visuocortical and Physiological Correlates of Defensive Behavior During Threat Generalization**

Y. Stegmann, *Universität Würzburg*

**P.111 - How do people react to and learn from emotional social encounters? A multimodal social conditioning study in immersive virtual reality**

S. Gado, *Universität Würzburg*

**P.123 - EEG microstates in social and affective neuroscience**

B. Schiller, *Universität Freiburg*

**P.131 - Impact of restrictive eating/dieting on coding of subjective preferences for edible and non-edible rewards in the event-related potential (ERP)**

C. Assen, *MSH Medical School Hamburg*

**P.149 - Psychosexual health during the menopause transition**

F. Weinmar, *Universität Tübingen*

**P.167 - No cardiac phase bias for threat perception under naturalistic conditions in immersive virtual reality**

M. Gaebler, *Max Planck Institute for Human Cognitive & Brain Sciences*

**P.175 - Deciphering the Impact of a Trauma-Analogue: Assessing Individual Vulnerability through Heart Rate, Cognitive Control, and Memory Reactivation**

L. Petersdotter, *Lund University*

**P.195 - I freeze, therefore I act: Disentangling freezing responses linked to threat versus action preparation**

J. Teigeler, *Universität Würzburg*

**P.217 - Comparing behavioural responses and activation patterns of thermal heat and cuff pressure pain – an explorative fMRI study**

J. Nold, *Promotionsstudentin*

**P.225 - Mechanisms of Motivated Endogenous Pain Modulation**

L. Asan, *University Medical Center Hamburg-Eppendorf*

**P.295 - An experimental and computational test of links between self-esteem, control experience, and positive affect**

J. Weis, *Jan Weis*

**P.301 - The evaluation of presumed deepfakes with different basic emotional expressions depends on valence**

J. Baum, *Humboldt-Universität zu Berlin*)

**P.353 - Pre-stimulus oscillatory activity modulates emotional facial expression processing**

C. Jaap, Carina Jaap (*Universitätsklinikum Eppendorf; Systemische Neurowissenschaften*)

**P.361 - Real-time continuous rating of affective experience in immersive Virtual Reality.**

a. fourcade, antonin fourcade (*Max Planck Institute for Human Cognitive and Brain Sciences*)

**P.363 - Deciphering Empathy: Neural Insights into Cognitive and Affective Empathy and Personal Distress**

A. Wolber, *Alexander Wolber*

**P.393 - An Overestimation of Safety? The Impact of Acoustic Startle Probes on Task Effects in a Threat of Shock Paradigm**

H. Carsten, Hannes Per Carsten (*Institute of Psychology*)

**P.435 - EXPLORING ANHEDONIA IN DOPAMINERGIC ANTIDEPRESSANT MOOD EFFECTS**

L. Chuang, *Li-Ching Chuang (Philipps-Universität Marburg)*

**Individual Differences and (Epi)Genetics**

**P.047 - Gene-Environment Interaction Effects on Perceived Stress and the Cortisol Awakening Response in Daily Life over 13 Months**

S. Wüst, *Universität Regensburg*

**P.087 - Can Personality Traits be Predicted from Resting-state EEG Oscillations? A Replication Study**

C. Fröhlinger, *Universität Hamburg*

**P.201 - Testing the mismatch-hypothesis for chronic pain – Integrating insights from ancient, comparative and neuroimaging genomics**

O. Goltermann, *Universität Hamburg*

**P.203 - Come closer if your dare: A validation of the revised Reinforcement Sensitivity Theory by behavioral responses to positive and negative stimuli**

S. Hogeterp, *Universität Bonn*

**P.211 - Enhancing Achievement Motivation: Neurocognitive Insights into Task Difficulty Selection**

Y. Wilk, *Universität zu Köln*

**P.251 - Continuous glucose monitoring across the menstrual cycle: Associations between glucose levels, mood and sex hormones**

M. Grahlow, *Universitätsklinikum Tübingen*

**P.303 - Cognitive motivation influences effort discounting in the presence of real but not sham or no feedback**

J. Zerna, *Josephine Zerna*

**P.441 - Epigenetic signatures of childhood maltreatment in a high-risk sample - a replication study**

E. Unternaehrer, *Eva Unternaehrer (UPK Basel, Schweiz)*

**P.463 - Phenome-wide association study of pain- and anxiety-linked endocannabinoid gene variation FAAH C385A**

A. Gärtner, Anne Gärtner

**Social and Environmental Neuroscience**

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**P.075 - cooperative and competitive interactions in a social foraging task.**

S. Khoneiveh, *Universitätsklinikum Hamburg-Eppendorf UKE*

**P.147 - The Impact of Attachment on Stress Resonance in Romantic Partnerships**

M. Gallistl, *Universität Leipzig*

**P.171 - Temporal presence in computer-mediated social encounters modulates neural but not behavioral and electrodermal indices of empathy for pain**

J. Heimann, *Universität zu Lübeck*

**P.213 - Effect of social presence on approach-avoidance conflicts – Preliminary data from a 7T fMRI experiment**

J. Bischofberger, *Universitätsklinikum Würzburg*

**P.275 - The (in)stability of incentivized prosocial behavior**

A. Saulin, *Universitätsklinikum Würzburg*

**P.349 - White matter differences in monozygotic twins discordant for obsessive-compulsive disorder**

P. Keutz, *Patricia Keutz*

**Development and Aging**

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**P.077 - Personality Traits and Cognitive Reserve – High Openness Benefits Cognition in the Presence of Age-related Brain Changes**

A. Coors, *Columbia University Medical Center*

**P.083 - The development of receptive fields for numerosity perception in the human brain**

G. Jeong, *Max-Planck-Institute for human cognitive and brain sciences*

**P.119 - Curiosity and surprise differentially affect long term memory across the adult lifespan**

N. Bunzeck, *Universität zu Lübeck*

**P.177 - Central insulin effects on appetitive decision-making in older adults**

C. Moreno, *Universitätsklinikum Hamburg-Eppendorf*

**P.239 - How do childhood negative life events and brain development relate to depression in young adulthood?**

N. Vetter, *Nora Vetter*

**P.263 - Developmental changes in theta band activity during continuous sensorimotor integration: an EEG study**

A. Böttcher, *TU Dresden*

**P.309 - Self-Esteem Dynamics and Reactivity towards Social Feedback in Adolescents with and without Symptoms of Borderline Personality Disorder**

K. Gregorova, *Klara Gregorova*

**P.315 - Healthy aging increases the lexical bias in speech perception independent of individual hearing acuity**

N. Pfitzner, *Nele Lea Pfitzner*

**P.323 - The Impact of Smoking Initiation in Late Adolescence on Functional Network Organization in the Transition to Early Adulthood**

D. Fiesel, *Christian-Albrechts-Universität zu Kiel*

**P.329 - Real-time fMRI neurofeedback reduces hippocampal hyperactivity and improves pattern separation in Mild Cognitive Impairment**

K. Klink, *Katharina Klink*

**P.343 - Dense-sampling fMRI to test the expansion and renormalization of BOLD responses caused by learning interventions**

A. Enge, *Alexander Enge (Max Planck Institute for Human Cognitive and Brain Sciences)*

**P.379 - Blocked learning curriculum reduces age-related deficits in memory**

X. Ren, *Xiangjuan Ren*

**P.381 - Examining the influence of efficacy and reward on cognitive control across development**

S. Kleber, *Solvejg K. Kleber (Zentrum für Psychische Gesundheit, Klinik und Poliklinik für Kinder- und Jugendpsychiatrie, Psychosomatik und Psychotherapie des Uniklinikum Würzburg)*

## **P.407 - Individual Differences in Resting-State EEG Markers of Dementia and Normal Aging**

O. Labrenz, *Oliver Labrenz (Brandenburg Medical School)*

## **P.429 - False Recognition in Aging is Due To an Emphasis on Semantic Information at Encoding**

L. Naspi, *Loris Naspi (Humboldt University of Berlin)*

## **P.437 - Cognitive and Motor Adaptation Across the Lifespan**

J. Falck, *Johannes Falck*

## **Disorders and Interventions**

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### **P.091 - Sugar Rush to Remember: Sweetening the Fear Memory Circuit with Glucose**

M. Lehnert, *Universität des Saarlandes*

### **P.163 - Improving Executive Functions: Assessing the Impact of a Three-Week At-Home Cognitive Training on Mediofrontal Negativities in OCD Patients**

M. Ganser, *Medical School Berlin*

### **P.165 - Neural correlates of cognitive control in problematic internet use**

C. Turhan, *MSB Medical School Berlin*

### **P.181 - Ruminative emotion regulation is associated with increased fronto-limbic activity, but decreased fronto-limbic connectivity in young patients with depression**

K. Förster, *TU Dresden*

### **P.187 - From Cyberspace to the Laboratory to Clinical Context: Validation of a digital, pre-recorded exposure intervention for public speaking anxiety – a study protocol**

S. Klein, *Universität des Saarlandes*

### **P.209 - A neural signature of touch aversion and interoception in Borderline Personality Disorder**

J. Voelter, *Carl-von-Ossietzky Universität Oldenburg*

**P.223 - Increasing the smoking cessation success rate by enhancing improvement of self-control through sleep-amplified memory consolidation**

M. Kroth, *Department of Clinical Psychology, Central Institute of Mental Health, University of Heidelberg*

**P.249 - Electrophysiological Correlates of Vulnerability and Resilience to Helplessness**

A. Forster, *Universität Würzburg*

**P.255 - Neural and behavioral reactions to emotional baby and adult faces in mothers with bonding disorder during the first year postpartum**

M. Krauch, *Universitätsklinikum Heidelberg*

**P.259 - Breathing Apperception Training: Evaluation of a breath-centered intervention program to influence psychological and biological mechanisms of depression and anxiety**

Ç. Gürsoy, *Zentralinstitut für Seelische Gesundheit, Mannheim*

**P.287 - The tell-tale heart: Resting heart rate predicts emotional interference in a transdiagnostic outpatient sample**

S. Tholl, *University of Konstanz*

**P.313 - Differences in the reassessment of choices in an unstable environment in twins discordant for obsessive-compulsive disorder**

A. Seidel, *Institute for Systems Medicine, Faculty of Human Medicine, MSH Medical School Hamburg*

**P.345 - Cognitive control and error processing in OCD—behavioral and electrophysiological markers in discordant monozygotic twins**

A. Schönbohm, *Anniqa Schönbohm*

**P.351 - Voxel-wise intrinsic measures in sensorimotor cortices characterises substance use disorders: An ALE meta-analysis**

M. Fascher, *Maximilian Fascher*

**P.365 - Walking the Black Dog: A Systematic Review and Meta-Analysis of Walking as an Intervention in the context of Depression**

L. Rupp, *Lydia Helen Rupp*

**P.367 - How Well Can We Explain Paranoia? A Machine Learning Approach to Aetiological Models of Persecutory Delusions**

S. Denecke, *Saskia Denecke*

**P.411 - Altered functional connectivity in spider phobia normalised after one-session treatment**

M. Muehlhan, *Markus Muehlhan*

**P.415 - Exposure to relaxation-associated odors during sleep reduces sleep spindles in people with frequent nightmares**

C. Sayk, Clara Sayk (*Universität zu Lübeck, Translational Psychiatry Unit*)

**P.445 - Computational Modeling of Belief Updating across Social versus Non-Social Contexts in Individuals with High versus Low Paranoia**

A. Bott, Antonia Bott (*Clinical Psychology and Psychotherapy, Universität Hamburg*)

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## Computational Methods and Neuroimaging

**P.101 - A Graphical User Interface for Game-Theoretic Lesion-Symptom Mapping**

S. Dixit, *Universitätsklinikum Hamburg-Eppendorf*

**P.109 - Past and future episodic cues modulate temporal discounting via multiple common computational routes.**

K. Knauth, *Universität zu Köln*

**P.115 - Structural-Functional Brain Network Coupling During Task Performance Reveals Intelligence-Relevant Communication Strategies**

J. Popp, *Universität Würzburg*

**P.127 - Communication with Surprise – Computational and Neural Mechanisms for Non-Verbal Human Interactions**

T. Buidze, *Universitätsklinikum Hamburg-Eppendorf*

**P.155 - Exploring False Memories through Neural Network Word Embeddings**

S. Sander, *Central Institute of Mental Health Mannheim*

**P.215 - Neural substrates underlying overriding automatic behavioral tendencies in approach-avoidance conflict decisions**

M. Chen, *Universität Würzburg*

**P.241 - Well, would you look at the time - Comparing of the influence of different cortical organizational schemes on the temporal layout of the cortex**

F. Mecklenbrauck, *Universität Münster*

**P.257 - Neural correlates of individual stress responses and problematic alcohol use**

L. Wazulin, *Zentralinstitut für Seelische Gesundheit*

**P.279 - Tyrosine reduces discounting of delayed rewards using a Bayesian DDM framework in a mixed-gender sample**

C. Nientimp, *Cederik Nientimp*

**P.289 - Performance and exploration strategies in recurrent neural networks during reinforcement learning depend on network capacity.**

H. Flimm, *Department of Psychology, Biological Psychology, University of Cologne*

**P.321 - Glutamatergic and GABAergic modulation of cortical temporal dynamics**

A. Dias Maile, *Ana Antonia Dias Maile*

**P.335 - Modeling brain sex in the limbic system to track pubertal development**

G. Matte Bon, *Gloria Matte Bon (University of Tübingen)*

**P.377 - The Comet Toolbox: Multiverse analysis for robust assessment of dynamic, time-varying brain connectivity and its interaction with cognitive functions**

M. Burkhardt, *Micha Burkhardt (Carl von Ossietzky Universität Oldenburg)*

**P.413 - Aperiodic brain activity tracks seizure progression and propagation**

L. Heidiri, *Laura Heidiri*

**P.433 - In search of reward: Computational and neurophysiological assessment of treatment expectations in mood enhancement**

N. Augustat, *Nick Augustat (University of Marburg)*

## Learning, Memory, and Sleep

**P.107 - Modelling metabolic influences on human risky choice**

S. Geysen, *Universität zu Köln*

**P.135 - Neural reorganization of memory representations over time: A Comparison Between Children And Young Adults**

I. Schommartz, *Goethe University Frankfurt*

**P.221 - Absence of Systematic Effects of Trait Anxiety on Learning under Uncertainty**

M. Satti, *Freie Universität Berlin*

**P.227 - Increasing eyewitness identification accuracy in lineups using 3D interactive virtual reality (3DIL)**

A. Kastrinogiannis, *Department of Neurology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany*

**P.261 - Behavioral and Electrophysiological Correlates of Mnemonic Predictions in a Visual Statistical Learning Task**

N. Mba, *Universität Frankfurt*

**P.281 - Rapid microstructural plasticity following an image-location learning task**

A. Lenders, *Antonia Lenders*

**P.283 - How the sense of presence can boost the elemental vs. configural representation of a threatening virtual context.**

M. Andreatta, *Marta Andreatta*

**P.285 - Challenges in Assessing Long-Term Memory for Second Language Vocabulary with Fast Periodic Visual Stimulation and EEG: Issues of Reliability and Learning Effects**

S. Marca, *UniDistance Suisse, Université de Genève*

**P.293 - Representing old and new - The neural patterns of episodic memory updating**

M. Boeltzig, *University of Münster*

**P.317 - Learning and application of speaker-specific semantic models**

F. Schneider, *Department for Systems Neuroscience, University Medical Centre Hamburg-Eppendorf*

**P.331 - Decomposing dynamical subprocesses for compositional generalization**

L. Luettgau, *Max Planck UCL Centre for Computational Psychiatry*

**P.373 - Novel imagery-based fear conditioning paradigm investigating fear learning and extinction in individuals with psychotic liability: an EEG study**

N. Demirdal, *Nilay Esin Demirdal (Universität Hamburg)*

**P.383 - Retrieval-based learning benefits vocabulary learning in school children**

D. Derks, *Deborah Derks (Carl von Ossietzky Universität Oldenburg)*

**P.391 - : How does reward affect neighbouring items in a graph learning paradigm**

S. Kern, *Simon Kern (Zentralinstitut für seelische Gesundheit)*

## **P.401 - The Structure of Experience: Tracking the emergence of complementary memory representations across brain networks**

S. Wiese, *Sina Sophia Wiese* (*Max Planck Institut für Kognitions- und Neurowissenschaften*)

## **P.421 - Hunger promotes memory consolidation during wakefulness through neuropeptide Y signaling**

A. Sawangjit, *Anuck Sawangjit* (*Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen*)

## **P.423 - Cross-Context Value Dynamics: The Impact of Contextually Irrelevant Values on Choice Behaviour**

N. Elbersgerd, *Neele Elbersgerd* (*Universität Hamburg / Max-Planck-Institut for Human Development Berlin*)

## **P.427 - Sleep-dependent Spatial Schema Formation: A Virtual Reality Paradigm**

L. Bastian, *Lisa-Marie Bastian* (*Institute for Medical Psychology and Behavioral Neurobiology, University Tübingen*)

## **P.473 - Exploring the Impact of Daytime Light Exposure and Physical Activity on Circadian Rhythms and Sleep: Preliminary Findings from the “Hiking-Study”**

A. Loock, *Ann-Sophie Loock*

## **Open, Reproducible and Meta Science**

### **P.173 - Data management and FAIRification in the DFG-funded multicentre research project MeMoSLAP (FOR5429)**

S. Paßmann, *Universitätsmedizin Greifswald*

### **P.253 - Behaviour vs. Neuroscience: who wins?**

G. Feld, *Zentralinstitut für Seelische Gesundheit - Universität Heidelberg*

### **P.307 - A lab of all trades: What to consider when setting up a multi-method psychophysiology lab for developmental clinical research**

M. Rehbein, *Institute of Psychology, Clinical Psychology and Psychotherapy in Childhood and Adolescence, University of Osnabrück, Germany*

### **P.341 - No Evidence That Sound-Shape Associations Influence Temporal Resolution in Humans: Five Non-Replications of Parise and Spence (2009) and Meta-Analyses**

S. Sourav, *Suddha Sourav* (*Biological Psychology and Neuropsychology*)

**P.357 - Experimental stress induction in children and adolescents: a systematic review and meta-analysis of published studies using the Trier Social Stress Test**

S. Seel, Saskia Seel (*Biologische und Klinische Psychologie, Universität Trier*)

**P.403 - Steps Towards Reproducibility in Sexuality Research**

S. Prantner, Sabine Prantner

**P.453 - Interactive Tool for Data Simulation using DAGs**

F. Luebber, Finn Luebber (*Universität zu Lübeck*)

**Other**

**P.243 - Predicting change in pain coping resulting from prefrontal-limbic connectivity-informed fMRI-neurofeedback by respective resting-state connectivity in patients with chronic back pain and healthy participants**

L. List, Christian Albrechts Universität zu Kiel

## Keynote

# Human auditory communication – from visual face areas to sensory thalamus

**Katharina von Kriegstein**

Technische Universität Dresden

**Friday 11:00 - 12:00 | Large Auditorium**

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Understanding what is said and recognising the identity of the speaker are two important tasks that the human brain is faced with in auditory communication. For a long time, neuroscientific models of auditory communication have focused mostly on auditory language and voice-sensitive cerebral cortex regions to explain speech and voice identity recognition. However, we now know that the brain uses even more complex processing strategies for recognising auditory communication signals, such as the recruitment of dedicated visual face areas, as well as subcortical sensory thalamus structures. In the first part of my talk, I will present a short overview on our neuroscientific findings how visual face areas help processing auditory communication signals. I will also show studies that translate the neuroscience findings to computational models. In the second part, I will focus on the contribution of subcortical sensory thalamus structures to speech recognition. I will review 7-Tesla neuroimaging findings from typically developed participants as well as developmental dyslexics that suggest a major role of the sensory thalami in speech recognition.



## Symposia session 4

### S16 - Multidisciplinary and multimodal perspectives on episodic memory in neuropsychiatric disorders

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**Freitag 09:00 - 10:30 | Large auditorium**

**Session chair(s): Jessica Peter, Michael Orth**

University of Luebeck

The ability to form and retrieve memories about personal experiences is paramount for human existence. The quantity and quality of such memories depend on numerous factors to do with the experiences themselves but also with the complexities of the neuroanatomical basis of memory formation and retrieval. Much insight can be gained from deficits in this ability in the context of neuropsychiatric disorders. In this symposium, we will explore the topic of episodic memory formation and retrieval from different perspectives. We will look at the impact of ageing, degeneration, or surgical lesions on the hippocampus as a key hub in networks subserving episodic memory. We will then examine the influence mood states can have on formation and retrieval of emotionally-valenced memories and, vice-versa, how mood states may self-perpetuate because of what is being remembered. This symposium will provide a neuroscience perspective on factors that influence episodic memory performance and its underlying neuroanatomy across the lifespan and in the context of neuropsychiatric conditions such as Alzheimer's disease, Depression, TRooma, and Epilepsy. There will be five talks, each presenting cutting-edge research combining behavioural data with physiology or neuroimaging in different age groups or psychiatric conditions. We will discuss implications and possible directions for our understanding of episodic memory and future theoretical and experimental approaches that could be useful to fill the many remaining knowledge gaps.

**Bunzeck N.** Trajectories and contributing factors of neural compensation in healthy and pathological ageing | 09:00

**Reber T.** Single neuronal mechanism of transitive inference: insights from invasive recordings in the human medial temporal lobe of epilepsy patients | 09:15

**Staniloiu A.** Dissociative Amnesia – A survey of 95 cases | 09:30

**Kobelt M.** Exploring neural representations during tRooma-analog experiences and memory intrusions | 09:45

**Orth M.** Left DLPFC modulation induces cognitive reorganisation in patients with depression | 10:00

## **S17 - Exploring the Layers of Language Prediction: From Phonemes to Paragraphs**

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**Freitag 09:00 - 10:30 | Room 1.12/1.**

**Session chair(s): Merle Schuckart, Sandra Martin**

Ernst Strüngmann Institut

Language prediction plays a pivotal role in understanding and facilitating everyday communication. It operates on multiple levels and time scales, enabling us to anticipate everything from phonemes and syllables to words, meanings, and syntactic structures. Each granularity level contributes uniquely to our ability to comprehend language, making communication more seamless. This symposium illustrates the breadth of the methodological intricacies of language prediction research and how predictability shapes language comprehension and production across different time scales. Firstly, Peter Donhauser presents two MEG studies on prediction during natural listening at the phonemic time-scale, highlighting predictions at the most granular levels. Jill Kries then shows how the neural dynamics of phoneme representation interact with lexical predictability, in healthy participants and individuals with aphasia. Moreover, she will also present her ongoing intracranial EEG work on the decoding of speech features such as word predictability, during speech comprehension and production. Following this, Merle Schuckart shares findings from a behavioral self-paced reading experiment, illustrating the influence of increased cognitive load on language prediction across several time scales, and how this relationship is modulated by cognitive aging. Lastly, Cas Coopmans discusses the role of syntactic structure building in natural language comprehension. Using MEG data, he provides novel evidence for predictive structure building during story listening. We envisage a controversial and fruitful discussion of conceptual and methodological links between these approaches. How might these diverse perspectives on language prediction reshape our understanding of communication? Join us in exploring these innovative studies.

**Donhauser P.** Neurophysiology of speech predictions at the sublexical level | 09:00

**Kries J.** How lexical predictability affects neural dynamics of phoneme representations in neurotypicals and individuals with aphasia | 09:20

**Schuckart M.** Contribution of cognitive control resources to natural language comprehension across the adult lifespan | 09:40

**Coopmans C.** Predicting syntactic structures during naturalistic language comprehension | 10:00

## **S18 - The versatile role of the endocannabinoid system in clinical research**

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**Freitag 09:00 - 10:30 | Room 1.18**

**Session chair(s): Daniela M. Pfabigan, Sara L. Kroll**

University of Bergen

Recent years have seen an emergent interest in research of the endocannabinoid system (ECS). Endocannabinoid signalling plays a significant role in promoting stress buffering and reward-related behaviour. However, how endocannabinoids contribute to the presentation of clinical conditions, or how this system may be leveraged for novel therapeutics, is poorly understood. Therefore, this panel will highlight clinical research on the novel role of the ECS in psychiatric and non-psychiatric disorders. This symposium will provide an overview of ongoing research that takes advantage of improved assessment methods and underlying knowledge concerning the ECS. Sara L. Kroll (University of Zurich) will start with an introduction to the ECS. Daniela M. Pfabigan (University of Bergen) will present a clinical trial design investigating changes in social experiences in individuals undergoing weight-loss surgery. This trial will link social experiences and well-being to hair concentrations of endocannabinoids as biological marker of well-being. Sara L. Kroll will show findings of an altered ECS in individuals with non-medical prescription opioid use (NMPOU) and discuss drug-related differences of peripheral endocannabinoids. Vinzenz K. Schmid (University of Zurich) will present recent findings of an altered endocannabinoid response to the psychosocial stressor of social exclusion within the same NMPOU population compared to controls. The symposium will be concluded by Marc D. Ferger (University of Cologne) talking about how non-suicidal self-injurious behaviours and childhood-tRooma are reflected in endocannabinoid concentrations in a large female adolescent sample. He will discuss the potential of using the ECS as a novel therapeutic target for psychiatric disorders

**Pfabigan D.** Does bariatric surgery have a positive effect on patients' social experiences and is this associated with the endocannabinoid system? – Study design of the BaSES study | 09:00

**Kroll S.** Peripheral endocannabinoids and their link to social stress in individuals with chronic non-medical prescription opioid use | 09:20

**Schmid V.** The Role of the Endocannabinoid System in Social Stress Reactivity among Non-medical Prescription Opioid Users: A Cyberball Paradigm Study | 09:40

**Ferger M.** The endocannabinoid system in adolescents with non-suicidal self-injurious behavior and childhood tRooma- new findings and promising therapeutic targets | 10:00

## **S19 - Models of Mismatch Responses - Moderators and Underlying Mechanisms**

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**Freitag 16:30 - 18:00 | small auditorium**

**Session chair(s): Insa Schlossmacher**

University of Münster

Perceiving unexpected events is an important function of human perception and of utmost importance for survival. In an experimental setting, a mismatch between expected input and presented stimulus is often accompanied by an increase in processing and/or brain activation (= mismatch response). In the current symposium, results of new studies investigating such mismatch responses in audition, vision and somatosensation will be presented. The talks will cover a wide area of applied methods like electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) as well as behavioral measures. In the first talk, Jana Harenbrock will focus on how auditory mismatch responses measured with EEG are moderated by awareness and task relevance. In the second talk, Nina Coy will shed light on how the predictive potential of auditory deviants influences mismatch responses like mismatch negativity, P3a and behavioral measures. In the third talk, Insa Schlossmacher will address underlying mechanisms of visual mismatch responses measured by EEG as well as fMRI. In the fourth talk, Miro Grundei will examine mismatch responses across vision, audition and somatosensation using computational modeling and connectivity analysis of EEG and fMRI data. In the last talk, Kaja Loock will take up the topic of predictive processing by investigating how prediction errors elicited in a fear-conditioning paradigm influence episodic memory formation. Taken together this symposium will present new and impactful findings elucidating moderators and underlying mechanisms of mismatch responses.

**Harenbrock J.** Differential auditory mismatch responses depending on awareness and task relevance | 16:30

**Coy N.** Is the oddball just an odd-one-out? A new perspective on the predictive potential of deviations from structured auditory regularities. | 16:45

**Schlossmacher I.** Underlying mechanisms of visual mismatch responses – an EEG-fMRI study | 17:00

**Grundei M.** Modeling mismatch responses across the senses | 17:15

**Loock K.** The specificity of aversive prediction error-related memory enhancement | 17:30

## **S20 - The German National Cohort (NAKO) as a resource for mental health research**

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**Freitag 09:00 - 10:30 | Room 0.12/0.**

**Session chair(s): Maja P. Völker, Fabian Streit**

Department of Genetic Epidemiology in Psychiatry, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University; Department for Psychiatry and Psychotherapy, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University; Hector Institute for Artificial Intelligence in Psychiatry, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University

The German National Cohort (NAKO) is a population-based prospective cohort study that investigates common diseases and their risk and protective factors. It is the largest German health study with 205,415 subjects aged 19–74 years recruited in 18 study centres. The symposium targets researchers who might benefit from working with NAKO data, and showcases its potential to investigate mental health, risk factors, and neural correlates. The first presentation provides an overview of the NAKO with a focus on psychiatric phenotypes. It will present the assessment strategy and show how researchers can access the data. Moreover, an overview of the instruments to assess mental health and related constructs, and of observed prevalences and associations with established risk factors is given. The second presentation shows how this dataset can be used to investigate risk factors for mental health. Findings on individual and joint effects of family history and childhood TRooma on depression are presented. The third presentation gives an overview of the brain imaging performed in a subset of 30,868 individuals and introduces preliminary findings regarding associations of neuroimaging metrics with socio-demographic variables and cognitive domains, as well as the application of data in a deep learning-based brain-age model. The fourth presentation shows how structural brain imaging data can be combined with psychosocial factors to predict measures of anxiety and panic disorder. The applied machine learning algorithms showed good classification performance, the predictive power of psychosocial factors and highlighted the left amygdala as a relevant brain region.

**Streit F.** An introduction to the German National Cohort (NAKO) with a focus on psychiatric phenotypes | 09:00

**Völker M.** Individual and Joint Effects of Family History of Depression and Childhood TRooma on Current and Lifetime Depression | 09:20

**Jockwitz C.** Overview of the (brain) MRI assessment in the NAKO | 09:40

**Gutzeit J.** Classification of anxiety and panic using structural MRI data and psychosocial factors: machine learning results from the NAKO study | 10:00

## Symposia session 5

### S21 - Unravelling Visual Prediction: Insights from Electrophysiology, EEG, fMRI, and Computational Modelling

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**Freitag 12:45 - 14:15 | Room 1.12/1.**

**Session chair(s): Helen Blank**

Neural Circuits and Cognition Lab, European Neuroscience Institute Göttingen Perception and Plasticity Group, German Primate Center

The central role of predictions in visual perception prompts ongoing debates regarding how priors influence sensory processing, specifically whether, where, and when they increase or reduce representations of expected input. This symposium unifies researchers employing diverse methodologies, encompassing electrophysiology in the primate brain as well as fMRI, EEG, and computational modelling based on deep convolutional neural networks (DCNN) in humans, with the collective aim to understand how predictions shape visual processing. In the domain of hierarchical face recognition, Caspar Schwiedrzik will show that tuning properties in early regions of the macaque face-processing system reflect properties of higher areas, revealing the flexible transformation of representational spaces by predictive context. Correspondingly, Annika Garlichs employs multivariate fMRI analyses with DCNNs to demonstrate prediction-dependent error processing throughout, as well as heightened representations at early stages of the face-processing hierarchy in humans. In the domain of image processing, Lea-Maria Schmitt presents a series of behavioural and fMRI studies with laminar precision probing the recurrent dynamics underlying the perception of novel but not familiar images. Arjen Alink presents EEG evidence that initially predictions facilitate processing of expected visual information in natural images while later enhancing the processing of unexpected input, thereby suggesting that priors and input are differentially integrated over time. Finally, Wanlu Fu combines a DNN model with EEG recordings to show that readers optimize visual information using predictive coding principles by focusing on the orthographic prediction error. Overall, the symposium will provide computational insights into how predictions influence neural representations across visual processing hierarchies.

**Schwiedrzik C.** Linking pattern separation to predictive processing in high-level visual cortex | 12:45

**Garlichs A.** Computational Modelling Reveals Prediction Error and Sharpened Representations Across the Face-Processing Hierarchy | 13:00

**Alink A.** Stimulus-evoked EEG response patterns more strongly encode expected and unexpected image components consecutively | 13:15

**Schmitt L.** What recurrent dynamics underlie the perception of familiar and novel images? | 13:30

**Fu W.** Specifying the orthographic prediction error for a better understanding of efficient visual word recognition in humans and machines | 13:45

## **S22 - Uncovering lifespan signatures: A multimodal perspective at the interface of development, aging, and disease risk**

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**Freitag 12:45 - 14:15 | Large auditorium**

**Session chair(s): Christina Artemenko**

TU Dresden

In our modern aging society, individuals must function in their daily life well into old age. Cognitive deficits during aging might therefore have a detrimental impact on the ability to live independently. Hence, it is essential to better understand how cognitive processes change during aging. This symposium addresses this question in the domains of perception, memory, and numerical cognition. Thus, age-related effects will be discussed regarding multisensory plausibility, visual distractibility, episodic and working memory, as well as number processing and arithmetic. The employed tasks cover the whole range from basic to complex cognitive performance tests. In addition to behavioral methods, functional (fNIRS) and structural (MRI) neuroimaging techniques were used to identify the underlying neural mechanisms subserving cognitive functions. Methodologically, study designs consisted of cross-sectional studies (comparison of older and younger adults), longitudinal studies (developmental changes during aging), intervention studies (pre-post-design with a control group), and patient studies (neurodegenerative disease with or without cognitive impairment and a healthy control group). This methodological variety reflects the chances and challenges in the research field on cognitive aging. The findings reveal age-related deficits in subjective perception and objective performance, but also age-related modulation and compensation mechanisms that support the preservation of cognitive functions during aging.

**Li S.** Aging and digitalized perceptual augmentation: Lessons learned from cortical processes of multisensory plausibility in virtual environments | 12:45

**Klink H.** The degree of subjective cognitive complaints is related to increased distractibility but also increased improvement in visual processing speed after physical exercise | 13:00

**Dahl M.** The integrity of dopaminergic and noradrenergic brain regions is associated with different aspects of late-life memory performance | 13:15

**Artemenko C.** Age-related changes in arithmetic in the fronto-parietal network | 13:30

**Loenneker H.** Basic numerical cognition, arithmetic, and activities of daily living in Parkinson's Disease | 13:45

## **S23 - The Brain on Gonadal Hormones: Uncovering the Interplay between Affect and Brain Dynamics**

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**Freitag 12:45 - 14:15 | Room 1.18**

**Session chair(s): Anna Denninger**

Biological and Clinical Psychology, University of Trier and Institute for Cognitive and Affective Neuroscience

Gonadal hormones, integral to the reproductive system in both sexes, appear to play a critical role in our everyday life regulating various physiological and psychological responses within the body and influencing our affective system including the stress response, emotion regulation, reward processing and mood. As the brain represents a gateway for endocrine effects, their influence further extends to brain structure and functioning. Any alterations in the hormone levels may lead to health challenges. Women, especially, experience hormonal fluctuation throughout their lifespan that impact brain function and plasticity, affect regulation, and mental well-being. Thus, changes in hormonal status (e.g., menstrual cycle fluctuations, use of hormonal contraceptives, and menopause) have been linked to mental health and brain architecture changes in different groups of women. Our symposium focuses on current state-of-the-art research on the interplay between gonadal hormones, affect and brain functioning. Gregor Domes (Trier) discusses a meta-analysis on stress reactivity's link to gonadal hormones. Followed up by Anna Denninger (Tübingen) exploring the impact of experimentally elevated estrogen on brain volume and emotion regulation in women. Tobias Sommer (Hamburg) then presents data on brain function, reward processing, and reinforcement learning in both sexes. Next, Ann-Christin Kimmig (Tübingen) analyzes inter-subject representational similarity in women discontinuing or starting oral contraception, examining hormone concentration variability, resting-state functional connectivity, and depression. Arielle Crestol (Oslo) investigates the link between proxies of cellular and brain aging with menopause-related factors, depression, and APOE  $\epsilon 4$  genotype. Overall, this symposium will explore the complex interplay between gonadal hormones, affect, and brain dynamics.

**Domes G.** The acute effects of psychosocial stress on gonadal steroid secretion in humans  
– a meta analysis | 12:45

**Denninger A.** Effects of estradiol and emotion regulation on grey matter volume | 13:00

**Sommer T.** Influence of estrogen on dopamine-related brain activity | 13:15

**A-C.S. K.** Navigating Mood: Understanding Oral Contraceptives' Influence on Mental Well-Being | 13:30

**Crestol A.** Proxies of biological aging are associated with menopause, depression, and genetic risk for Alzheimer's disease in females | 13:45

## **S24 - Sensory, cognitive, and metabolic drivers of eating behavior**

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**Freitag 12:45 - 14:15 | Room 0.12/0.**

**Session chair(s): Kathrin Ohla**

dsm-firmenich

Understanding the drivers of eating behavior is at the core of combating the global health challenges posed by obesity, malnutrition, and related disorders. Insight into the multifaceted factors influencing eating allows for the development of effective interventions. It is well-accepted that taste and smell play an intricate role in food perception and eating behavior through an interplay of sensory and cognitive processes. Neural encoding of taste and smell informs reward processing, and satiety signaling, and ultimately guides dietary preferences. Nevertheless, both senses are notoriously understudied. The first two presentations significantly contribute to understanding taste and smell perception and provide novel findings on how the brain codes taste and odor information that can be linked with behavior. Even less understood is the role of tight attire in modulating bodily awareness, or interoception, which can regulate food intake as it provides individuals with real-time information about their internal physiological states. The 3rd presentation investigates the influence of attire on mind-body connections and exposes how the wearing of shapewear affects body image and dietary preferences. Lastly, the role of the neurotransmitters in food intake will be explored. Dopamine and serotonin have been linked with reward and motivation and appetite, respectively. The last two presentations examine the time-of-day fluctuations of dopamine in the regulation of impulsivity and fat intake and how insulin sensitivity regulates central serotonin functions in humans, unveiling implications for risk decision-making and mood behaviors.

**Ohla K.** Taste Quality Decoding in Human EEG predicts Taste-Related Behavior | 12:45

**Kehl M.** Human Single Neuron Codes for Olfaction | 13:00

**Cionca S.** Dressing the Mind: Shapewear Influences Mind-Body Connection, Altering Body Awareness and Dietary Preferences | 13:15

**Ryan L.** Dopamine underpins time-of-day dependent variation of human impulsivity and fat intake | 13:30

**Pu M.** Insulin gates the serotonergic brain functions in humans | 13:45

## **S25 - Mnemonic processing of immersive environments: Neuronal findings on different memory systems from virtual reality studies**

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**Freitag 12:45 - 14:15 | small auditorium**

**Session chair(s): Joanna Kisker**

University of Stuttgart, Institute of Human Factors and Technology Management IAT,  
Applied Neurocognitive Systems

The majority of everyday memories is based on sensory-rich, three-dimensional experiences. For that reason, Virtual Reality (VR) is increasingly used to approximate realistic experiences. Yet little is known about how the neuronal correlates of memory derived from 2D-conditions translate to immersive conditions. Consequently, the symposium explores how different memory systems operate under VR-conditions, demonstrating both fundamental principles and practical applications. Anna Vorreuther presents a series of VR-fNIRS-studies examining the neuronal correlates of working memory load and associated learning progress. She demonstrates how brain-computer-interfaces can be utilized to develop and tailor immersive learning systems to individual needs and abilities. As Felix Klotzsche demonstrates, visual short-term memory is affected by the spatial relationship between stimulus and observer. By assessing the spatial constraints underlying two well-established electrophysiological markers of memory retention, he examines the effects of stimulus eccentricity. Likewise, spatial memory is facilitated by offering real-time 3D-content: Julia Belger presents an immersive Virtual Memory Task which allows for assessing, training and rehabilitating spatial memory deficits in neurologic patients, demonstrating the advantages of using VR in neuropsychological practice. To unravel the dependence of episodic memory retrieval on the encoding modality, Joanna Kisker compares the electrophysiological correlates of retrieval of VR-based and 2D-based engrams, and demonstrates the potential to refine these findings by examining the high-frequency domain. Concluding, Marike Johnsdorf presents a comprehensive investigation on how different degrees of reality affect object perception and mnemonic processing. Remarkably, she contrasts the neuronal correlates of a conventional laboratory, a realistic VR, and a real-life condition.

**Vorreuther A.** fNIRS-Based Decoding of Mental State in Virtual Reality | 12:45

**Klotzsche F.** Title: The influence of stimulus eccentricity on short-term memory-related EEG components in virtual reality setups | 13:00

**Belger J.** Neuropsychological Application of Immersive Virtual Reality for Enhanced Spatial Memory Assessment and Rehabilitation | 13:15

**Kisker J.** How immersive features affect memory: Contrasting the retrieval of Virtual Reality-based and PC-based engrams on the electrophysiological level. | 13:30

**Johnsdorf M.** Object Perception and Memory Processing in Laboratory, Realistic Virtual, and Real-Life Environments: A Comparative EEG Analysis | 13:45

## Symposia session 6

### S26 - Improving replicability in neuroscientific research (IGOR-Symposium)

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**Freitag 14:30 - 16:00 | Large auditorium**

**Session chair(s): Hilmar Zech**

University of Bielefeld, University Medical Center Hamburg-Eppendorf

The topic of replicability has been widely discussed in neuroscientific research recently. Replicability challenges have been particularly highlighted for experimental tasks, which are crucial for bridging the gap between brain and behavior. Therefore, this symposium will focus on improving replicability in neuroscientific research, with a special emphasis on testing and enhancing the reliability of experimental tasks. Tina Lonsdorf will start off the symposium by providing a general introduction to the topic of replicability with a focus on neuroscientific research. She will introduce the multiverse approach as a potential solution to improve replicability and share a vision for a living database. Next, Sercan Kahveci will offer a detailed comparison of methods for determining the split-half reliability of experimental tasks while highlighting best practices and giving hands-on recommendations for neuroscience researchers. Building upon this talk, Hilmar Zech will demonstrate how test-retest reliability of smartphone-based experimental tasks can be improved by pooling longitudinal data, and how this can improve neuroscientific research by linking task outcomes to real-world behaviors. Advancing to fMRI research, Juliane Nagel will showcase, how large-scale online experiments can be instrumental in improving the reliability and, ultimately, the replicability of costly fMRI experiments. Finally, Nils Kroemer will underscore the importance of assessing individual-level reliability in task research to foster translational research that links task outcomes to neurological disorders. Together, this symposium will highlight the importance of replicability and provide researchers with insights into the toolkit necessary to promote reliable and replicable research in neuroscience.

**Lonsdorf T.** Navigating replicability in experimental behavioral neuroscience | 14:30

**Kahveci S.** Reliability of reaction time tasks: exploring the methods and pitfalls of its computation | 14:45

**Zech H.** Improving task reliability in experimental behavioral neuroscience | 15:00

**Nagel J.** Using online-studies to perform precise human neuroscience: how do rewards affect long-term memory? | 15:15

**Kroemer N.** How to design a good task: lessons from statistical and computational models of behavior and brain responses | 15:30

## **S27 - Down the habit hole: Where habitual and goal-directed control of behavior meet**

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**Freitag 14:30 - 16:00 | small auditorium**

**Session chair(s): Stephan Nebe, Lieneke K. Janssen**

University of Zurich

Behavior is generally thought to rely on either habitual or goal-directed control. Despite its merits in the lab, this strict dichotomy is increasingly questioned, in particular for its use in understanding real-life habits in health and disorders. Together with current criticism of existing experimental “habit” paradigms, the need for more diverse experimental approaches becomes manifest. In this symposium we go down the rabbit hole of research on habitual and goal-directed control and discuss promising (variations of) experimental paradigms, innovative modeling strategies, and imaging approaches to pave the way forward. First, Stephan Nebe will introduce novel tasks, designed to capture value-free habit learning using computational modeling, as well as a test battery of established lab-based and self-report measures of habit, used for validation. Second, Eike Buabang will present EEG correlates of habitual and goal-directed control in a contingency reversal task to explore their interaction. Third, Matthias Rudolph will show that contingency learning is the outcome of two independent processes, namely automatic retrieval of recent stimulus-response episodes and the application of rule-based knowledge. Fourth, Angela Brands will bridge the gap between lab and life by presenting model-based behavioral and fMRI results from a sequential decision-making task in gambling addiction, which is thought to be characterized by aberrant habitual responding in daily life. To conclude the session, Lieneke Janssen will lead a discussion on current limitations of habit research, challenges that follow a greater diversity in research approaches, not necessarily relying on dichotomous thinking, and impactful next steps in habit research.

**Nebe S.** A comprehensive study of experimental approaches to habit formation | 14:30

**Buabang E.** Characterizing neural correlates of habitual and goal-directed control | 14:50

**Rudolph M.** Dissociating the roles of automatic episodic retrieval and contingency awareness in contingency learning | 15:10

**Brands A.** Problematic gambling behavior impacts model-based reinforcement learning performance | 15:30

## **S28 - Central nervous biomarkers of stress and resilience in the lab and in everyday life: Predictions and considerations**

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**Freitag 14:30 - 16:00 | Room 1.18**

**Session chair(s): Gina-Isabelle Henze, Lara M.C. Puhlmann**

Research Division of Mind and Brain, Department of Psychiatry and Psychotherapy CCM, Charité Universitätsmedizin Berlin, Corporate Member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health; Big Data Institute, Li Ka Shing Centre for Health Information and Discovery, Nuffield Department of Population Health, University of Oxford; Institute of Psychology, University of Regensburg;

Stress reactions are holistic phenomena characterized by psychological and physiological activation encompassing the brain and the endocrine system. Understanding how the brain reacts to acute and long-term stress is therefore central to biopsychological stress research. It promises to identify neural biomarkers to predict future psycho-physiological stress reactions. However, biopsychological stress measures often do not correspond empirically. Our symposium discusses novel approaches to study how neural activation and plasticity correspond with stress and resilience trajectories in the laboratory and everyday life. First, Gina-Isabelle Henze presents data from a mega-analysis including 500 subjects exposed to ScanSTRESS. For a subsample, it was further investigated if structure- and task-based brain measures can predict response trajectories of acute stress processing from baseline through acute to recovery phase. Next, Peter Kirsch speaks about effects of autonomy support and physical activity of pupils (fifth and sixth graders) on their neural and cortisol stress responses as well as on brain development in the context of an education outside the classroom intervention. Marina Giglberger reports on associations between acute neural stress responses and depression- and anxiety-symptoms as well as on the predictive value of these neural correlates for the course of depression- and anxiety-symptom measures in healthy subjects in daily life (over 13 months). Lara Puhlmann then discusses how psychological stress reactions as a proxy for mental resilience can be measured and predicted in cross-sectional as well as longitudinal studies. Finally, Meike Hettwer presents data on how longitudinal trajectories of resilience are related to progressive cortical myelination during adolescence.

**Henze G.** The brain under acute stress: Triple network reactions and prediction of psycho-endocrine response trajectories | 14:30

**Kirsch P.** Choice and movement matters: Pupils' stress regulation, brain development and brain function in an outdoor education project | 14:45

**Giglberger M.** The association between neural stress responses and symptoms of anxiety and depression | 15:00

**L.M.C. P.** Resilience quantification via psychological stressor reactivity scores | 15:15

**Hettwer M.** Longitudinal trajectories of resilient psychosocial functioning link to ongoing cortical myelination and functional reorganization during adolescence | 15:30

## S29 - Neural correlates of conscious experience: progress and challenges

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**Freitag 14:30 - 16:00 | Room 1.12/1.**

**Session chair(s): Torge Dellert**

University of Münster

How does our brain generate consciousness, that is, our subjective experience of what it is like to see or feel? Recent years have seen remarkable progress in the search for its neural correlates. However, central aspects of their spatiotemporal dynamics are still hotly debated. The aim of this symposium is to showcase how rigorous behavioral and neuroscientific experiments can critically test competing theoretical predictions in the neuroscience of consciousness. While each talk will address a specific debate, a common focus will be on dissociating neural correlates of conscious experience from those of post-perceptual processes. Torge Dellert (University of Münster) will highlight the importance of isolating neural correlates of consciousness from those of decision-making and show that they are graded rather than dichotomous. Darinka Trübtschek (MPIEA Frankfurt) will then challenge widely held assumptions about the role of memory for conscious perception based on behavioral, eye-tracking and MEG data. The next two talks will address previously neglected sustained rather than transient visual experiences. Antje Peters (University of Münster) will present EEG and fMRI studies, while Alex Lepauvre (MPIEA Frankfurt) will showcase intracranial and behavioral data from the Cogitate consortium and psychophysical experiments. Finally, Jona Förster (FU Berlin) will highlight neural correlates of conscious experiences in a previously understudied sensory modality: somatosensation. Together, these presentations will demonstrate how carefully designed experiments can shed light on the neural basis of an inherently subjective phenomenon. We will finish the symposium with an open discussion of advances, challenges and future directions in the neuroscience of consciousness.

**Dellert T.** Electrophysiological correlates of gradual awareness in the absence of decision-making | 14:30

**Trübtschek D.** Challenging current theories of conscious perception? - The case of activity-silent, non-conscious 'working' memory | 14:45

**Peters A.** Neural correlates of sustained conscious visual perception | 15:00

**Lepauvre A.** Temporal dynamics of visual conscious experience | 15:15

**Förster J.** EEG correlates of conscious somatosensory perception in a tactile temporal discrimination task | 15:30

## S30 - Cognitive Schemas and Memory Generalization

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**Freitag 14:30 - 16:00 | Room 0.12/0.**

**Session chair(s): Mona Garvert, Monika Schönauer**

University of Freiburg

To navigate a complex world successfully, we need to gather knowledge about the rules that govern it. By abstracting general knowledge from the experiences we make, we form flexible schemas that allow us to predict future outcomes and react appropriately. Drawing on multimodal brain imaging data and behavioral evidence, this symposium presents new evidence on how schemas guide human behavior and allow us to generalize to new experiences. The first two talks will focus on how cognitive schemas shape behavioral choices: Katja Kleespies will show that prior knowledge influences what we remember from everyday-like experiences, like visiting a supermarket or going to a restaurant, and that schema-related brain activity guides memory encoding and retrieval. Charley Wu will then demonstrate that we use complex compositional strategies to navigate such contexts, drawing on fragments of existing schemas to solve novel tasks, even under time pressure. The following speakers will shed light on how regularities are inferred from new experiences: Nico Schuck will show that both the hippocampus and the orbitofrontal cortex are involved in generalizing event structures across different environments. Felix Deilmann will present evidence that the hippocampus and prefrontal cortex represent distinct types of relational information, predictive contingencies between objects and the associated reward structure, and how we can generalize contingencies between these dimensions. Finally, Philipp Paulus will talk about how sleep aids the abstraction of rule-based contingencies in a category learning task, demonstrating that our brains continue to process information even after exploration has ended.

**Kleespies K.** Structuring the world: Naturalistic event schemas guide recall behavior and induce content-specific oscillatory activity | 14:30

**Wu C.** From Fragments to Schemas: Compositional Navigation Under Time Pressure | 14:45

**Schuck N.** Hippocampus and OFC map experiences on abstract state representations to help us learn generalisable policies | 15:00

**Deilmann F.** Distinct hippocampal and prefrontal representations of structure and reward contingencies for generalization and inference | 15:15

**Paulus P.** Sleep aids rule-based inference in a category learning task | 15:30

## Poster session 2

### Learning, Memory, and Sleep

#### **P.006 - Learning from Emotional Feedback in Younger and Older Adults: An ERP-Study**

J. Braunwarth, *Bergische Universität Wuppertal*

#### **P.044 - Statistical learning of successor representations is related to on-task replay**

L. Wittkuhn, *Universität Hamburg*

#### **P.100 - Sleep Slow Oscillation-Spindle Coupling Precedes Spindle-Ripple Coupling During Development**

J. Fechner, *Universität Tübingen, Institut für Medizinische Psychologie und Verhaltensneurobiologie*

#### **P.108 - How the brain adapts episodic representations after prediction errors: New insights on memory modification**

S. Siestrup, *Universität Münster*

#### **P.110 - The Relationship between Monitoring and Working Memory Updating during Learning from Feedback**

J. Graf, *Universität Wuppertal*

#### **P.136 - Memory retrieval and encoding of prediction error: Electrophysiological correlates and a lifespan comparison**

S. Nolden, *University of Frankfurt am Main*

#### **P.148 - Neural Correlates of Fear Conditioning in Patients with Anxiety Disorders and OCD**

K. Sobania, *Universität Hamburg*

#### **P.212 - Studying Schema Memory Formation in Rodents**

M. Harkotte, *Universität Tübingen*

#### **P.262 - Rapid formation of new visual concepts in early visual cortex assessed with multimodal MRI**

S. Klinkowski, *Svenja Klinkowski*

#### **P.264 - The impact of semantic information on memory for temporal sequences**

H. Soldan, *Ruhr-Universität Bochum*

**P.266 - Investigating Spatial and Temporal Properties of Human Sleep Spindles Using MEG Source-Space Analysis**

T. Haase, *Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen, Silcherstr. 5, 72070 Tübingen, Germany*

**P.284 - Didn't see that coming: acute stress enhances memory for unexpected surrounding events.**

A. Lilja, *Antonia Lilja*

**P.298 - How to design a good localiser? – Capturing neural representations with functional magnetic resonance imaging (fMRI)**

E. Kolbe, *Institute of Psychology, University of Hamburg/Max Planck Institute for Human Development, Berlin*

**P.302 - A novel motor sequence learning task to model habit formation in humans**

C. Grundmann, *Clarissa Grundmann*

**P.330 - The impact of respiration on associative memory retrieval**

E. Tarraso, *Ludwig Maximilians Universität*

**P.346 - Emergence of task representations during learning in human prefrontal cortex and in artificial networks**

S. Grossman, *Shany Grossman (Institute of Psychology, Hamburg University, Hamburg, Germany)*

**P.352 - Study protocol: Effects of High-Intensity Interval Training (HIIT) on Sleep-Related Memory Formation**

N. Frisch, *Nicole Frisch*

**P.366 - Does Individual vs. Observational Reinforcement Learning Affect Memory Differently?**

M. Woitow, *Maria Woitow (Humboldt-Universität zu Berlin)*

**P.436 - Learning from Explainable Artificial Intelligence: Evidence from a House Rent Estimation Task**

D. Guo, *Dingrong Guo (Goethe University Frankfurt)*

**P.456 - Confidence as an internal reinforcement learning signal: evidence from a novel confidence-based conditioning paradigm**

D. Kittelmann, *Denise Kittelmann*

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**Open, Reproducible and Meta Science**

**P.008 - MOTION-BIDS: extending the Brain Imaging Data Structure specification to organize motion data for reproducible research**

J. Welzel, *Universität zu Kiel*

**P.090 - Version Control of Code and Data: A full-semester course about Git for psychological research**

K. Pagenstecher, *Universität Hamburg*

## **Cognition**

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**P.010 - Pharmacological enhancement of dopamine neurotransmission does not affect illusory pattern perception**

E. Smith, *Universität zu Köln*

**P.012 - Losing Hurts More Than Not Acquiring at All: Insights from P3b Reflections on Gain Amount, Loss Amount, and Loss Probabilities in Consecutive Risk-Taking**

C. Lorenz, *Bergische Universität Wuppertal*

**P.024 - Mental time travel flexibility and its role in mental health**

L. Plank, *Ruhr-Universität Bochum*

**P.080 - Exploratory Graph Analysis of cognitive functioning in individuals with Parkinson's disease**

D. Scharfenberg, *Universitätsklinikum Köln*

**P.114 - An investigation of the influence of category knowledge on memory for temporal sequences**

N. Genc, *Ruhr-Universität Bochum*

**P.144 - Shaping perceptual decision formation by GABA-A and NMDA receptor manipulation**

A. Toso, *University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

**P.162 - Impaired coding of reward prediction errors in patients with cerebellar degeneration - a study with EEG and voxel-based morphometry**

A. Berlijn, *Universität Düsseldorf*

**P.180 - Decision noise mediates the age-dependent development of specific reinforcement learning signatures**

V. Scholz, *Universitätsklinikum Würzburg*

**P.185 - Linguistic and acoustic factors contributing to competing speech comprehension**

V. Barchet, *Max Planck Institute for Human Cognitive and Brain Sciences*

**P.204 - Does mid frontal theta activity correlate with complex decision making during approach avoidance task?**

S. Pandey, *Universität Osnabrück*

**P.226 - Altered Theta and Delta Dynamics: How Speed and Accuracy Instructions Affect Oscillatory Brain Responses during Performance Monitoring**

A. Dolge, *Alexander Dolge*

**P.232 - Adaptive Integration of Perceptual and Reward Information in an Uncertain World**

P. Ganesh, *Department of Education and Psychology, Freie Universität Berlin, Berlin, Germany*

**P.278 - Prediction of language comprehension and production from brain connectivity data across the life span**

N. Bittner, *Institute for Anatomy I, Medical Faculty & University Hospital Düsseldorf, Heinrich Heine University Düsseldorf, Düsseldorf, Germany*

**P.280 - The truth is in there: Belief processes in the human brain**

M. Gerchen, *Zentralinstitut für Seelische Gesundheit, Mannheim*

**P.292 - Neurophysiological signatures of working memory binding and updating during encoding**

K. Sadus, *Kathrin Sadus*

**P.300 - A Network Neuroscience Perspective on Response Monitoring**

A. Mattes, *Department of Individual Differences and Psychological Assessment, University of Cologne, Cologne, Germany*

**P.322 - Unraveling Neurophysiological Mechanisms of Response Inhibition Deficits in Adolescents with AD(H)D: The Role of Theta and Alpha Band Activity**

K. Graf, *Katharina Graf*

**P.338 - Neurophysiological principles underlying predictive coding during dynamic perception-action integration**

R. Jamous, *Roula Jamous*

**P.348 - The N400 during proverb listening**

S. Geukes, *Sebastian Geukes (Universität Bielefeld)*

**P.360 - Anatomo-functional brain organization across the broad spectrum of cognition: A high-quality (f)MRI approach illustrated on the Multiple-demand system**

D. Faber, *Daniel Faber*

**P.388 - Higher-order error monitoring in multistage tasks**

P. Löschner, *Peter Löschner*

**P.390 - Cholinergic and GABAergic modulation of reward-guided learning under different levels of uncertainty**

M. Froböse, *Monja Froböse (Institute of Experimental Psychology, Heinrich Heine University Düsseldorf)*

**P.398 - Can you hear your errors? Own speech as feedback for error processing in speech production.**

M. Buch, *Marlene Buch (Catholic University of Eichstätt-Ingolstadt)*

**P.400 - Prior knowledge modulates neural responses to event boundaries across memory networks**

L. Naudszus, *Luca Naudszus*

**P.406 - Voluntary movement sharpens sensory prediction and facilitates neural processing of contingent sensory stimuli.**

E. Ody, *Edward Ody (University of Marburg)*

**P.420 - Effect of modality mappings on dual-task performance in a more naturalistic environment**

P. Asuako, *Piesie Akwasi Gyimah Asuako (Neuromotor Behaviour and Exercise)*

**P.444 - N2 in the Temporal Flanker Task: Interplay of Conflict Frequency and Trial-to-Trial Control Adaptation**

K. Jost, *Kerstin Jost (Brandenburg Medical School)*

**P.466 - The Impact of High Overall Values on Gaze-Choice Association in Perceptual and Preferential Decision-Making**

C. Ting, *Chi-Chung Ting*

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## Computational Methods and Neuroimaging

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**P.014 - Meta-analytic evidence for distinct neural correlates of conditioned vs. verbally induced placebo analgesia**

H. Hartmann, *Universität Duisburg Essen*

**P.106 - Long-Term Consequences of Very Preterm Birth or Very Low Birth Weight: Mapping Brain Networks of Cognitive Control**

M. Marek, *Carl von Ossietzky Universität Oldenburg*

**P.154 - Insular Gray Matter Volume explains Substance-Related Problems Beyond the Degree of Substance Use**

M. Hildebrandt, *TU Dresden*

**P.156 - Altered interoceptive processing following bilateral amygdala damage – a dynamic functional connectivity analysis of fMRI data**

C. Müller, *Carl-von-Ossietzky Universität Oldenburg*

**P.160 - Using PCA for Analyzing Global Phase Synchronization of Neural Entrainment During Rhythmic Grasping Under Visuomotor Conflict**

P. Wang, *Universität Greifswald*

**P.172 - Non-linear evidence accumulation for context-dependent decision-making**

J. Calder-Travis, *Universitätsklinikum Hamburg-Eppendorf*

**P.222 - Is EEG better left alone for decoding?**

R. Kessler, *Max Planck Institute for Human Cognitive and Brain Sciences*

**P.286 - Real-time fMRI Neurofeedback to Investigate the Role of Neural Stress Regulation in Problematic Alcohol Use**

N. Kempf, *Nina Kempf*

**P.294 - Co-registering EEG and eye-tracking in developing populations**

L. Kulke, *University of Bremen*

**P.320 - Optimal Transport explains the Representational Similarities between Letters: A pre-registered EEG Study**

J. Taylor, *Goethe University Frankfurt*

**P.354 - Cooperation decisions in women with borderline personality disorder**

L. Doppelhofer, *Lisa Doppelhofer*

**P.362 - Learning and adapting cognitive maps for flexible decision-making**

F. Renz, *Fabian Renz (Max Planck School of Cognition)*

**P.386 - Derivation of the Default Mode Network using a clinical language-fMRI in people with epilepsy**

L. Wemheuer, *Lea Wemheuer*

**P.410 - Studying the neural and neurochemical basis of flexible decision making in changing environments using continuous decision paradigms**

L. Weber, *Lilian Aline Weber (Department of Psychiatry, University of Oxford, United Kingdom)*

**P.418 - Craving across the escalating impulsive-compulsive spectrum – study description and preliminary data**

E. Bode, *Erik Lukas Bode*

**P.428 - Decoding illusory colours from human visual cortex**

M. Nemecek, *Marek Nemecek (Humboldt-Universität zu Berlin)*

**P.432 - Unique neural signatures of childhood sexual abuse: Larger cerebellar volume and preserved fronto-parietal cortical thickness compared to non-sexual maltreatment**

V. Hammes, *Vincent Hammes (Philipps-Universität Marburg, Klinik für Psychiatrie und Psychotherapie)*

**P.468 - Neural variability is modulated by local cortical activation along a sensorimotor-association gradient**

J. Terlau, *Jonas Terlau*

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**Brain and Periphery, Neuroendocrinology, and Stress**

**P.016 - Exploring Heart Rate Variability Synchronization in Horse-Assisted Therapy in the Triad Patient – Horse – Therapist**

S. Wienhold, *Universität Konstanz*

**P.018 - Cortisol and Interleukin-6 Awakening-Response in Long COVID**

N. Volkmer, *Universität Konstanz*

**P.078 - How social Support and Stress affect Chronic Pelvic Pain: A psychobiological Ecological Momentary Assessment Study.**

K. Stein, *Universitätsklinikum Heidelberg, Institut für Medizinische Psychologie*

**P.082 - Activation of the pain matrix during self-referential pain imagination**

A. Vetterlein, *Universität Bonn*

**P.102 - Stress-induced Changes in Cortical Organization**

E. Reinwarth, *Max-Planck-Institut für Kognitions- und Neurowissenschaften*

**P.118 - Biopsychological alterations in work-related burnout: Main findings from the Regensburg Burnout Project**

B. Kudielka, *Universität Regensburg*

**P.128 - Using the online version of the Trier Social Stress Test to investigate the effect of acute stress on functional lateralization**

L. Pfeifer, *Lena Pfeifer*

**P.142 - Risky decision-making in the balloon analogue risk task – The role of noradrenaline and cortisol**

K. Fricke, *MSH Medicschool Hamburg*

**P.184 - Effects of circadian cortisol variations on cognitive emotion regulation**

M. Yildirim, *Ruhr-Universität Bochum*

**P.202 - Feeling stressed? Hormonal IUD effects on stress differ from oral contraception**

Z. Bürger, *Department of Psychiatry and Psychotherapy, Tübingen Center for Mental Health (TüCMH), University of Tübingen, Tübingen, Germany*

**P.220 - Stress-induced movement inhibition during acute psychosocial stress predicts HPA axis response**

R. Richer, *Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*

**P.230 - An fMRI study on the effects of clonidine on working and declarative memory**

C. Rosada, *Catarina Rosada*

**P.258 - Benchmarking Automatic Pre-Ejection Period Computation**

L. Abel, *Machine Learning and Data Analytics Lab, Friedrich-Alexander-Universität Erlangen-Nürnberg*

**P.308 - Memories of a stressful episode with varying retrieval intervals**

L. Fester, *Leander Fester*

**P.312 - Decoding the effects of acute stress on different memory processes**

S. Soylu, *Dresden University of Technology*

**P.314 - Reappraising stress-related arousal enhances prosocial behavior in individuals perceiving the intervention as effective**

L. Oswald, *Laura Oswald*

**P.316 - Testosterone reactivity to acute psychosocial stress in a group setting**

L. Haase, *Universität Trier*

**P.324 - The effects of gender-affirming hormone therapy on the brain structure of transgender individuals**

L. Thecla van Egmond, *Department of Psychiatry and Psychotherapy, Women's Mental Health and Brain Function, Tübingen Center for Mental Health (TüCMH), University of Tübingen, Germany*

**P.336 - Investigating the Differences in Psychological and Physiological Relaxation Responses in Clinical and Healthy Population Samples Using Guided Imagery and Diaphragmatic Breathing**

E. Klink, *Elea Klink*

**P.364 - Targeting Treatment Expectations to Improve Psoriatic Skin Symptoms, Itch and Quality of Life: A Clinical Proof-of-Concept Study**

S. Hölsken, *Stefanie Hölsken (University of Duisburg-Essen)*

**P.368 - The Influence of Stress and Sex Hormones on Social Decision-Making in Adolescent Girls: an fMRI Study.**

N. Clusmann, *Nils Clusmann*

**P.424 - Salivary Endocannabinoid Response to the Trier Social Stress Test and its Interaction with Salivary Cortisol Levels Using a Novel Combined Online SPE LC-MS/MS Measurement Method**

J. Eder, *Julian Eder (Technische Universität Dresden)*

**P.430 - Positive and negative effects of social media use in adolescent girls**

E. Karavidaj, *Edita Karavidaj*

**P.438 - Perceived safety during interaction with own partner affects immune response after wounding**

E. Schneider, *Ekaterina Schneider*

**P.450 - Machine Learning-Based Detection of Acute Psychosocial Stress from Digital Biomarkers**

V. Mueller, *Victoria Mueller (Friedrich-Alexander-University Erlangen-Nuremberg)*

**P.458 - Consistently increased dorsolateral prefrontal cortex activity during the exposure to acute stressors**

J. Meier, *Jacqueline Meier (Universität Hamburg)*

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**Social and Environmental Neuroscience**

**P.020 - Method of Choice for Analysis of Autonomic Nervous System Synchrony Depends on Data Type**

B. Denk, *Universität Konstanz*

**P.122 - The interplay between neural correlates of prototypical personality faces, social preferences, and personality traits**

M. Weiß, *Universität Würzburg*

**P.126 - Observational reinforcement learning across development**

J. Buritica, *Universität Greifswald*

**P.150 - Social modulation of anxiety during social interactions in patients with depression and anxiety**

A. Jachnik, *Universitätsklinikum Würzburg*

**P.174 - The modulating roles of xenophobia and empathy on neuronal activation in response to in-group and out-group suffering: An fMRI study**

T. Plieger, *Universität Bonn*

**P.192 - Learning about others' cooperative and competitive intentions under ambiguity**

S. Zhang, *Universität Heidelberg*

**P.272 - Within-Subjects EEG Analysis of Alpha Asymmetry in Social Power Dynamics**

S. Scholz, *Sebastian Scholz*

**P.296 - Differences in frontostriatal and corticostriatal systems in patients with obsessive-compulsive disorder**

J. Franke, *Julia Franke*

**P.404 - Embarrassment for and with others: An fMRI investigation of Chinese and German participants**

C. Sojer, *Christian A. Sojer*

**P.422 - Social cooperation: Dynamic role taking during a dyadic game can be traced by EEG oscillations**

K. Flösch, *Karl-Phillip Flösch*

**P.442 - New paradigm to investigate immediate effects of social support provision on providers in the laboratory**

V. Hajak, *Vivien Hajak (Medical School Berlin)*

## **P.470 - Consequences of Quiet Political Repression on Everyday Stress in Victims**

R. Marheinecke, *Ruth Marheinecke (Universitätsklinikum Jena)*

## **Attention and Perception**

### **P.076 - The Imfluence of Trait Mindfulness on adapting to Painful Stimuli**

C. Lu, *Institute of Medical Psychology and Medical Sociology, Universitätsklinikum Kiel*

### **P.088 - Causal inference in visual and olfactory multisensory perception**

D. Marr, *Friedrich Alexander Universität, Erlangen Nürnberg*

### **P.120 - Noise suppression through attention and action**

M. Wöstmann, *Universität zu Lübeck*

### **P.138 - Analyzing Induced Oscillatory Responses in a 2D Laboratory and Virtual Reality Setting: Face and Object Perception in the Frequency Domain**

M. Sagehorn, *Merle Sagehorn*

### **P.166 - Categorization and Comparison of Frequency-Modulated Tones in Children with ADHD**

A. Groppe, *Leibniz-Institut für Neurobiologie Magdeburg*

### **P.178 - Distinct behavioral correlates of spontaneous versus stimulus-evoked variability of phasic pupil-linked arousal**

J. Hebisch, *Universität Hamburg*

### **P.186 - What comes next? The Pupil Dilation as an Indicator of Expectation Effects**

J. Becker, *Universitätsklinikum Hamburg-Eppendorf*

### **P.190 - The interaction between oscillatory auditory performance and oculomotor control**

C. Fabio, *Universität Bielefeld*

### **P.236 - Representation of a continuous decision variable in human extrastriate visual cortex**

A. Arazi, *Universitätsklinikum Hamburg-Eppendorf*

**P.290 - Self-Determination: Motivational and affective processing depend on task context**

S. Kontaxi, *International Psychoanalytic University Berlin*

**P.326 - The Visual Perception of Figures in Textures: An EEG Source Localization Study**

C. Löffler, *Psychologisches Institut Mainz*

**P.328 - The Aperiodic Temporal Structure of Human Attention**

I. Raposo, *Hertie Institute for Clinical Brain Research*

**P.334 - Comparing sensory attenuation for sounds associated with motor imagery, action execution or observation**

C. Weber, *Heinrich-Heine Universität, Düsseldorf*

**P.350 - Identifying central timing mechanisms in the human cerebellum across explicit and implicit timing: a combined neuropsychology-electroencephalography approach**

C. Zanonato, Chiara Zanonato (*Max Planck Institute for Biological Cybernetics, Tübingen, Germany; University of Tübingen, Tübingen, Germany*)

**P.374 - The Causal Role of the Frontal Eye Field in Saccade Rhythmicity**

T. Näher, Tim Näher (*Ernst Strüngmann Institute for Neuroscience*)

**P.376 - Enhancing the EEG automatic response to varied natural faces in adults and very young infants: an image set validation for low-acuity vision**

D. Rekow, Diane Rekow (*Biologische Psychologie und Neuropsychologie, Universität Hamburg*)

**P.378 - Task-irrelevant speech modulates early sensory processing, but not attentional orientation in verbal short-term memory**

D. Czernochowski, Daniela Czernochowski (*RPTU Kaiserslautern-Landau*)

**P.380 - The effect of context variability on serial dependence in speech perception**

C. Ufer, Carina Ufer (*UKE*)

**P.394 - Perceptual sensitivity to deviations from isochrony in complex sound sequences**

C. Mock, Charlotte Mock

**P.408 - Motor strategies for active self-identification in virtual reality**

J. Yi, Jonathan Yi (*University of Greifswald*)

**P.414 - Long-term contextual dependencies determine whether non-speech contexts induce rate normalization effects in speech perception**

A. Zyryanov, Andrey Zyryanov (*University of Tuebingen*)

**P.417 - Olfaction and gustation under metabolism: Role of nutritional status**

U. Stockhorst, *Ursula Stockhorst (Universitätsprofessorin)*

**P.426 - Effects of Visual Saliency on the Processing of Audiovisual Spatial Information: An EEG Study**

C. Kubetschek, *Cora Kubetschek*

**P.452 - Differential Impact of Temporal Expectations Derived from Rhythmic Entrainment and Interval Memory on Multiple Levels of Perception**

C. Bruckmann, *Christina Bruckmann (Max-Planck-Institute for Biological Cybernetics)*

**P.474 - Unraveling the Cortical Processes behind Across-Dimensional Feature Binding**

N. Schönemann, *Nadine Schönemann (Otto-von-Guericke Universität Magdeburg)*

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**Affective Neuroscience**

**P.084 - Neural correlates of aesthetic processing of material surfaces during active fingertip exploration**

A. Löw, *Helmut-Schmidt-Universität*

**P.086 - How relationship status affects social-affective touch: A three-dimensional movement analysis of hugging using markerless motion capture**

S. Ocklenburg, *Medical School Hamburg*

**P.098 - Links between executive functions and emotion regulation? Insights from an fMRI-study on inhibition, working memory, task switching and reappraisal**

S. Schmidt, *Universität Konstanz*

**P.112 - The role of affective neuroscience personality traits for anticipation and agency**

M. Wernicke, *Universität Hildesheim*

**P.168 - Situational and Dispositional Aspects of Empathy-Induced Oxytocin Release**

K. Henkel, *Justus-Liebig-Universität Gießen*

**P.170 - Effects of word length and word frequency on the visual event-related P1 component in a valence-detection task: Further evidence for the hypothesis of valent word forms**

H. Gibbons, *Universität Bonn*

**P.176 - Predictive Timing in Pain Perception**

A. Strube, *Universitätsklinikum Hamburg-Eppendorf*

**P.208 - Interactive Effects of Sexual Excitation and Sexual Inhibition on Neural Correlates of Erotic Stimulus Processing: an ERP-study**

N. Schmidt, *Justus-Liebig-Universität Gießen*

**P.224 - Communicative social intentions modulate emotional mimicry responses**

L. Kroczek, *Universität Regensburg*

**P.246 - Exploring Emotion Processing in the Human Brain through Positive and Negative Affect-inducing GIFs**

J. Rocha, *Department of Clinical Psychology, Central Institute of Mental Health, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany*

**P.250 - Negative urgency moderates the relationship between neural correlates of feedback processing and action cancellation**

R. Wüllhorst, *Technische Universität Dresden*

**P.252 - Electrophysiological measures of emotional reactivity and emotion regulation and associations with self-reported emotion regulation capacity in healthy individuals and patients with internalizing disorder**

R. Wewers, *Humboldt-Universität zu Berlin*

**P.306 - Does task focus tune emotion processing in the brain?**

S. Ertugrul, *PhD Candidate*

**P.332 - Measuring the impact of theory of mind and empathy on controlled behaviour in social interactions**

A. Giesche, *PhD student at the chair of clinical psychology and behavioral neuroscience at the TU Dresden*

**P.344 - The role of fear learning dynamics in people with psychotic vulnerability (PROOF): An EEG Study utilizing an established differential fear conditioning paradigm**

M. Özyagcilar, *Metin Özyagcilar (Scientific Associate / PhD Candidate)*

**P.358 - Hair cortisol levels along the COVID-19 pandemic in adults with recurrent major depressive disorder and healthy individuals**

T. Wechsler, *Theresa Wechsler (Universität Regensburg)*

**P.382 - Facial Expressions of Appreciation and Critique (FACES-AC): Development and Validation of an Image Database for Experimental Research on Social Reinforcement**

R. Ochs, *Ronja Ochs*

**P.396 - The interplay between elemental and conjunctive context representations modulates avoidance behavior**

F. Tortora, *Francesco Tortora (Department of Biological Psychology, Clinical Psychology, and Psychotherapy, Institute of Psychology, University of Würzburg, 97070 Würzburg, Germany)*

**P.416 - Sex hormones and Empathy: A Systematic Review**

B. O'malley, *Bonnie O'malley (Max Planck Institute of Human Cognitive and Brain Sciences)*

**P.464 - Neural Correlates of Feedback Processing in Internalizing Disorders: A Comparison of Guessing and Learning Scenarios**

F. Jüres, *Franziska Jüres*

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**Individual Differences and (Epi)Genetics**

**P.096 - Early Childhood Adversity & Cognitive Control Alterations**

K. Paul, *Universität Hamburg*

**P.164 - Parental Behavior and DNA Methylation of the Oxytocin Receptor Gene – The Moderating Role of Personality**

L. Geißert, *Justus-Liebig-Universität Gießen*

**P.194 - Loneliness is associated with a decreased propensity for altruistic behavior but only for distant others**

A. Piejka, *Polish Academy of Sciences*

**P.210 - A case for estradiol: Studying the causal link between estradiol and mental and brain health in females**

H. Oppenheimer, *Diakonhjemmet Hospital, Oslo*

**P.214 - Deciphering White Matter Microstructure's Influence on Fluid Intelligence Through Structural Equation Modeling**

H. Jungeblut, *Johannes Gutenberg Universität Mainz*

**P.310 - Association of Childhood Traumatization with microRNA Levels in the Rhineland Study**

R. Etteldorf, *Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE)*

## **P.446 - Not just black and white: Neurocognitive error processing in a new ambivalent task**

A. Erlenbusch, *Anna Erlenbusch (Universität Osnabrück, Fachgebiet Differentielle Psychologie & Persönlichkeitsforschung)*

## **Disorders and Interventions**

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### **P.104 - Emotion regulation in adolescents with major depression – A combined EEG and eye-tracking study**

L. Feldmann, *LMU Klinikum*

### **P.132 - Effects of social exclusion on empathy and prosocial behavior: A comparison between patients with borderline personality disorder and healthy participants**

L. Graumann, *Livia Graumann*

### **P.146 - How-to study dissociative symptoms: A state-of-the-art overview**

S. Danböck, *Universität Mannheim*

### **P.152 - Globus pallidus iron levels relate to cognitive impairment in Alzheimer's disease: Evidence from an in vivo MRI-based meta-analysis**

M. Mieling, *Universität zu Lübeck*

### **P.196 - The Role of Social Learning Processes in the Etiology of Fear of Interoceptive Threat: Testing the Effects of Verbal Information on the Acquisition of Fear of Somatic Sensations**

C. Albert, *Philipps-Universität Marburg*

### **P.198 - Neural response patterns to sad and happy faces of their own children in mothers with borderline personality disorder**

K. Meyer, *Charité - Universitätsmedizin Berlin*

### **P.216 - Trial-by-Trial Association Between Neural Error Signals and Defensive Mobilization in Obsessive-Compulsive Disorder**

L. Balzus, *MSB Medical School Berlin*

### **P.228 - Neurocomputational mechanisms underlying differential reinforcement learning from wins and losses in obesity with and without binge eating**

M. Waltmann, *Maria Waltmann*

**P.234 - Higher frontal delta power during resting-state is related to fatigue and post COVID subjective cognitive difficulties**

L. Godbersen, *Lara Godbersen*

**P.268 - Out of touch with society – Neural patterns of social touch in patients with schizophrenia**

D. Postin, *Universitätsmedizin Oldenburg*

**P.274 - The dynamics of real-world threat perception, avoidance and information seeking in somatic and cognitive anxiety: a longitudinal study**

O. Zika, *Max Planck Institute for Human development*

**P.276 - Category learning and its neural correlates in individuals with and without Autism Spectrum Condition (ASC)**

C. Warren, *(Universit Clinic Eppendorf*

**P.282 - Schizophrenia and exceptional experiences – phenomenological and electrophysiological measures**

E. Joos, *Institut für Grenzgebiete der Psychologie und Psychohygiene (IGPP)*

**P.318 - Dopaminergic modulation of brain networks under pramipexole associated with reward-discounting behavior**

M. Alavash, *Institut für Psychologie*

**P.340 - Mindfulness-based Instruction to Improve Real-time fMRI Neurofeedback Efficiency in Problematic Alcohol Use**

J. Zhang, *Jingying Zhang (Zentralinstitut für Seelische Gesundheit (ZI))*

**P.342 - Associations between exposure to synthetic oxytocin during labor and postpartum depressive symptoms, maternal bonding, and neonatal outcomes: a large retrospective cohort study in Sweden**

N. Röhm, *Nina Röhm (Universität Tübingen)*

**P.412 - The neural correlates of the Attention Training Technique: A fMRI pilot study.**

K. Schwarz, *Kristina Schwarz (TU Dresden)*

**P.440 - Exaggerated frontoparietal control over cognitive effort-based decision-making in young females with anorexia nervosa**

M. Ohme, *Michaela Ohme*

**P.448 - Behavioural measure of appraisal style: how do we evaluate stressors?**

P. Petri-Romão, *Papoula Petri-Romão (Leibniz Institute for Resilience Research)*

**P.455 - Psychoneuroendocrine Stress Response in Female and Male Youth with Major Depressive Disorder**

A. Bernhard, *Anka Bernhard*

**(Brain) Stimulation**

**P.116 - Enhancement of task-switching performance with transcranial direct current stimulation over the right lateral prefrontal cortex**

K. Prehn, *Medicalschool Hamburg*

**P.238 - Pupillary markers of noradrenergic activity under brief and long pulses of transcutaneous auricular Vagus Nerve Stimulation (taVNS).**

L. Skora, *Heinrich-Heine-Universität Düsseldorf*

**P.392 - taVNS enhances the practice effect in mental rotation tasks**

L. Drost, *Lisa Drost*

**P.454 - Development and evaluation of an experimental setup for combining transcranial ultrasonic stimulation of the human basal forebrain with simultaneous electroencephalography**

M. Lueckel, *Maximilian Lueckel*

**Other**

**P.130 - Dopamine modulates schema dependent memory formation**

M. Yousuf, *Mushfa Yousuf*

**Development and Aging**

**P.134 - Reading acquisition as a window into the development of multisensory integration**

J. Finnemann, *Johanna Finnemann*

**P.254 - Developmental differences in aversive and non-aversive learning processes**

D. Reindel, *Uniklinik Würzburg - KJPPP*

**P.304 - Altered visual cortex excitatory/inhibitory ratio following transient congenital visual deprivation in humans**

R. Pant , *University of Hamburg*

**P.372 - Aging decreases EEG resting network stability**

T. Kleinert, *Tobias Kleinert (Albert-Ludwigs-Universität Freiburg)*

**P.384 - Age and Sex Effects on General Psychopathology in the General Population**

R. Etteldorf, *Rika Etteldorf (Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE))*

**P.434 - Examining the Influence of Depression, Anxiety and ADHD on Learning and Decision-Making during Childhood and Adolescence**

J. Falck, *Johannes Falck*

**P.460 - Color-preferring regions of the ventral visual stream emerge after sight restoration in congenitally blind humans**

K. Rączy, *Katarzyna Rączy (University of Hamburg, Biological Psychology and Neuropsychology)*

**P.462 - Attention modulation of acute pain in aging – is high or low cognitive load more effective in distraction from pain in older adults?**

A. Dierolf, *Angelika Dierolf*

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## **Development and Aging**

**P.200 - The impact of paternal odor on emotion processing in 7-month-old infants – EEG measurements**

A. Düfeld, *Universität Lübeck*

**P.206 - Associations of Infant Colic with Sleeping Problems from Childhood through Adolescence**

N. Rheinheimer, *Radboudumc Nijmegen*

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## **(brain) Stimulation**

**P.240 - Is the ACC crying for help? Characterizing the neural network of performance monitoring by implementing simultaneous TMS-EEG**

E. Nießen, *Eva Nießen*

## **learning, Memory, and Sleep**

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**P.256 - Does sleep inspire insight?**

A. Löwe, *UHH*

**P.270 - Sequential hierarchical structure of events in human memory**

M. Petzka, *Institute of Psychology, University of Hamburg*

## **Attention and Perception**

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**P.288 - The Effect of Action on the Shape of Audio-Visual Binding Window**

K. Jagini, *University of Hamburg*

## Keynote

# Body-brain interactions in the control of motivation

**Nils B. Kroemer**

Universität Bonn, Universität Tübingen

**Saturday 12:00 - 13:00 | Large Auditorium**

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To ensure survival, optimal reward-seeking requires adaptation to internal and external states, and it is thought that our actions operate on a deeply engrained metabolic budget. Although goal-directed behavior has often been linked to prefrontal circuits, emerging evidence suggests a pivotal role of ascending signals from the body in tuning reward-related behavior according to bodily demands. In this talk, I will review the growing support for bodily signals as key modulators of instrumental behavior and the neural pathways subserving adaptation. First, I will summarize the motivational effects of interventions targeting ascending bodily signals, such as non-invasive transcutaneous vagus nerve stimulation (tVNS). Second, I will discuss the potential mechanistic role of bodily signals, such as gastric myoelectric frequency that regulates the speed of the digestive tract, in the control of motivation. Third, I will evaluate the implications of a focus on body-brain interactions for an improved understanding of the etiology and treatment of frequent mental disorders using major depressive disorder as an example. Fourth, I will highlight remaining challenges and open questions to unlock the potential of novel techniques to effectively modulate goal-directed behavior via the body. Taken together, conceptualizing bodily signals transmitted via vagal afferent as catalysts for goal-directed actions opens new avenues for theory-driven translational work that may help contextualize key motivational symptoms as a result of aberrant body-brain interactions.



## Symposia session 7

### S31 - Neuromodulation - current challenges in method optimization

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**Samstag 09:00 - 10:30 | Room 1.18**

**Session chair(s): Thomas Dresler, Miroslava Jindrova**

Johannes Gutenberg University Medical Center, Leibniz Institute for Resilience Research

Neuromodulation is a promising field employing various techniques (e.g. electric/magnetic stimulation, neurofeedback) to modulate brain activity and brain states in order to improve clinical symptoms or to investigate specific functions of different brain regions. Although the initial results of its clinical application seem promising, optimization and personalization of these methods are needed to advance treatment. In this symposium, we will provide an overview of different neuromodulation methods that have been investigated as potential clinical treatments for various mental disorders. The main focus will be on current challenges in optimizing these methods, including their combination with various neuroimaging modalities to achieve personalization and enhance the intended clinical effects. First, Maximilian Lückel will talk about the personalization of transcranial magnetic and ultrasonic stimulation by combining them with MRI. Second, Magdalena Mischke will report on the use of transcranial direct current stimulation to alleviate post-COVID fatigue and how individual electrophysiological and immunological parameters can predict outcomes and potentially optimize stimulation. Third, Beatrix Barth will elaborate on different targeting approaches of the motor cortex during functional near-infrared spectroscopy neurofeedback (NF) and their effects on the underlying processes of NF learning. Finally, Miroslava Jindrová will give an overview of NF training for emotion regulation, compare different methods (functional magnetic resonance imaging and electroencephalography), feedback timings, and the use of mental strategies.

**Lückel M.** Personalized precision neuromodulation by combining transcranial magnetic and ultrasonic stimulation with neuroimaging | 09:00

**Mischke M.** The influence of transcranial direct current stimulation on post-COVID fatigue: a comprehensive analysis of the electrophysiological and immunological influences | 09:20

**Barth B.** Exploring underlying mechanisms of real-time single region neurofeedback, functional connectivity neurofeedback and support vector machine neurofeedback | 09:40

**Jindrová M.** The way to optimization of neurofeedback training protocols for emotion regulation | 10:00

## **S32 - Revisiting the relationship between autonomic reactivity and affective and threat-related processes**

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**Samstag 09:00 - 10:30 | Room 1.12/1.**

**Session chair(s): Carlos Ventura-Bort**

Victoria University of Wellington

It is widely acknowledged that feelings of excitement or threat often coincide with physiological changes. However, the complexities surrounding affect-related physiological responses, including their connection to emotional experiences, temporal consistency, and relationship to learning processes, remain topics of ongoing debate. Showcasing a wide range of multivariate methodologies, including machine learning and representational similarity analysis on autonomic (SCR, HR, startle) and BOLD fMRI data, this symposium will provide innovative insights into the dynamics of physiological reactions within affect-inducing contexts. First, Hedwig Eisenbarth (Victoria University of Wellington) will present data about the contribution of SCR and HR for determining emotional states in both natural and controlled settings. Next, Alina Koppold (University Medical Center Hamburg-Eppendorf) will explore the relationship between valence, arousal, and SCR and startle blink responses, to clarify whether events eliciting similar affective experiences produce comparable physiological reactions. While the autonomic reactivity pattern elicited by established paradigms such as fear conditioning is well-documented, the question remains as to whether these patterns exhibit temporal stability. To address this, Maren Klingelhoefer-Jens (University Medical Center Hamburg – Eppendorf) will present findings on the temporal robustness of SCR and BOLD fMRI evoked by a fear conditioning paradigm. Lastly, Carlos Ventura-Bort (University of Potsdam) will explore the relationship between autonomic reactivity and learning processes, investigating the correspondence between SCR, startle responses, and measures of associative learning change and uncertainty across a series of fear conditioning studies.

**Eisenbarth H.** Linking autonomic nervous system activity to body movement and subjective experiences | 09:00

**Koppold A.** Physiological Harmony or Discord? Unveiling the Correspondence Between Subjective Arousal and Valence and Physiological Responses | 09:20

**Klingelhoefer-Jens M.** Using representational similarity analysis to assess the temporal stability of SCR and BOLD fMRI in a fear conditioning paradigm | 09:40

**Ventura-Bort C.** Burned in the skin, stored in an eye blink: The correspondence between SCR, startle, associative learning and uncertainty in the context of an aversive learning task | 10:00

## **S33 - Using Genetics to Understand Pathways to Mental Disorders**

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**Samstag 09:00 - 10:30 | Room 0.12/0.**

**Session chair(s): Fabian Streit**

Department of Epidemiology and Preventive Medicine, University of Regensburg

The symposium aims to demonstrate how large-scale genetic data can be used to identify pathways that might predispose individuals to mental disorders. Julian Konzok uses genomic structural equation modeling to investigate causal risk factors for internalizing and externalizing mental disorders. He identifies childhood maltreatment as a universal risk factor while indicating alcohol consumption as a specific risk factor for the externalizing dimension, and physical activity as a specific protective factor for the internalizing dimension. Javier Schneider Penate's study on the genetics of extinction learning used polygenic scores (PGS) in a well-characterized sample subjected to a fear conditioning paradigm. He shows that the functional connectivity between key brain regions mediates the relationship of genetic risk for anxiety disorders and PTSD with fear learning. Helena Forstbach investigates the small-world properties of DTI brain networks, using data from the UK Biobank to examine genetic and phenotypic associations with small-world propensity. The results identify a genetic locus related to Alzheimer's disease and show associations with physical health measures and mental health variables. Sebastian Markett focused on white matter tract integrity as a potential intermediate phenotype for depression. Analyzing data from the UK Biobank, the study found that depressive symptoms, genetic predisposition for depression, and adverse life events are linked to reduced white matter integrity. Taken together, these presentations underscore the complex genetic and neurobiological underpinnings of mental disorders and highlight potential intermediate phenotypes through which genetic and environmental risks might affect mental health.

**Konzok J.** [NoTitleAvailable] | 09:00

**Penate J.** Polygenic prediction of learned fear responses is mediated by functional connectivity in the human extinction network | 09:20

**Forstbach H.** [NoTitleAvailable] | 09:40

**Nothdurfter D.** [NoTitleAvailable] | 10:00

## **S34 - Up-regulating and down-regulating memory functions by influencing sleep**

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**Samstag 09:00 - 10:30 | small auditorium**

**Session chair(s): Nora Roüast, Thomas Schreiner**

Hertie-Institute for Clinical Brain Research, University Medical Center Tübingen

It is well established that sleep is crucial for memory consolidation. The memory function of sleep relies on a delicate interplay of physiological mechanisms facilitating memory reprocessing during sleep. Yet, sleep is not occurring in a vacuum and many factors influence sleep-related neural processes with significant down-stream effects on cognitive functioning. It is therefore crucial to investigate how the sleeping brain codes and reprocesses information, how different factors influence these mechanisms and how this might affect memory functioning. Within this symposium, we will initially focus on consolidation-related neural processes obtained by intracranial and surface electrophysiology and how experimental interventions such as targeted memory reactivation (TMR) can alter sleep-physiological markers and memory consolidation. We then broaden the perspective by considering how sleep-related consolidation processes and their manipulation can be harnessed to benefit cognitive functioning in both tRooma treatment and everyday life. Firstly, Michael Hahn presents intracranial sleep data on neural population coding efficiency as a mechanism for sleep-related memory consolidation. Thomas Schreiner then examines the relevance of sleep oscillations for TMR triggered memory reactivation using intracranial recordings. Nora Roüast demonstrates that random auditory stimulation can disturb deep sleep physiological markers and declarative memory. Anja Schaich discusses potential benefits of olfactory TMR in sleep on processing tRomatic memories and post-tRomatic stress disorder treatment. Daniela Ramirez Butavand gives an outlook on how exercise before sleep affects declarative memory performance. Overall, across multiple methodologies, we demonstrate how different interventions can alter sleep processes and thus memory, whilst proposing potential uses of such approaches.

**Hahn M.** Neural population coding efficiency in the hippocampal-neocortical network during human and rodent sleep | 09:00

**Schreiner T.** Spindle-locked ripples mediate memory reactivation during human NREM sleep | 09:15

**Roüast N.** Random auditory stimulation during sleep disrupts slow oscillations and decreases declarative memory consolidation | 09:30

**Schaich A.** The effect of odour cues during sleep on the efficacy of tRooma-focused treatment in post-tRomatic stress disorder (PTSD) | 09:45

**Butavand D.** Raining the sleeping brain: effects of acute exercise on sleep and memory | 10:00

## **S35 - Neurocognitive mechanisms of cognitive flexibility and attention allocation**

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**Samstag 09:00 - 10:30 | Large auditorium**

**Session chair(s): Laura Klatt, Anna-Lena Schubert**

Leibniz Research Centre for Working Environment and Human Factors

The symposium focuses on cognitive flexibility, a vital skill for navigating the complexities of dynamic environments. Despite its everyday importance, the neurocognitive mechanisms underpinning cognitive flexibility remain poorly understood. This symposium aims to bridge the gap between cognitive psychology and cognitive neuroscience, shedding light on these mechanisms.

The first talk by Laura-Isabelle Klatt will focus on the interplay between sensory modalities in a dynamic environment, requiring flexible shifts of spatial attention. Specifically, she will present behavioral and electrophysiological data demonstrating how sound localization and auditory spatial attention are influenced by bimodal odorant stimulation. Philipp Musfeld will follow with the second talk, exploring how working memory and long-term memory flexibly interact to optimize resource allocation within the limited capacity of our cognitive system. Specifically, using behavioral and electrophysiological data, his talk investigates how we learn regularities in our environment from repeated exposure and challenges the predominant view that such learning processes occur implicitly. In the third talk, Jan Göttmann will discuss findings from two novel working memory tasks. His talk will explore the interplay between computational model parameters indicative of working memory target and distractor processing, and the electrophysiological markers of attention allocation in complex span tasks. Lastly, Anna-Lena Schubert's talk will present insights from an individual differences study that examines the manifestation of cognitive flexibility in frontal midline theta connectivity and probes the interrelationships among these neural measures, their task-based variations, and general cognitive abilities.

**Klatt L.** Odorant-induced Sound Localization Bias: Behavioral Evidence and Neurophysiological Correlates | 09:00

**Musfeld P.** Repetition Learning Depends on Explicit Retrieval from Episodic Memory: Evidence from Behavioral and Neuroimaging Studies | 09:20

**Göttmann J.** Simulate, Develop, Infer: Measuring Individual differences in Working Memory Processes | 09:40

**Schubert A.** Temporal Dynamics of Global Theta Connectivity in Relation to Intelligence: Evidence from Three Cognitive Flexibility Tasks | 10:00

