Vienna Doctoral School
Cognition · Behavior · Neuroscience
from Biology to Psychology and the Humanities

universität wien

AGENDA

FEBRUARY 24

TIME	AGENDA ITEM	LOCATION
12:00 – 16:00	Haidlhof Lab visit (Corvid and Kea lab)	Meeting Point: tba*
13:45 – 16:00	Psychology Lab visit (EEG, eye tracking)	Meeting Point: inner courtyard at Liebiggasse 5, 1010 Vienna*
16:00 – open	Pre-conference drinks and Ice Breaker	Café Einstein (Rathausplatz 4, 1010 Vienna)

* We will then walk to the pre-conference drinks together.

FEBRUARY 25

TIME	KLEINER FESTSAAL	HÖRSAAL 30	HÖRSAAL 31
08:30 – 09:00	REGISTRATION		
09:00 – 09:30	Welcome Address		
09:30 – 10:30	**KEYNOTE 1: Blanca Spee**		

10:30 – 11:00	COFFEE BREAK		
11:00 – 12:30	Environmental Perspectives	Perceiving Art, Perceiving Others	Animal Behaviour I
12:30 – 14:00	LUNCH BREAK		
14:00 – 15:00	**KEYNOTE 2: Lisa Fenk**		
15:00 – 15:30	COFFEE BREAK		
15:30 – 17:00	Social Contexts & Groups I	Animal Behaviour II	Brain, Perception, and Stats
17:00 – 18:30	POSTER SESSION		
18:30 – 21:30	Conference Dinner + Professors' Powerpoint Karaoke		

FEBRUARY 26

TIME	KLEINER FESTSAAL	HÖRSAAL 30	HÖRSAAL 31
09:00 – 10:00	**KEYNOTE 3: Giovanni Spezie**		
10:00 – 10:30	COFFEE BREAK		
10:30 – 12:00	Social Contexts & Groups II	Communication & Perception	Mental & Physical Health I

12:00 – 13:30	LUNCH BREAK		
13:30 – 14:30	**KEYNOTE 4: tba**		
14:30 – 15:00	COFFEE BREAK		
15:00 – 16:30	Mental & Physical Health II	Brain Imaging & Modulation	Animal Behaviour III
16:30 – 18:00	Panel Discussion		
18:00 – 18:30	Conference Conclusion + Awards Ceremony		

SOCIAL EVENTS

★ The evening before the conference, February 24, we would like to kick off the event with a get-together at Café Einstein (Rathausplatz 4, 1010 Vienna) starting at 16:00.

★ On 25 February we will close the day with a conference dinner and the Professors' Powerpoint Karaoke from 18:30.

★ The opportunity to chat over coffee will be given throughout the conference ☺

★ Not feeling social? Need some space? Got a deadline looming? Try out the Green Lounge, a quiet room next to Elise-Richter-Saal. This is how you get there (barrier-free).

ROOMS

Floor plans can be found following the links below:

Kleiner Festsaal | Barrier-free Route

Hörsaal 30 | Barrier-free Route

Hörsaal 31 | Barrier-free Route

CONTACT

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KEYNOTE TALKS

KEYNOTE 1 (Psychology):

Blanca Spee (Vienna Cognitive Science Hub, University of Vienna, Austria)
Kleiner Festsaal | February 25 | 09:30-10:30
tba

KEYNOTE 2 (Neuroscience):

Neural mechanisms for active eye movements in Drosophila

Lisa Fenk (Max Planck Institute for Biological Intelligence, Seewiesen, Germany)
Kleiner Festsaal | February 25 | 14:00-15:00

Sensory perception is often an active process, and many animal species move their sensory organs to control their interaction with the outside world. Fruit flies move their retinas, via tiny muscles, both seemingly spontaneously and in response to visual motion. These movements and our vertebrate eye movements share surprising similarities. We now leverage fly retinal movements as a relatively simple model to examine cellular underpinnings of active visual processing. We make use of the rich experimental toolbox in Drosophila and combine these efforts with comparative experiments in other insect species. We aim to understand how fly eye movements are controlled neuronally, how the brain deals with input provided by moving eyes, and how visual perception in the end benefits from eye movements.

KEYNOTE 3 (Behavioural & Cognitive Biology): Learning and plasticity of avian courtship: The role of the social environment

Giovanni Spezie (PostDoc, Max Planck Institute for Biological Intelligence, Seewiesen, Germany; Konrad Lorenz Institute for Ethology, University of Veterinary Medicine, Vienna, Austria)

Kleiner Festsaal | February 26 | 09:00-10:00

Bird courtship displays are among nature's most captivating spectacles, yet significant questions have received little attention. To what extent are these sexual phenotypes fixed, and how much flexibility remains? Despite growing interest in learning and plasticity of sexual signals, research has primarily concentrated on a narrow range of traits, notably acoustic ones. Moreover, little is known about the developmental processes underlying the expression of visual signal components. I will present the results of my PhD project on the courtship behaviour of spotted bowerbirds (Ptilinorhynchus maculatus), as well as my current ongoing work on alternative reproductive tactics in ruffs (Calidris pugnax). Both projects focus on the role of the social environment in shaping the expression of elaborate courtship behaviours. Our aim is to gain new insights into how (social) experience affects motor performance associated with visual displays and alternative reproductive tactics.

KEYNOTE 4 (Cognitive Humanities):

tba

Kleiner Festsaal | February 26 | 13:30-14:30

TRACK OVERVIEW PhD TALKS

Environmental Perspectives

I Came, I Saw, It Was Good for My Health – Examining Green Space Interaction Through Nature-Based Biopsychosocial Resilience Theory (Valentina Hampejs)

Investigating the Effects of Heat Stress on Cognition and Well-Being (Moana Drüe)

Gender Gaps about Environmentalism: Are they mostly in our head? (Olena Vitkovska)

Impacts of lead exposure on movements of California Condors (Varalika Jain)

Perceiving Art, Perceiving Others

Pupillary Dynamics in Art Perception and Aesthetic Experience (Xingyu Long)

Connecting Minds through Art: How do autistic and non-autistic adults communicate emotions through art? (Young Ah Kim)

Investigating Aesthetic Experiences in Everyday Life: A Mobile Eye-Tracking Approach (Tristan David Barriere)

Interactions with Art in an Everyday Urban Environment (Anna Lena Knoll)

Animal Behaviour I

Discerning the drivers of individual variation in extractive foraging behaviour in wild birds (Myrto Petropoulou)

Effects of relationship quality on cooperation in corvids (Lin Wang)

Investigating intentionality in elephant gestural communication (Vesta Eleuteri)

Prior experience influences when, not whether, dogs overimitate (Louise Mackie)

Social Contexts & Groups I

When talking makes things worse—Changing minds by doing things (Peter Hochenauer)

Baby I'm back! Effects of short-term separations on long-term pair bonded corvids (Anna Luise Fabbri)

Community collaboration - Participatory research with LGBTQ+ parent families using the example of the Rainbow Longitudinal Austrian Family (RALF) study (Betty Geidel)

Empathy Across Boundaries: How Social Groups Shape Biased Empathy Beliefs (Yufang Liao)

Stress after flight: Investigating the impact of post-migration stress on mental health in daily life (Rojan Amini-Nejad)

Animal Behaviour II

From Nestling to Nutcracker: Investigating the Ontogeny of Extractive Foraging in Crows (Valentine Nella Comin)

Ears up: differences in human greeting behaviour between dogs and wolves – a two-sided exploration (Svenja Chiara Capitain)

Female song and territorial defense across seasons in the Galápagos Yellow Warbler (Alper Yelimlies)

Can social proximity predict audio-visual similarities in the courtship of spotted bowerbirds? (Job Knoester)

Bird or cheetah? – Utilizing playbacks to test prey species reaction to cheetah chirps (Katharina Prager)

Brain, Perception, and Stats

Subcellular localization of the calcium channel Ca 2.3 in cultured hippocampal neurons (Stephan-Matthias Schulreich)

VALID: A Checklist-Based Approach for Improving Validity in Psychological Research (Susanne Kerschbaumer)

Celebrating Diversity: Insights into the Evolution of Central Brain (Alisa Del Pilar Jiménez García)

Does Null Hypothesis Significance Testing Require Adaptation to the Smallest Effect Sizes of Interest? A Preregistered Systematic Review on Meehl's Crud Factor and Lykken's Ambient Noise (Robin Beckenbach)

Temporal Certainty in Visual Search (Alisa Höflinger)

Social Contexts & Groups II

Embracing Uncertainty with Creative Action - Towards a 4E Cognition Perspective on Entrepreneurial Imagination (Felipe Gonzalez Tubio Machado)

Object Play as a Strategy to Mediate Social Interactions in Common Ravens (Awani Lalitkiran Bapat)

Is it Worth the Hustle? A Multi-Country Replication of the Effort Moralization Effect and an Extension to Generational Differences in the Appreciation of Effort (Leopold Roth)

Plasticity of antipredator behavior in common ravens (Corvus corax) across developmental and social context (Silvia Damini)

Communication & Perception

Exploring Subliminal Affective Priming Effects in the Initial Stage of Hiring Process (Hakimeh Ghafari)

Extended Evolutionary Perspectives on Music and Musicality - Timbre in Communication Systems of Vocal Learners (Oliver Tab Mario Bellmann)

“Morphotactic Ambiguity Avoidance” in Language Learning and Change (Irene Amparo Böhm)

Green for success? The influence of visual sustainability cues on product evaluation (Katharina Steiner)

The weighing of speaker and lexical information in spoken language processing (Helen Robinson Reese Klubach)

Beyond synchrony: investigating rhythmic variation and social bonding (Dhwani Parimal Sadaphal)

Mental & Physical Health I

Concept of a Digital Information Platform to Support Parents Regarding their Children's Mental Health. Participatory Research and Design Thinking (Carina Hauser)

Good Mental Health in People with Intellectual Disabilities: An Inclusive Delphi Study (Sophie Komenda-Schned)

"Navigating Assisted Suicide in Austria: Experiences and Views of Physicians, Patients and Relatives" (Tamina-Laetitia Vielgrader)

Being Mortal: Investigating the effects of a mortality salient exhibition on prosociality and general wellbeing using a daily dairy (Christina Makri)

Mental & Physical Health II

Understanding the Menstrual Cycle: Distress and Symptomatology across the Premenstrual, Menstrual and Intermenstrual Phases (Lucia Volpi)

Interactions in Stress and Premenstrual Symptoms Across the Menstrual Cycle – The ISSAC Study (Celine Bencker)

ReCoVer: A study on caregiver perspectives and contributions to youth mental health recovery after inpatient stay (Amos-Silvio Erik Friedrich)

Brain Imaging & Modulation

Creative Cognition, Cognitive Flexibility, and the Dopaminergic Pathways – Investigating the Role of the Striatal Regions using Low-Intensity Focused Ultrasound Stimulation (Franz Schmid)

MLAT-V performance and variability in brain activation during a language localizer task (Sevil Maghsadhagh)

The Art of Connection: Cognitive and Neural Correlates at the Venice Biennale (Paula Angermair)

DeCoDe: Defining Computational Mechanisms of Depressive Symptoms - an Investigation of Neurocomputational and Behavioral Biotypes of Depression (Laura Pauline Gschwandtner)

Animal Behaviour III

Common marmosets (Callithrix jacchus) do not differentiate between familiar and unfamiliar individuals on pitch contour information alone (Julia Victoria Grabner)

Investigating learning and memory of dogs (canis familiaris) using a touchscreen-based matching-to-sample task (Siqi Yang)

Intraspecific competition alters life-history strategies in the Avian Vampire Fly Philornis downsi (Barbara Kofler)

Fit for alignment? To what extend does object assymmetry affect shape fitting in Goffin's cockatoos (Cacatua goffiniana) (Jeroen Stephan Zewald)

Environmental Perspectives

I Came, I Saw, It Was Good for My Health – Examining Green Space Interaction Through Nature-Based Biopsychosocial Resilience Theory

Valentina Hampejs (Vienna Cognitive Science Hub, University of Vienna, Vienna, Austria)

Kleiner Festsaal | February 25 | 11:00-11:20

Keywords: Resilience, Nature, Public Health, Wellbeing

Objectives: The objective of this study is to explore several aspects of the *nature-based biopsychosocial resilience theory* using secondary data from approximately 18,000 visits to natural environments recorded through the *People and Nature Survey* in England. The initial section is primarily concerned with establishing whether nature and nature contact are direct predictors of biopsychosocial resilience. The second section will address the potential interactions within these predictors, focusing on the most prevalent activity in the most frequent environment. This will entail examining whether different nature contact experiences moderate the effect of who you do the visit with (interpersonal) and resilience. Methods: The initial analyses will employ a four-step block-wise linear regression approach, utilising three distinct models (one for each outcome variable; self-reported biological, psychological, social resilience resources). For the second part, a structural equation modelling approach will be employed. Results: Conclusion In progress. Will be presented. Importance for an interdisciplinary audience: The findings of this study will contribute to the growing understanding of the ways in which humans interact with and benefit from the natural environment. Firstly, this will facilitate the development of nature-based therapies, which could complement traditional healthcare. Secondly, these insights can inform urban planning to provide urban green/blue spaces adapted to the needs of those who engage with nature. Additionally, the findings will most likely emphasise the importance of nature on physical, physical, mental, and social well-being and health. It is conceivable that the findings could engender pro-environmental behaviours and thus, the protection of the environment.

Co-Authors: Addi Wala, Julia Egger, Martin Voracek, Ulrich Tran, Sabine Pahl, Mathew White

Investigating the Effects of Heat Stress on Cognition and Well-Being

Moana Drüe (Department of Cognition, Emotion, and Methods in Psychology)

Kleiner Festsaal | February 25 | 11:20-11:40

Keywords: Heat stress, Cognitive performance, Pro-environmental behavior, Well-being, Urban climate impact

As heat waves intensify and become more frequent, their impact on human cognition, well-being, and behavior grows increasingly

concerning. However, current empirical findings are inconsistent, highlighting the need for further research. This study aims to address these gaps by investigating the effects of prolonged urban heat stress on cognitive performance, well-being, and pro-environmental behavior (PEB) in Austrian and German populations. Using a between-subjects design, participants completed an online survey during hot (≥30°C) and not-hot (~20°C) periods (N = 985 for hot, collected in summer 2024; N = 1091 for not-hot, to be collected in fall 2024). The survey included a battery of cognitive tasks assessing dimensions such as impulse control (Stop-Signal Task) and working memory (N-back Task). Additionally, social cognition, PEB, anger, risk-taking, and well-being were measured. We hypothesized that heat would impair cognition (particularly with increased task complexity), and social cognition, increase risk-taking and anger, and reduce well-being. Given the exploratory nature of the study, a bi-directional hypothesis was proposed for the effect of heat on PEB. Statistical analyses will include mixed-effects models and linear regression to compare the impact of hot vs. not-hot conditions while exploring the role of regressors such as sleep quality, perceived temperature, and air conditioning usage. This ongoing study aims to deepen our understanding of the cognitive and psychological impacts of heat stress, offering critical insights for urban policy and interventions in a warming world.

Co-Authors: Jonas P. Nitschke, Max O. Steininger, Marc G. Berman, Kimberly L. Meidenbauer, Claus Lamm, Kimberly C. Doell

Gender Gaps about Environmentalism: Are they mostly in our head?

Olena Vitkovska (Department of Occupational, Economic and Social Psychology, University of Vienna)

Kleiner Festsaal | February 25 | 11:40-12:00

Keywords: pro-environmental behavior, environmental concern, gender stereotypes, identity compatibility

Are women more environmentally conscious than men? Some of the previous research demonstrated that women are more closely associated with ecofriendliness, indicating the presence of the stereotype, which may also contribute to the fact that women show more environmental concern and perform more environmental behaviors in comparison to men. Despite that, there is still some conflicting evidence that does not find a gender gap in environmental concern (Gelissen, 2007), and no research has simultaneously examined the gender gap and the stereotypes, limiting the opportunity to compare their magnitudes. To address this, we contrasted the stereotype with empirical data: in two studies (overall N = 889), we compare gender stereotypes about ecofriendliness with exiting gender gaps in environmental concern and behavior. Specifically, study 1 explored the gender gap in environmental concern, environmental prioritization and gender stereotypes, while study 2 replicated the results using Bayesian analyses with informative priors from study 1 and applied some additional environmental outcomes (policy support and intention to act). Study 1 (N = 274) found no gender gap in environmental concern but revealed strong gender stereo-

types, with women associated with eco-friendliness more. Study 2 (N = 615), using a larger U.S. census-representative sample, confirmed the presence of these stereotypes and identified a small gender difference in environmental concern and intention to act.

Impacts of lead exposure on movements of California Condors

Varalika Jain (Department of Behavioral and Cognitive Biology)

Kleiner Festsaal | February 25 | 12:00-12:20

Keywords: Animal movement, conservation, endangered species, lead contamination, prevention

Lead contamination poses a serious threat to vulture populations globally, particularly threatening the Critically Endangered California Condor (*Gymnogyps californianus*). In the condors, contamination typically occurs through their ingestion of lead ammunition residues embedded within the remains of shot animals. Detecting lead exposures typically requires invasive interventions, including resource-intensive capture, repeated blood sampling, and sometimes treatment. Here, we explore a minimally invasive alternative using bio-logging methods. We analyzed satellite-based GPS-telemetry data to determine if lead-exposed condors exhibit different movement patterns compared to unexposed birds, potentially aiding in development of an early alert system. Specifically, we integrated data from lead contamination monitoring with GPS-telemetry data, focusing on the 30-day period prior to monitoring. First, we investigated if exposed and unexposed individuals differed in their daily movement patterns across four metrics. Then, to understand the spatial distribution of exposures across the landscape, we estimated the overall 30-day autocorrelated Kernel Density Estimate range values and calculated range overlaps among individuals. We found spatial but not temporal differences between exposed and unexposed condors. Exposed birds exhibited greater space-use patterns daily and wider 30-day ranges, which were also more concentrated in a previously identified high-risk zone, than unexposed birds. Exposed birds' ranges overlapped more with each other than with unexposed individuals. Interestingly, unexposed individuals' ranges also overlapped more with exposed birds than each other. These findings highlight the complexity of using movement metrics for post-poisoning detection, but underscore their potential in identifying at-risk individuals, offering a valuable tool for targeted conservation efforts.

Co-Authors: Chris McClure, Chris N. Parish, Tim Hauck, Petra Sumasgutner,

Perceiving Art, Perceiving Others

Pupillary Dynamics in Art Perception and Aesthetic Experience

Xingyu Long (Department of Art History, University of Vienna)

Hörsaal 30 | February 25 | 11:00-11:20

Keywords: Eye Tracking, Pupillometry, Art Perception, Empirical Aesthetics

Empirical research in art history and museum studies, supported by eye tracking and cognitive informatics, has deepened our understanding of how viewers engage with visual art. Most previous studies, however, have relied primarily on saccadic movements and fixation patterns to analyze viewing behavior and art cognition. By incorporating pupillometry—the measurement of pupil dilation and constriction—alongside established eye-tracking metrics, new dimensions of visual perception and aesthetic experience can be investigated. Key research questions include: (I) Can pupillometry improve the existing frameworks of art perception by offering new insights into attention allocation and internal cognitive processes? (II) How do saccadic eye movements and pupillary dynamics correlate with cognitive and emotional responses in art perception? (III) How do saccadic and pupillary responses vary across different types of artworks (e.g., abstract vs. figurative), different backgrounds of the beholders (e.g., age, gender, culture, expertise, etc.), and different contexts (e.g., controlled lab vs. museum)? (IV) How is working memory, as indexed by pupil oscillation, involved in the process of art perception and aesthetic experience?

Connecting Minds through Art: How do autistic and non-autistic adults communicate emotions through art?

Young Ah Kim (Department of Cognition, Emotion, and Methods in Psychology, Faculty of Psychology, University of Vienna)

Hörsaal 30 | February 25 | 11:20-11:40

Keywords: Communication, Emotion, Art Production, Autism

Autistic individuals are reported to show less expression of emotion and ability to recognize emotions in others. However, most studies on emotion recognition in autistic individuals focus on recognizing facial expressions, which could be influenced by other factors related to autism such as altered face processing and heightened social anxiety. Additionally, although there are many studies on how autistic people perceive emotion expressions of neurotypical people, there are limited research on how autistic people express emotions, as well as how interaction between autistic people differ compare to interaction between autistic and neurotypical people. To address these gaps, the current study employs visual art and written language as an alternative medium of emotion expression and recognition and investigates the dynamic interaction between autistic and neurotypical adults as both

expressers and perceivers. In combination with behavioral data on how people communicate emotions through facial expressions, drawings and writings, the neural activity in the empathy and theory of mind related brain areas (mPFC, rIFG, TPJ/IPL) is recorded using functional near-infrared spectroscopy (fNIRS), as well as physiological activity such as electrodermal activity and facial electromyography. The study will analyze whether successful communication of emotion is related to synchronization of neurophysiological activity between a dyad, and whether/how this pattern is different between autistic and neurotypical participants.

Investigating Aesthetic Experiences in Everyday Life: A Mobile Eye-Tracking Approach

Tristan David Barriere (Department of Cognition, Emotion, and Methods in Psychology, University of Vienna)

Hörsaal 30 | February 25 | 11:40-12:00

Keywords: Eyetracking, Aesthetics, Urban, Nature

Urban environments offer plenty of beauty if only we look for it. From trees to (street-) art, buildings, and people, there is plenty of beauty around us. Preferences for natural over manmade objects/scenes is well documented, outside of and within urban environments (Batool et al., 2021; Li et al., 2020). Nonetheless, manmade aesthetic objects can still lead to significant aesthetic experiences outside of a museum (Isaacs, 2000; Mitschke et al., 2017). We investigated the differences between nature and art in various contexts in relation to the aesthetic experiences which they elicit, investigating the extent to which everyday aesthetic experiences can influence our lives. We conducted three studies: in the city, in a museum, and a botanical garden, comparing how individuals perceive nature and art in an everyday environment and prototypical aesthetic environments. Using mobile-eyetracking we measured differences in gaze behaviour between the two object categories, nature and manmade. Participants heartrate variability (HRV) and subjective beauty ratings were measured to study the interplay between subjective aesthetic evaluations and physiological changes. Participants mood was assessed pre- and post- walk/visit using the PANAS. In a lab follow-up one week later, participants were shown footage from their walk/visit, while measuring gaze behaviour, HRV, beauty ratings and mood. We used questionnaires to assess how individual differences of art interest (VAIAK) and nature relatedness (NRS) can influence the aesthetic experience. By comparing our results from the field with the lab, with the same visual stimuli, we can better understand the effectiveness of laboratory experiments for studying aesthetic experiences.

Co-Authors: Anna Lena Knoll, Aenne Brielmann, Eva Specker, Helmut Leder

Interactions with Art in an Everyday Urban Environment

Anna Lena Knoll (EVALab, Department of Cognition, Emotion, and Methods in Psychology, University of Vienna)

Hörsaal 30 | February 25 | 12:00-12:20

Keywords: art, aesthetics, everyday environments, urban environments

Our everyday urban environments can often be a little grey and boring, and it may sometimes be difficult to find beauty in such environments. Placing art in urban spaces can make these environments more attractive, more colourful, and may invite people to spend time in the area. In this observational study we worked with 'Keine Galerie' (translating to 'not a gallery'), a small window gallery in the 7th district of Vienna. Our first aim is to compare how people that naturally pass through this area interact with their environment when no art is present vs when art is presented to be visible to everyone passing through the area. Further, in our everyday life we are often around other people. Our interactions with others may influence how attentive we are to and in turn how we interact with and perceive our environments. We therefore also aim to observe whether people interact differently with publicly accessible art if they are alone or in groups. Are we more likely to stop and look at the art? Stick around for a longer time? Take photos of or with the art? Across two exhibitions, featuring work of one artist each, and a no-art control we observe behaviours of passers-by. We track interactions with the art (e.g. looking at art, taking photos) but also track people who only pass the study area without interacting with the art. Additionally, we track whether people were in groups or alone, and roughly estimate their age and gender.

Animal Behaviour I

Discerning the drivers of individual variation in extractive foraging behaviour in wild birds

Myrto Petropoulou (Department of Behavioural and Cognitive Biology, University of Vienna)

Hörsaal 31 | February 25 | 11:00-11:20

Keywords: Extractive Foraging, Individual Variation, Crows

Extractive foraging, the extraction and processing of hard-to-access food sources of high nutritional quality, is a behaviour found in a wide variety of species. Animals have evolved various adaptations that aid extractive foraging, ranging from morphological to behavioural ones. However, even within the same species individuals show variation in how they access embedded or encased food. To investigate what drives this inter-individual variation, we caught, measured, sexed, aged and individually marked wild carrion and hooded crows in Vienna, Austria. We then observed these crows in the wild to assess how they open walnuts. Hooded and carrion crows are known to open walnuts by either pecking them open or by dropping them on hard surfaces. We examined how individual-level (sex, age, morphometrics) and social (centrality, dominance, number of conspecifics) characteristics as well as environmental factors such as the availability of walnut trees, and different surface types affect the crow's

walnut opening techniques. We will discuss the results of this ongoing study, which will shed light on the till now unexplored factors that drive individual variation in extractive foraging behaviours.

Effects of relationship quality on cooperation in corvids

Lin Wang (Department of CoBeNe)

Hörsaal 31 | February 25 | 11:20-11:40

Keywords: relationship quality; cooperation; corvids

Long-term monogamous birds form pairs for reproduction, which stay together for several breeding seasons or even for a lifetime. In these pairs, cooperation and coordination between partners are especially important for raising chicks and defending territories. However, behavioural differences between individual pairs can be large, which indicates differences in the quality of the relationship between pairs. In this project, I study relationship quality and cooperation in breeding pairs of captive ravens (Corvus corax). I hypothesize that relationship quality is a stable trait that characterizes breeding pairs of ravens and affects their cooperation. Parents with good relationship quality will show a better coordination in caring for the young, potentially because they attend to each other's behaviour better and are capable of making better adjustments to their own behaviour than parents with a less good relationship quality. Therefore, I observed and analysed interactions and chick-rearing behaviours of 14 pairs of ravens over a single breeding season. In study 1, I explore the characteristics of adult breeders' relationship quality. In study 2 and 3, I test whether relationship quality influences pair partners' behavior at food and coordination when feeding offspring, respectively.

Investigating intentionality in elephant gestural communication

Vesta Eleuteri (Department of Behavioural and Cognitive Biology, University of Vienna)

Hörsaal 31 | February 25 | 11:40-12:00

Keywords: intentionality, elephants, gestural communication

A crucial feature of human language is goal-directed intentionality, the ability to convey goals to communicative partners. Criteria for goal-directed intentionality are audience directedness (i.e., targeting gestures at a present and perceiving audience), and persistence of signalling (i.e., continuing signalling) or elaboration of signalling (i.e., using new signal types) when previous signalling attempts fail at communicating goals. Today we know that non-human apes, along with a few other primates, gesture with goal-directed intentionality to achieve behavioural reactions from recipients. However, the extent to which this capacity is restricted to the primate lineage remains unclear. Here we tested whether African savannah elephants gesture with goal-directed intentionality and whether they alter gestural strategies depending on the success of previous gestures at achieving behavioural goals. We presented semi-captive elephants with a desired and a non-desired item, thus providing them the opportunity to gesture for the desired item, and created conditions in which an experimenter met, partially met, or did not meet their goal. Elephants used gestures only in

the presence of the experimenter, meeting the criterion of audience directedness. They persisted gesturing more when their goal was partially met compared to when it was fully met. However, they did not persist gesturing more when their goal was not met compared to fully met. Elephants elaborated their gesturing when the experimenter failed to meet their goal. Our findings indicate that elephants meet certain criteria of goal-directed intentionality in their gestural communication and that they assess the effectiveness of their gestures at communicating their goal. Our study reveals the occurrence of intentional gesturing beyond primates, enhancing our understanding of the phylogenetic origin of this capacity.

Prior experience influences when, not whether, dogs overimitate

Louise Mackie (Messerli Research Institute, Vetmeduni)

Hörsaal 31 | February 25 | 12:00-12:20

Keywords: dogs, overimitation, social learning, prior experience

Domestic dogs have been shown to copy their caregiver's actions, including ones which are causally-irrelevant to a physical goal—a behaviour called "overimitation". In a new overimitation task with a non-food reward, this study investigated "causal misunderstanding"—falsely assuming causally-irrelevant actions to have functional relevancy—as an explanation for dog overimitation (N = 81). By providing dogs with prior experience of the task to learn about the consequences of its irrelevant box-stepping and relevant bucket-opening action to obtain a toy-ball, we tested whether and when dogs would copy their caregiver's irrelevant-action demonstrations. Dogs with and without prior experience were compared to a third (control) group of dogs, who had neither prior experience nor caregiver demonstrations of the task. Results revealed that the timing of overimitation, rather than its frequency, was closely related to dogs' prior experience: dogs with prior experience attended to their reward first, then interacted with the irrelevant box later ("post-goal overimitation"), while dogs without prior experience first interacted with the irrelevant box ("pre-goal overimitation"). Our results suggest that, when action consequences are understood, dogs are overimitating for a secondary social goal that is clearly distinct from the task goal of obtaining a physical reward.

Co-Authors: Ludwig Huber

Social Contexts & Groups I

When talking makes things worse—Changing minds by doing things

Peter Hochenauer (Department of Philosophy, Faculty of Philosophy and Education, University of Vienna)

Kleiner Festsaal | February 25 | 15:30-15:50

Keywords: Wicked Problems, Joint Problem Framing, Transformative Learning, Enactive Cognitive Science

Many pressing societal issues like social and gender inequalities, migration, new technologies, or climate change mitigation turn out to be *wicked problems*. They seem impossible to solve due to their complexity (many interdependent facets), uncertainty (crucial unknowns), and value divergence (disagreement, controversy, polarization). They are ill-structured, concern diverse stakeholders, cut across various fields of knowledge, and span public and private spheres. Given the different perceptions, values, and worldviews of those involved, any attempt to find a solution runs the risk of becoming purely political. I therefore propose a new approach *to joint problem framing* (i.e., the process of understanding a problem together) to broaden and transform the space of possible outcomes in tackling wicked problems. It is based on *transformative learning* and *enactive cognitive science* to open up new ways of understanding. In a nutshell, this approach challenges the priority of rationality by shifting attention to nonlinguistic, nonconceptual forms of cognition. Thus, non-rational factors like bodily sensations, emotions, intuitions, and imaginations, as well as experiential, artistic, and practical knowledge, are included. In a process of exploring and learning new ways of interacting with the problem and each other, the problem and the space of possible outcomes are gradually and simultaneously expanded and transformed. As a result, new opportunities for action may arise. I will outline the theoretical background of this work and elaborate on its design principles based on a course format I have developed.

Baby I'm back! Effects of short-term separations on long-term pair bonded corvids

Anna Luise Fabbri (Department of Behavioral and Cognitive Biology, University of Vienna, Austria; Haidlhof Research Station, University of Vienna, Austria)

Kleiner Festsaal | February 25 | 15:50-16:10

Keywords: Social bonding, long-term monogamy, pair-bond maintenance, corvids

Relationships in long-term monogamous species are often supported by pair-bond maintenance behaviors, primarily affiliation such as mutual preening and food sharing. Most corvid species, including common ravens, hooded crows, and carrion crows, spend time in non-breeder groups until adulthood, when they form lifelong partnerships. Although it has been shown that non-breeding ravens exhibit calming behaviors upon returning to their social group after separation, little is known about paired ravens' and crows' responses to temporary separation. In this study, we investigated the effects of short-term separations on the behavior of captive paired ravens (*Corvus corax*, 8 pairs) and crows (*Corvus cornix* and *Corvus corone*, 4 pairs). Each individual was separated from its partner for 5 hours, and pairs were filmed before separation and after reunion. We hypothesized that, due to life history similarities and genetic relatedness, responses would not differ by species and that in turn the duration of the pair bond would influence reunion behaviors. We predicted an increased frequency and duration of pair-bond maintenance behaviors (affiliation, spatial proximity, and displaying) during reunions of pairs bonded for longer. Behavioral scor-

ing was used to measure behaviors pre- and post-separation, and the resulting data will be analyzed using generalized linear mixed modeling. Our findings will provide insight into behavioral mechanisms underlying pair-bond maintenance in corvids.

Co-Authors: Daria Nagel, Jim Mc Getrick, Lea Rosensteiner, Thomas Bugnyar

Community collaboration - Participatory research with LGBTQ+ parent families using the example of the Rainbow Longitudinal Austrian Family (RALF) study

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Kleiner Festsaal | February 25 | 16:10-16:30

Keywords: LGBTQ+ parent families, community-based participatory research, community advisory boards

Theoretical background: Community-Based Participatory Research (CBPR) is becoming increasingly important in psychological and health research. Particularly for the growing number of LGBTQ+ parent families (in which at least one parent identifies as lesbian, gay, bisexual, transgender, queer or another non-heterosexual sexual orientation or non-binary gender identity), CBPR is ideally suited to increase engagement and identify relevant research gaps. As part of the Rainbow Longitudinal Austrian Family (RALF) study, Austria's first longitudinal study with LGBTQ+ parent families, a Community Advisory Board (CAB) is established as CBPR component to guide and advise the study, ensuring the integration of diverse perspectives and potentially increasing the study's relevance and validity. *Research question*: What insights can the RALF study's CAB offer with regards to LGBTQ+ parent families and family research in general? *Sample*: The CAB consists of 6 – 7 community representatives, including members of LGBTQ+ parent family associations as well as parents and adolescents from LGBTQ+ parent families. *Study design*: Annual CAB meetings are held at three time points over the course of the longitudinal study (each before the respective data wave starts). Focus group interviews will address relevant topics for the execution and implementation of the study. *Analytic procedures*: Audio data from CAB meetings will be transcribed and qualitatively analyzed. Results will inform refinements to the study's future data waves and general implementations. *Results:* This is a work in progress and results are not available yet. Following the first CAB meeting in November 2024, data will be analyzed and the findings will be presented.

Co-Authors: Magdalena Siegel, M.Sc., B.Sc., Univ.-Prof.in Dr.in Martina Zemp

Empathy Across Boundaries: How Social Groups Shape Biased Empathy Beliefs

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Kleiner Festsaal | February 25 | 16:30-16:50

Keywords: empathy, politics, intergroup relations, in-group favoritism

Empathy is biased, as individuals are more likely to empathize with members of their ingroup than with those of outgroups. This bias contributes to conflicts and polarization between different political groups. Additionally, the extent to which an individual can empathize with a target is influenced by their own beliefs about empathy. Empathy beliefs (EBs) refer to the attitudes towards the act of empathizing with a particular group. In this study, we define it as the beliefs about the desirability of empathizing with the target. However, it remains unclear whether the level of empathy beliefs is also moderated by the empathy target - that is, whether individuals hold different beliefs about empathizing with ingroups compared with outgroups. This study aims to (1) establish the concept of biased empathy beliefs (biased EBs), proving that individuals' levels of EBs are affected by the empathy target; (2) examine whether this bias is influenced by the beliefs of others within social groups. One online experiment (N = 252) has been conducted, and two more online experiments are in progress. Preliminary results show that people indeed hold more positive EBs when the target belongs to their political in-group compared to when it belongs to the political out-group. Moreover, this bias can be moderated by exposure to the average (un)biased EBs of their political in-group. The follow-up experiments will investigate the effect of being exposed to (un)biased EBs of outgroup on individuals' biased EBs, and explore it's effect in real life by using fake tweets as materials.

Stress after flight: Investigating the impact of post-migration stress on mental health in daily life

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Kleiner Festsaal | February 25 | 16:50-17:10

Keywords: ecological momentary assessment, refugee mental health, affect, coping, salivary cortisol, salivary

Post-migration stress has been recognized as a significant factor negatively impacting the psychological well-being of refugees, even independently of pre-migration trauma exposure. However, there is no study yet investigating the detrimental effects of post-migration stress on psychological and physiological indicators of well-being in refugees in daily life. To address this gap, we aim to recruit 60 Arabic- or Farsi-speaking adult refugees who have resided in Austria for less than 36 months. Over a period of 14 days, participants will complete daily smartphone-based questionnaires using ecological momentary assessment (EMA), which enables near-real-time assessments via self-reports. A preinstalled mobile application will prompt participants to report on experienced migration-specific stressors, their perceived momentary stress levels, negative and positive affect, and symptoms of flight-associated mental disorders, repeatedly throughout the day. In addition to subjective stress assessment, participants will provide saliva samples to measure psycho-

biological stress system functioning, indicated by salivary cortisol and alpha-amylase. We expect negative correlations between psychological stress and indicators of well-being (mood, sleep quality, resilience) and positive correlations with symptoms of flight-associated mental disorders (i.e., depression, anxiety, and post-traumatic stress disorder) and indicators of psychobiological stress. The hypotheses will be tested by employing multilevel analyses. So far, 22 participants have been recruited (2 female, M_{age}= 33.9, Range = 18–53). At the time of the congress, preliminary results will be available, providing valuable insight into the complex impact of post-migration stress on refugees' well-being, thus informing more targeted interventions.

Co-Authors: Ricarda Mewes, Urs Nater

Animal Behaviour II

From Nestling to Nutcracker: Investigating the Ontogeny of Extractive Foraging in Crows

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Hörsaal 30 | February 25 | 15:30-15:50

Keywords: ontogeny, extractive foraging, crows

Extractive foraging, the extraction and processing of embedded or encased foods, has been proposed as one of the drivers for advanced cognitive abilities. While most research has focused on tool-using species, this study investigated how naturally non-tool-using carrion and hooded crows (henceforth: crows) learn to open walnuts. Various crow species are well-known to drop walnuts to break them open, often showing a preference for larger, easier-to-crack walnuts and hard surfaces, while adjusting the drop height based on the presence of other crows. Juvenile crows are known to drop mussels randomly with low success rates, but how walnut dropping develops and whether it requires extended practice is still unknown. Here, we examined how young crows develop the skills necessary for successful extractive foraging, and how resource availability influenced this development. We housed crows in three groups with varying access to walnuts and other manipulable material (from none to unlimited). Over eight months, their walnut interactions were recorded during weekly experimental sessions. Crows with unlimited access manipulated and broke walnuts earlier than groups with restricted access. Strategies for opening walnuts (pecking vs dropping) changed over time for crows from all groups, but crows with *ad libitum* access to walnuts started dropping walnuts earlier. These findings suggest that extractive foraging abilities in crows improve with age and are accelerated by greater exposure to walnuts. Access to manipulable objects seems to be enough to develop basic manipulation skills, however experience with encased foods is critical for developing extractive foraging abilities.

Co-Authors: Barbara C. Klump

Ears up: differences in human greeting behaviour between dogs and wolves – a two-sided exploration

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Hörsaal 30 | February 25 | 15:50-16:10

Keywords: canids, human-animal interaction, facial expressions, domestication

The comparison between present-day dogs and wolves can provide insights into how dog domestication may have occurred. Dogs' increased seeking of human contact suggests a selection for hypersociability, although increased submissive (deferential) behaviour might be equally explanatory. Rather than observing just general behaviour, this study investigates facial expressions in similarly raised dogs and wolves (n=11 respectively) in a 1-minute greeting with both a bonded and familiar human, to compare whether affiliative or appeasing signals predominate. Since humans might unconsciously express different attitude towards dogs and wolves and thereby influence the species' behaviour, we also examined the human interactors' facial expressions. Both species showed more proximity and putative appeasement/submissive signals (yawning, nose lick, ears flattener) with the bonded than the familiar person, countering the suggestion that dogs evolved general hypersociability. Interestingly, while dogs raised the inner brow – a well-studied adaptation – more, the species' facial expressions differed mainly in the ear movements. Dogs exhibited more ears down, ears rotate, and less ears forward than wolves. The literature-based association of ears down with social frustration and ears forward with positive anticipation in dogs might imply more ambiguous affect in dogs while greeting humans rather than hypersociability. Human behaviour could have also been influential: while only familiar partners were more positive towards dogs, both human groups showed more consistent and intense facial expressions towards dogs than wolves. This divergence might suggest a subconscious bias towards the species even in highly experienced humans. Whether and how these influence the animals remains to be explored.

Co-Authors: Giulia Pedretti, Gwen Wirobski, Valeria Bevilacque, Sarah Marshall-Pescini, Friederike Range

Female song and territorial defense across seasons in the Galápagos Yellow Warbler

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Hörsaal 30 | February 25 | 16:10-16:30

Keywords: Female song, territory defense, birdsong

Although singing is widespread in female birds, until recently, research has been predominantly focused on males. Here we studied female song in the Galápagos subspecies of the Yellow Warbler (Setophaga petechia aureola) which was previously

overlooked. We found that, unlike the commonly studied North American subspecies, female Galápagos Yellow Warblers commonly sing both solo songs and duets with their paired males. We then investigated whether female and male Yellow Warblers modulate their aggression and use of song in territory defense, both seasonally and in response to the sex of the conspecific intruder. To this aim, we carried out simulated territory intrusion experiments using solo male song, solo female song, and duet song playbacks across both breeding and nonbreeding seasons. Preliminary results suggest that males sang in response to the intruders regardless of season, while females sang fewer times in the breeding season compared to the nonbreeding season. Moreover, outside the breeding season, solo female intruders received more response from female territory owners. We discuss our work in progress in relation to the breeding biology of Yellow Warblers and the sex-specific functions of song.

Co-Authors: Katherine Anabel Albán Morales, Çağlar Akçay, Sonia Kleindorfer

Can social proximity predict audio-visual similarities in the courtship of spotted bowerbirds?

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Hörsaal 30 | February 25 | 16:30-16:50

Keywords: Social learning, multi-modal, courtship, dialect

Bowerbird males build a structure – the bower – where they perform a multi-modal courtship display consisting of sequences of vocalizations, postures and movements. In spotted bowerbirds, subordinate males are tolerated by bower owners and participate in various bower activities such as performing or receiving courtship displays. Subordinate males may benefit from these male-male partnerships by learning the skills needed for sexual signaling. In such case, similarities in audio-visual signals may emerge between socially interacting individuals, potentially resulting in geographical patterns of courtship. In this study, we tested whether male-male social interactions can predict similarities in courtship display within a single population of spotted bowerbirds. Video recordings were taken at bower sites to determine whether (i) individuals exhibit similarities in their audio-visual courtship display at micro-geographical scale and (ii) the strength of social interactions between males can predict these similarities. Our results show that geographic proximity among bowers explains similarities of audio-visual signals. For acoustic display components, in addition, social interactions could predict courtship similarities. Moreover, ongoing work using automated tracking methods will allow us to quantify highly detailed measures of the visual display similarities. These findings give novel observational evidences of social learning in wild birds at the small geographic scale.

Co-Authors: Giovanni Spezie, Dan C. Mann, Leonida Fusani

Bird or cheetah? – Utilizing playbacks to test prey species reaction to cheetah chirps

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Hörsaal 30 | February 25 | 16:50-17:10

Keywords: bioacoustics, cheetah, acoustic crypsis, adaptive function, communication

Cheetahs (*Acinonyx jubatus*) emit high-pitched vocalizations known as "chirps" that resemble bird calls in sound quality and structure when calling for conspecifics. The frequency of these chirps is considerably higher than expected for an animal of this size and for a sound employed in long-distance communication within a savannah habitat. Cheetahs are predators that rely on successful hunting attempts, while also facing threats from stronger predators like lions, which are among the main causes of mortality, particularly in cheetah cubs. The cheetah chirp is suggested to represent acoustic crypsis, mimicking avian calls and thereby hindering detection by prey species or competitors. To initially examine this idea, we performed playback studies with prey species, Impalas (*Aepyceros melampus*), Wildebeests (*Connochaetes taurinus*), Zebras (*Equus quagga*) and Kudus (*Tragelaphus strepsiceros*), at the Mabula Game Reserve in South Africa in September and October 2024. We deployed cheetah chirps, various other cheetah vocalizations, calls from other predators, and bird calls as controls, broadcasting these stimuli via loudspeaker from one vehicle, while simultaneously video recording the reactions of the prey species from a second vehicle. Videos will be coded in the forthcoming months. The presentation will include a summary of our fieldwork and coding methodologies, as well as the status of the ongoing work.

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Brain, Perception, and Stats

Subcellular localization of the calcium channel Ca 2.3 in cultured hippocampal neurons

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Hörsaal 31 | February 25 | 15:30-15:50

Keywords: calcium channel 2.3, synapse formation, cultured hippocampal neurons, immunofluorescence, imaging

Voltage-gated calcium channels (Cav) mediate calcium influx in living cells and are necessary for essential physiological functions such as muscle contraction and exci-

tation-transcription coupling. Channels of the Cav 2 family are highly expressed in the central nervous system (CNS) and are important regulators of neuronal excitability. They are involved in pre- and postsynaptic functions where they, for example, trigger neurotransmitter release. Cav 2.3 is involved in neuronal development and, when compared to other Cav channels, shows the strongest expression in mouse hippocampus. Nevertheless, little is known about the subcellular localization of Cav 2.3 in CNS neurons. Here, we aim to investigate the pre- and postsynaptic localization of Cav 2.3 in hippocampal neurons. To this end, we are employing low-density primary cultures of mouse hippocampal neurons, transfected with HA-epitope tagged α subunits of calcium channels, immunofluorescence staining, and high-resolution fluorescence microscopy. For a comparative quantitative analyses, the well-characterized Cav 1.2 channel is used as control. Analysis of live cell labelled hippocampal neurons revealed a clustered localization of Cav 2.3 channels throughout the neuronal plasma membrane of somata, dendrites, and axons. In addition, Cav 2.3 channels show a strong presynaptic expression in excitatory and inhibitory neurons. However, and similar to Cav 1.2, Cav 2.3also shows a strong expression in dendritic spines of excitatory synapses and in inhibitory postsynaptic locations opposite vGAT positive synaptic boutons. Taken together, our results show a pre- and postsynaptic localization pattern of Cav 2.3 channels, which supports its proposed roles in synaptic transmission and postsynaptic calcium signalling.

Co-Authors: Ruslan Stanika, Sabrin Haddad, Cornelia Ablinger, Gerald Obermair

VALID: A Checklist-Based Approach for Improving Validity in Psychological Research

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Hörsaal 31 | February 25 | 15:50-16:10

Keywords: validity, tailored online checklist, open practices

In response to the replication and confidence crisis across various empirical disciplines, ensuring the validity of research has gained attention. High validity is crucial for obtaining replicable and robust study outcomes, both when exploring new questions and when replicating previous findings. This study aimed to address this issue by developing a comprehensive checklist to assist researchers in enhancing and monitoring the validity of their research. After systematically analyzing previous findings on validity, a comprehensive list of potential checklist items was compiled. Over the course of three rounds, more than 30 interdisciplinary and psychological science experts participated in a Delphi study. Experts rated items on their importance and were given the opportunity to propose novel items as well as improve existing ones. This process resulted in a final set of 91 items, organized according to common stages of a research project. The VALID checklist is accessible online (https://www.validchecklist.com/) and provides researchers with an adaptable, versatile tool to monitor and improve the validity of their research and to suit their specific needs. By focusing on adaptiveness during its development, VALID encompasses 331 unique checklist versions, making it a one-stop solution suitable for a

wide range of projects, designs, and requirements.

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Celebrating Diversity: Insights into the Evolution of Central Brain

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Hörsaal 31 | February 25 | 16:10-16:30

Keywords: brain lateralization, evolution, neuronal plasticity

Our brains are largely organized in a left-right symmetrical fashion. However, structural and functional differences between the two hemispheres are widespread, not only in humans but across the animal kingdom. Brain asymmetry is most obvious in lateralized motor behaviors, such as handedness, but it also plays a crucial role in various cognitive functions. In humans, altered asymmetries are linked to neurological conditions such as schizophrenia, autism, and dyslexia. Despite its significance, our understanding of how brain asymmetries are organized at the circuit level and integrated into a symmetrical ground pattern is largely unknown. In my PhD thesis, I am using a comparative approach to determine the cellular and molecular diversity of central brain asymmetry among different Drosophila species. The central complex (CX) of the insect brain is a highly conserved center for sensory-motor transformation and memory formation, exhibiting functional similarities to the vertebrate basal ganglia. During my MSc studies, I identified a class of neurons that acts as master regulator of CX circuit asymmetry. To gain further insights into the morphological diversity in CX asymmetry, I analyzed the circuit design of closely and more distantly related Drosophila species, using conserved molecular markers specific to asymmetric CX neurons. While left-right brain asymmetry is a consistent feature across all Drosophila species studied, the degree and direction vary significantly. My developmental studies suggest that differences in neuronal plasticity allow for the evolution of diverse asymmetry patterns.

Co-Authors: Johann Markovitsch, Wolfgang Kallina, Sigrid Ilgerl, Thomas Hummel

Does Null Hypothesis Significance Testing Require Adaptation to the Smallest Effect Sizes of Interest? A Preregistered Systematic Review on Meehl's Crud Factor and Lykken's Ambient Noise

Robin Beckenbach (University of Vienna, Faculty of Psychology, Department of Basic Psychological Research and Research Methods)

Hörsaal 31 | February 25 | 16:30-16:50

Keywords: crud factor, smallest effect size of interest (SESOI)

The crud factor and ambient noise, which posit that *everything is related to everything*, state that any two variables are correlated in a real sense to a non-zero degree, challenge the standard of nil null hypothesis significance testing (NHST) for theory corroboration. They imply that statistical significance merely depends on sample size, if no smallest effect size of interest (SESOI) is considered, potentially leading to published results being practically and theoretically meaningless. Despite those consequences for the cumulative character of psychological research, the definitions of the crud factor and ambient noise remain vague, and no measure for their magnitude has been agreed on. This preregistered systematic review addresses this conceptual gap by utilizing conventional search strings, analyzing citation intentions in two key papers, and tracking recent developments through citations of the most recent review on the topic. This paper posits that the crud factor and ambient noise are perceived as conceptually equivalent, being used more often interchangeably than differently. The concepts are frequently cited to challenge the validity of NHST and to both accept and dismiss small effects. Most researchers use both concepts broadly, encompassing a range of methodological artifacts, such as common method variance. The findings further indicate the wide recognition of the crud factor and ambient noise as real phenomena, particularly in their influence on correlational research. The concepts are assumed to depend in kind and magnitude on the research field.

Temporal Certainty in Visual Search

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Hörsaal 31 | February 25 | 16:50-17:10

Keywords: visual search, distractor suppression, temporal certainty, attentional template

Visual search clearly benefits from knowing what targets look like. But not only what to search for, also knowledge about when to expect a target improves search performance. Given that, during visual search, our brain is confronted with a multitude of distractors, foreknowledge about distractors can similarly improve search. Nonetheless, an important question remains: Can distractors be suppressed more effectively if we know when to expect them? Considering temporal positions as feature-like information, we examine temporal influences by varying temporal certainty of visual stimuli in a conjunction search experiment (N=40). Participants search for a red vertical bar among four differently orientated, colored bars, or have to suppress the red vertical bar and, instead, search for a non-red vertical bar. The target display is preceded by a cueing display - proactive processing is expected to result in shorter (search condition; due to facilitation) or longer (suppression condition; due to suppression) reaction times in trials in which the red cue and target are presented at the same position compared to different-position trials. We evaluate the impact of temporal certainty by implementing two different types of trial blocks; with certain (100 ms or 200 ms) or uncertain (mixed) cue-target intervals. Temporal certainty is

hypothesized to result in stronger cueing effects of same-position vs. different-position cues compared to temporally uncertain trials. Results are discussed in light of current theories and constitute significance for central aspects of everyday life, by revealing the impact of temporal certainty on attention control.

Co-Authors: Univ.-Prof. Dr. Ulrich Ansorge

Social Contexts & Groups II

Embracing Uncertainty with Creative Action - Towards a 4E Cognition Perspective on Entrepreneurial Imagination

Felipe Gonzalez Tubio Machado (Department of Philosophy. Cognitive Science Hub)
Kleiner Festsaal | February 26 | 10:30-10:50

Keywords: 4E cognition, Imagination, Creativity, Uncertainty, Philosophy of Mind

This paper focuses on theories of entrepreneurship, more specifically, we explore what a 4E cognition perspective on entrepreneurship could be. There are several well-established theories of entrepreneurship in economics, such as the alertness to opportunities (Kirzner), the visionary imagination of the new (Schumpeter), or the creative nature of entrepreneurial choices (Buchanan and Vanberg). These accounts are clearly cognitivist in origin, they either articulate a clear division between cognitive agents and the world or posit an individual able to intellectually envision alternative futures which they are able to create through entrepreneurial action. They therefore do not provide fertile ground for a 4E perspective on entrepreneurship.But, we argue that some alternative accounts of entrepreneurship do point in the direction of 4E cognition. We start by analyzing Lavoie's articulation of the social element of the human mind, conceiving the entrepreneur as culturally embedded, while emphasizing the importance of embodied knowledge. 'Effectuation' is the second approach we investigate (Sarasvathy 2008). This account focuses on action and interaction with available means to imagine the new. We argue that effectuation moves closer to enactivism. A third approach to entrepreneurship which we explore is Beckert's (2016) 'imagined futures'. It gives a central place to uncertainty, and how individuals deal with it. Beckert's analysis focuses on how shared frames and narratives as well as calculative devices allow individuals and organizations to imagine the future. His framework is compatible with the extended mind approach.

Co-Authors: Erwin Dekker

Object Play as a Strategy to Mediate Social Interactions in Common Ravens

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Kleiner Festsaal | February 26 | 10:50-11:10

Keywords: object play, social behaviour, social cognition

Social play has been shown to facilitate the formation and development of social relationships between individuals. Social play may also involve objects. Most research on object play behaviour suggests that it is explorative in nature and adaptive in gaining foraging skills. However, not much is known about how individuals may use objects to initiate social interactions with others. Captive ravens have been shown to engage in interactions over cached objects, thereby learning about others' behaviours. Here we present two studies on object-handling behaviour in a group of individually marked, free-flying non-breeder ravens that has been monitored over 15 years. In the first study, we report the occurrence of object play in adult ravens under free-flying conditions, while validating studies from captivity concerning the patterns of object play across age, season, and object characteristics. Our findings support the notion that object play has more than one function and serves to gain information about the individual's physical and social environment. Focussing on the latter in the second study, we test the hypothesis that ravens may engage in object play to attract the attention of and initiate interactions with other ravens, using 493 play bouts recorded between October 2021 – December 2023. Our analysis shows a trend that object-handling behavior elicits approaches from other ravens and, indeed, may lead to social interactions. However, the exact social context seems to differ between the age-classes. The potential implications of these findings will be discussed.

Co-Authors: Palmyre H. Boucherie, Thomas Bugnyar

Is it Worth the Hustle? A Multi-Country Replication of the Effort Moralization Effect and an Extension to Generational Differences in the Appreciation of Effort

Leopold Roth (Department of Occupational, Economic and Social Psychology, University of Vienna)

Kleiner Festsaal | February 26 | 11:10-11:30

Keywords: effort moralization, generation effect, replication, multi-country, work ethic

Inferring the character of individuals is an adaptive need for partner and mating decisions as well as to avoid harm. The effort moralization effect is the finding that people who exert more effort in a task are seen as more moral, even if higher effort does not enhance the outcome (e.g., higher performance or better quality). We aim to replicate this effect, based on Celniker et al. (2023, Study 6), in countries not yet included in this research (Germany and Mexico). Furthermore, drawing on discussions around workforce participation (see 'great resignation', or 'quiet quitting') that criticize the supposedly lower work ethic of younger individuals (e.g., the so-called Gen Z), we will examine whether lower effort moralization is observed as a function of age (including non-linear terms). This will allow us to examine whether younger generations do

indeed moralize ineffective effort less than older generations.

Co-Authors: Tassilo T. Tissot

Plasticity of antipredator behavior in common ravens (Corvus corax) across developmental and social context

Silvia Damini (University of Vienna)

Kleiner Festsaal | February 26 | 11:30-11:50

Keywords: Antipredator behaviour, Development, Plasticity, Ravens

Effective responses to predators are critical for survival, especially when anti-predator behavior varies by context and requires adaptive flexibility. In corvids, mobbing behavior is influenced by social learning, social context, age and early-life experiences. Yet, most research focused solely on scolding, the vocal component of mobbing behavior, without investigating other predator-directed or escape behaviors. Moreover, there is little knowledge on the development of anti-predator behavior in corvids, and whether parental agitation affects offspring behavior. In this study, we investigated the ontogeny of anti-predator behaviour in captive raven (*Corvus corax*) families by exposing 12 family groups to a potentially dangerous human predator at two developmental stages: when the offspring had just fledged and when they were nearing independence. We hypothesized that (i) parental agitation would be higher when offspring are younger, given the heightened vulnerability of fledglings, and (ii) juvenile ravens would increasingly direct behaviours toward the predator as they age, taking an active role in the mobbing. We predicted that young fledglings would display limited predator-oriented responses, which would intensify as they approached independence, potentially influenced by parental behaviour cues. The findings of this study provide insights into the developmental trajectory of anti-predator behavior in ravens and explores the role of age-related vulnerability and social cues from parents in shaping effective responses to threats.

Co-Authors: Christian Blum, Petra Sumasgutner, Thomas Bugnyar

Exploring Subliminal Affective Priming Effects in the Initial Stage of Hiring Process

Hakimeh Ghafari (Department of Occupational, Economic and Social Psychology, University of Vienna)

Kleiner Festsaal | February 26 | 11:50-12:10

Keywords: Subliminal Priming, Hiring Decision, Affect, Bias, Resume Evaluation

This research explores how subliminal affective priming may influence resume evaluation in hiring processes. While conscious biases such as age or gender impact hiring decisions, there is limited understanding of how incidental emotions—unrelated to candidates' qualifications—might subtly bias recruiters' evaluations. This study addresses this gap by examining whether brief exposure to affective stimuli (e.g., happy, neutral, or angry faces) can affect resume ratings, even when these cues are presented below conscious awareness. Two re-

search questions guide the study: To what extent does subliminal affective priming impact resume evaluations, and are there differences in priming effects between professional recruiters and novice evaluators? We hypothesize that professional recruiters, due to their expertise, will rely more on relevant criteria and show less susceptibility to affective biases than novices. The study employs a 2×3×3 mixed design, with group type (recruiters vs. novices) as a between-subjects factor, and facial primes and resume quality (better, average, worse) as within-subject factors. Data collection will include reaction times and resume ratings to assess both speed and accuracy in evaluations. This study has potential implications for recruiter training by highlighting how even subliminal cues may impact decision-making, suggesting pathways for making recruitment practices more objective and fair.

Co-Authors: Prof. Oliver Fabel, Prof. Christian Korunka

Communication & Perception

Extended Evolutionary Perspectives on Music and Musicality - Timbre in Communication Systems of Vocal Learners

Oliver Tab Mario Bellmann (Acoustics Research Institute, Austrian Academy of Sciences)

Hörsaal 30 | February 26 | 10:30-10:50

Keywords: Music; Musicality; Evolution; Timbre

The origins of music and the abilities which enable us to produce and perceive it as such – musicality – are enigmatic, involving both biological and cultural factors. The central hypothesis of this proposal is that the origins of musicality and music are based on constructive interactions between biology and culture during individual development and cultural transmission across generations. In this talk, I will discuss how timbre, a crucial yet understudied aspect of music, offers a unique lens to explore this interplay. Using an innovative combination of computational music information retrieval, comparative developmental studies, and an iterated learning paradigm, this project will

- Develop a unifying conceptual framework for the biocultural coevolution of musicality and music
- Identify cultural uses of timbre in music and in other vocal learners' communication systems
- Investigate interactions between phenotype and culture through social learning of timbre patterns during ontogeny in a vocal learner
- Determine how repeated cultural transmission shapes the cultural evolution of timbre patterns in humans

I will discuss these approaches and highlight how the expected outcomes include a better understanding of timbre in vocal learning species, and insights into the constructive, developmental origins of musicality and music. This research is relevant to a broad range of disciplines and aligns with CoBeNe's objective of promoting inno-

vative and highly interdisciplinary basic research.

Co-Authors: Marisa Hoeschele, Acoustics Research Institute, Austrian Academy of Sciences

"Morphotactic Ambiguity Avoidance" in Language Learning and Change

Irene Amparo Böhm (Department of English and American Studies, University of Vienna)
Hörsaal 30 | February 26 | 10:50-11:10

Keywords: linguistics, ambiguity avoidance; sound change; experimental

Speakers keep track of where and how often sounds (co-)occur in a language, and use these distribution frequencies in the learning and processing of words (Storkel, 2001; Kelley & Tucker, 2017). Sometimes one can tell from the way a word sounds whether it is simple or complex. For instance, words ending in /-gz/ are always complex in English (*egg+s, leg+s*), and those ending in /-mp/ never are (*lamp, jump*). In other cases, sound sequences can just as easily occur with both simple and complex forms (e.g., /-nd/ in *hand* and *sinn+ed*); such patterns are morphotactically ambiguous. While predictable sound sequences have been shown to make word processing easier, ambiguous ones can hinder it (Post et al., 2008; Korecky-Kröll et al., 2014). It follows that such ambiguous sound patterns should be difficult to learn and, therefore, be selected against in language change. I present the results of two studies on this hypothesis: an artificial language learning experiment (osf.io/gdu79) and a historical corpus study (Böhm et al., submitted). In the former, I demonstrate that consonant sequences are learnt more easily when they predictably indicate word structure than when they are ambiguous. In the latter, I argue that a specific puzzling sound change from the history of English, sporadic past tense /-d/ devoicing (e.g., *spoilt, burnt*; Lahiri, 2008; Wełna, 2009), can be understood better if one assumes that sound changes tend to prevent or reduce this type of ambiguity (cf. also Matzinger & Ritt, 2022).

Co-Authors: Nikolaus Ritt

Green for success? The influence of visual sustainability cues on product evaluation

Katharina Steiner (University of Vienna; Department of Social Psychology)
Hörsaal 30 | February 26 | 11:10-11:30

Keywords: sustainable consumption, meat alternatives, packaging color, taste perception

Reducing carbon footprints and promoting sustainable lifestyles are critical societal challenges today. Meat consumption is a significant contributor to global greenhouse gas emissions, leading many consumers to adopt vegan, vegetarian or flexitarian diets. In response, companies have expanded their range of meat alternatives. However, the most effective marketing strategies for these alternatives remain unclear. Research shows that the main barrier to consumption of meat alternatives is their perceived lower sensory appeal. It is therefore crucial to find ways to enhance the sensory appeal of these products through effective packaging design. Color plays a significant

role in shaping consumer perceptions, particularly regarding taste. While it is well documented that packaging color influences taste perception, there is limited research on how packaging color influences perceptions of sustainability. This study aims to address this gap by investigating whether packaging color can enhance the taste perception of meat alternatives while simultaneously communicating sustainability. The findings will be particularly valuable to marketers, helping them to develop packaging strategies that not only enhance product appeal, but also drive consumer purchases.

The weighing of speaker and lexical information in spoken language processing

Helen Robinson Reese Klubach (Acoustics Research Institute, Austrian Academy of Sciences)

Hörsaal 30 | February 26 | 11:30-11:50

Keywords: spoken language processing, speech perception, phonetics

Social information inferred about the speaker is known to affect speech processing. A well-established example of this is the effect of speaker gender on fricative categorization: ambiguous fricatives are interpreted differently when combined with a male as opposed to a female voice. Previous experiments within this dissertation project examined the processing of speaker gender information in adverse listening conditions (i.e., under additional cognitive load or noisy listening conditions) and in non-native listeners. Here, an experiment is presented that tests the effect of speaker gender on lexical bias (i.e., ambiguous sounds tend to be interpreted a sound that would complete a real word) with the aim of determining the relative magnitude of the two effects in spoken word recognition. This experiment is a work in progress, with data expected by the end of 2024. One female and one male speaker were recorded producing /s/-/ʃ/ minimal pairs (e.g., same-shame), word - non-word pairs (e.g., safe-shafe) and non-word pairs (e.g., saf-shaf). A /s/-/ʃ/ continuum will be spliced onto the word ends to create unclear stimuli, which will be presented to participants as a 2AFC experiment in which they identify the fricative heard. We seek to determine if the speaker gender affects lexical bias and determine which effect is weighed more heavily in fricative categorization.

Co-Authors: Eva Reinisch

Beyond synchrony: investigating rhythmic variation and social bonding

Dhwani Parimal Sadaphal (Behavioral and Cognitive Biology, University of Vienna, Center for Music in the Brain, Aarhus University)

Hörsaal 30 | February 26 | 11:50-12:10

Keywords: interpersonal synchrony, polyrhythms, meter, social bonding

Past literature has illustrated a bidirectional link between synchrony and feelings of cooperation, affiliation, and social bondedness. However, studies of ensemble music around the world demonstrate that individuals often choose to produce varied and interesting interpersonal rhythmic patterns. Mounting evidence suggests that, while simultaneous and identical movements

lead to strong prosocial feelings, other forms of more complex interpersonal rhythms may be just as potent at bonding as perfect synchrony. The present study tests the effect of varying interpersonal synchrony between dyads within the context of hierarchical timing to gain insight into the cognitive processes involved in collective musical rhythm. The talk will discuss methods and preliminary results.

Co-Authors: Jan Stupacher, Peter Keller, Tecumseh Fitch

Mental & Physical Health I

Concept of a Digital Information Platform to Support Parents Regarding their Children's Mental Health. Participatory Research and Design Thinking

Carina Hauser (Department of Clinical Child and Adolescent Psychology, University of Vienna)

Hörsaal 31 | February 26 | 10:30-10:50

Keywords: mental health, mobile app, parents, participatory research

Recent studies in Europe have determined an increase in psychological distress among children and adolescents during the pandemic. In addition, other factors - such as the ongoing Russian-Ukrainian conflict, the climate crisis, and excessive use of social media negatively affect their mental well-being. This fact also has an impact on their parents, as recognizing and addressing mental health issues in their children represents an overwhelming situation for them. Digital solutions can serve as a valuable supplementary resource for professional support providing guidance to parents in managing this situation. However, available digital tools that do exist are often poorly organized and overloaded with inadequate information. The aim of the first study was to define and develop a concept for a useful digital information and counselling system by involving eight experts and parents as co-researchers. The study employed the Community-Based Participatory Research approach, utilising design thinking techniques to create personas, storyboards and paper-pencil prototypes. This was achieved through three workshops over a six-month period. The audio data collected during the discussion was transcribed and analysed according to Mayring's content analysis. The results highlight three concepts that could be implemented in mobile apps. The first concept is the presenting of case studies with suggested solutions to particular mental health issues. The second concept is to bundling contact and networking for written exchange with experts and other parents. The third idea is a matching platform that suggests professionals based on the symptoms and diagnoses provided. The co-researchers expressed a preference for the first concept.

Co-Authors: Elisabeth Kupka-Klepsch, Lena Rettinger

Good Mental Health in People with Intellectual Disabilities: An Inclusive Delphi Study

Sophie Komenda-Schned (Department of Clinical and Health Psychology, Faculty of Psychology, University of Vienna, Vienna, Austria; Vienna Doctoral School in Cognition, Behavior and Neuroscience, University of Vienna, Vienna)

Hörsaal 31 | February 26 | 10:50-11:10

Keywords: inclusive Delphi study, intellectual disabilities, good mental health, participatory approach, concept

Background: Currently there is no common conceptualization of good mental health in people with intellectual disabilities (ID). To develop an initial shared understanding of good mental health, an inclusive Delphi study was designed. People with ID served as co-researchers throughout the research process. Methods: Two groups of experts participated in this study: (1) mental health professionals and (2) people with ID. The Delphi questionnaire was based on triangulated data from prior studies: a systematic literature review, interviews with mental health experts and, focus groups with people with ID. Between the 1st and the 2nd survey round the questionnaire was adapted. Final analysis and clustering of the remaining set of items was carried out in a group of (co-)researchers with and without ID. Results: In the 1st survey round all items were rated to be important for good mental health of people with ID (weighted median ≥ 3 out of 5). In the 2nd survey round seven items were added, according to the responses of the participants in open text fields in the 1st questionnaire. Descriptive analysis and thematic clustering of the results of the 2nd round will be presented, depicting a consolidated list of factors contributing to good mental health of people with ID. Discussion: This study provides a foundational step toward developing a more inclusive understanding of good mental health for people with ID. The active involvement of co-researchers underscores the value of participatory methods in shaping research outcomes.

Co-Authors: Paula Moritz, Sarah Jasmin Landskron, Nicole Braunstein, Josef Hochmeister, Robert Saugspier, Karin Riegler, Elisabeth Lucia Zeilinger

"Navigating Assisted Suicide in Austria: Experiences and Views of Physicians, Patients and Relatives"

Tamina-Laetitia Vielgrader (Institute for Ethics and Law in Medicine, University of Vienna, Vienna, Austria)

Hörsaal 31 | February 26 | 11:10-11:30

Keywords: assisted suicide, patient empowerment, autonomy at the end of life, current legislation

On January 1, 2022, assisted suicide was legalized in Austria with the enactment of the new dying decree law. Since the implementation of this law, the occupational groups named in the legislation must navigate the detailed process of guiding terminally ill individuals who wish to die through the procedural complexities of establishing a dying decree. To date, there has been minimal research on the challenges faced by these occupational groups or on the experiences of those most affected by the

new law: terminally ill people who wish to die and their relatives. The aim of this dissertation is to identify the situation, needs, and challenges faced by patients and their relatives. The thesis comprises three studies: the first explores the situation for physicians, the second examines the situation for individuals who wish to die, and the third investigates the situation for relatives. The first study will use two mixed-methods online questionnaires to identify the situation for physicians and their attitudes towards assisted suicide. The second and third studies will provide deeper insights into the experiences of patients and their relatives through semi-structured, qualitative interviews. These interviews will focus on emotional and procedural dimensions of the assisted suicide process. Furthermore, the studies will examine the role of patient empowerment and autonomy at the end of life within the process of establishing a dying decree. Together, these studies aim to provide a comprehensive understanding of the social, legal, and ethical implications of Austria's dying decree law and inform future policy and practice.

Being Mortal: Investigating the effects of a mortality salient exhibition on prosociality and general wellbeing using a daily dairy

Christina Makri (Department of Cognition, Behaviour, Neuroscience, University of Vienna)

Hörsaal 31 | February 26 | 11:30-11:50

Keywords: art, death anxiety, mortality salience, museum study

The purpose of this study was to examine how experiencing a mortality salient art exhibition--that is, an exhibition with an overall curatorial design and selection of artworks meant to raise individuals' thoughts and conceptions regarding death--can influence one's behaviours and attitudes. The study was conducted with a single cohort of participants using both (1) a typical pre/post design (*'Day 0'* one week before exhibition viewing, *'Day 7'* immediately after and *'Day 14'*one week after) and (2) a daily dairy/EMA approach. The former measured the immediate effects following the viewing of the exhibition, while the latter approach tracked participants' reports over a period of two weeks regarding how they felt or acted each day and with the first week acting as a baseline and the exhibition visit embedded in the mid-way point of the study. Answers from this study allow for further understanding on the extent that art exhibitions can bring about change, and specifically considering mortality saliency as a mechanism to prosocial/reflective impacts. The study also provides important new evidence regarding how an exhibition visit may have downstream impacts on individuals and how long these impacts may last.

Co-Authors: Ryan Joseph Slaby

Mental & Physical Health II

Understanding the Menstrual Cycle: Distress and Symptomatology across the Premenstrual, Menstrual and Intermenstrual Phases

Lucia Volpi (Department of Clinical and Health Psychology, University of Vienna)

Kleiner Festsaal | February 26 | 15:00-15:20

Keywords: Menstrual symptoms, Menstrual distress, Germany, Austria

Menstruators may experience a range of symptoms (i.e., physiological, psychological-cognitive, pain, discomfort, gastrointestinal), which fluctuate throughout the different menstrual cycle phases, and which can interfere with their normal functioning. To date, research mostly focuses on the menstrual and premenstrual phases and on pain and psychological symptoms. This survey aimed to broaden the understanding of the burden that different symptoms generate throughout the cycle, including the intermenstrual phase. Menstruating participants (N=336) with female genital organs from Germany and Austria were asked to report the frequency and distress of 25 symptoms occurring in the three cycle phases and to rate how often the symptoms impaired their daily functioning. Repeated measure ANOVAs tested whether distress differed across phases. Age was tested as a covariate and hormonal contraception use and gynaecological conditions as between subject factors. Overall, the psychological-cognitive, discomfort and physiological symptom clusters were the most frequent across all phases. They were mostly reported in the premenstrual phase (76%, 74%, 71%, respectively), followed by the intermenstrual (72%, 71%, 69%) and menstrual (50%, 57%, 46%) phases. Nonetheless, the menstrual phase had the highest average of distress, which was significantly higher compared to the other two phases (ps < .001), $F(1.79, 526.15) = 91.19$, $p < .001$, $\eta p^2 = 0.23$. Age, contraception use, and gynaecological conditions did not explain the changes in distress. These findings highlight that different menstrual cycle-related symptoms and the distress they induce extends beyond the menstrual phase, emphasising the need for research to encompass the entire menstrual cycle and examine a broader range of symptoms including discomfort and physiological ones.

Co-Authors: Laura M. König

Interactions in Stress and Premenstrual Symptoms Across the Menstrual Cycle – The ISSAC Study

Celine Bencker (Department of Clinical and Health Psychology)

Kleiner Festsaal | February 26 | 15:20-15:40

Keywords: study protocol, premenstrual symptoms, stress, menstrual cycle, ecological momentary assessments

Premenstrual dysphoric disorder (PMDD) is a menstrual cycle-related mental disorder that affects approximately 58,000 to 155,000 individuals in Austria. While affective, behavioral, and physical symptoms during the luteal phase are common among individuals with menstrual cycles, PMDD represents the severe end of the spectrum. Stress has been proposed as a potential pathophysiological factor contributing to PMDD symptomatology, yet the temporal relationship between stress and PMDD symptoms across the menstrual cycle remains poorly understood. The ISSAC study aims to address this gap by investigating stress and PMDD symptom patterns over two menstrual cycles, employing both biological and self-reported measures. Eighty individuals with regular menstrual cycles and varying degrees of premenstrual symptoms will be recruited. Participants will complete five smartphone-based assessments per day throughout one full menstrual cycle, followed by daily assessments during a second cycle. Data collected will include momentary stress levels, affective symptoms, diurnal stress biomarkers (i.e., alpha-amylase and cortisol), and a comprehensive PMDD symptom diary. This study is the first to prospectively examine both biological and psychological stress patterns in relation to PMDD symptoms throughout the entire menstrual cycle, promising invaluable insights into the intricate relationship between stress and premenstrual symptomatology. At the forthcoming conference, the ISSAC study protocol will be presented along with insights from the data collected up to that point.

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ReCoVer: A study on caregiver perspectives and contributions to youth mental health recovery after inpatient stay

Amos-Silvio Erik Friedrich (Department of Clinical and Health Psychology, Faculty of Psychology, University of Vienna)

Kleiner Festsaal | February 26 | 15:40-16:00

Keywords: children, adolescents, mental health, family, aftercare

As inpatient treatment is increasingly focused on early reintegration into community- and family-based settings, the post-discharge period is key to improving child and adolescent mental health outcomes. Family-focused care during and after discharge is a promising element, but there is a lack of research on how families contribute to and can be supported to promote sustained youth mental health recovery after inpatient psychiatric stays.I present the longitudinal mixed-methods ReCoVer study following families of youth after their transition out of inpatient mental health

treatment. This study project aims to identify family needs around the return to home care and examine the role of caregiver stress and family resources as key determinants of recovery and recovery-promoting processes. Semi-structured interviews are conducted with a subsample of caregivers. Mental health outcomes are assessed over 6 months with regard to the contribution of family factors.Preliminary results of the ongoing study are presented. Findings are discussed with regard to implications for caregiver support in discharge and aftercare interventions.

Brain Imaging & Modulation

Creative Cognition, Cognitive Flexibility, and the Dopaminergic Pathways – Investigating the Role of the Striatal Regions using Low-Intensity Focused Ultrasound Stimulation

Franz Schmid (Vienna Cognitive Science Hub, University of Vienna, Austria)

Hörsaal 30 | February 26 | 15:00-15:20

Keywords: focused ultrasound stimulation, neuromodulation, cognitive flexibility, creative cognition

Creative cognition can be considered a fundamental characteristic of the human condition. However, it also allows for unique insights into various cognitive mechanisms, both in the healthy and pathological brain. Yet, little is known about the neurobiological mechanisms that drive creativity, and existing knowledge is mostly correlative in nature. In this PhD project, we aim to overcome this limitation and gain a deeper understanding of the underlying causative mechanisms. We do so by employing low-intensity focused ultrasound stimulation, a form of non-invasive brain stimulation that enables the precise modulation of small and deep brain areas. We target striatal parts of the dopaminergic pathways, such as the nucleus accumbens and the caudate nucleus – regions that play a vital role in creative cognition. We examine creative cognition and cognitive flexibility – a capacity closely linked to creativity – through a battery of behavioral assessments and compare pre- vs. post- and active vs. sham stimulation data. At the time of writing, the project is still in the piloting phase. Preliminary data analysis, however, indicates a decrease in cognitive flexibility after active stimulation of the right caudate nucleus. At the PhD Academy, a more comprehensive data set will be presented and discussed. The outcome of this PhD project will help to understand better the dopaminergic pathways, creative cognition, and the link between them. Eventually, the obtained knowledge will also feed into an international research collaboration called *Unlocking the Muse*, which seeks to understand Parkinson's Disease better by approaching it from the angle of creative cognition.

Co-Authors: Julia Sophia Crone**,** Vienna Cognitive Science Hub, University of Vienna, Austria

MLAT-V performance and variability in brain activation during a language localizer task

Sevil Maghsadhagh (Vienna Cognitive Science Hub)

Hörsaal 30 | February 26 | 15:20-15:40

Keywords: fMRI brain activation, declarative memory network, MLAT-V

Neuroimaging studies have revealed that successful language learning is associated with increased activation in the left hippocampus (Breitenstein et al., 2005), and that its involvement decreases as artificial language learning progresses (Opitz et al., 2003). Beyond the hippocampus, the caudate nucleus has also been shown to play a significant role in second language acquisition (Tan et al., 2011) and phonological learning (Tricomi et al., 2016). These findings align with the Declarative/Procedural memory model, which suggests that hippocampal-based and basal ganglia-based networks subserve memory processes in language learning and processing (Ullman, 2004). In this study, we investigated individual differences in brain activation patterns during an fMRI language localizer task (Malik-Moraleda et al., 2022) in relation to participants' scores on the Modern Language Aptitude Test MLAT-V, which assesses rote learning and lexical memory (Carroll & Sapon, 1959, 2002). We examined neural responses to the intact versus degraded first language (L1) conditions, analyzing whole-brain activation and also results within memory-related regions of interest, particularly in the hippocampi and caudate nuclei. Higher MLAT-V scores were associated with increased activation in the left superior parietal lobule and the right inferior occipital gyrus, which extended into the temporo-occipital part of the middle temporal gyrus. These regions are implicated in episodic memory retrieval (Spaniol et al., 2009) and in the encoding and retrieval of declarative memory and lexical learning (Tagarelli et al., 2019). Additionally, increased activation was observed in the left precuneus cortex, known for its role in free recall of word lists (Flanagin et al., 2023). Other significant areas included the right temporal occipital fusiform cortex extending to the parahippocampal gyrus and the cerebellum, both integral to declarative memory processes (Ullman, 2004), with the fusiform cortex also involved in content processing (Kim, 2011). However, no significant positive association was found between MLAT-V scores and activation of the bilateral hippocampi and caudate nuclei proper. In conclusion, our findings highlight the involvement of several declarative memory regions in relation to MLAT-V performance.

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tria, Department of Psychology, Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland

The Art of Connection: Cognitive and Neural Correlates at the Venice Biennale

Paula Angermair (Department of Psychology, University of Vienna)

Hörsaal 30 | February 26 | 15:40-16:00

Keywords: Art, fNIRS, Neuroaesthetics

This study examines how viewers engage with contemporary art installations through behavioral and neural measures. Using Anna Jermaloewa's functional phone-booth installation at the Austrian Pavilion during the Venice Biennale as a case study, we investigate the relationship between empathy, imagination, prosociality, and emotion sharing between artist and viewer. Our research primarily employs pre- and post-experience behavioral surveys (n=105), complemented by an exploratory neural component using functional near-infrared spectroscopy (fNIRS) with a subset of participants (n=12). This study examines whether direct interaction with art installations can modulate empathic concern and prosocial attitudes, and how emotional and cognitive engagement influence art interpretation. Data analysis is currently underway to examine how these processes shape art perception in real-world settings and to advance our understanding of art's role in fostering social connection. This interdisciplinary investigation could also contribute to ongoing discussions at the intersection of art and neuroscience, offering implications for both scientific inquiry and curatorial practice.

DeCoDe: Defining Computational Mechanisms of Depressive Symptoms - an Investigation of Neurocomputational and Behavioral Biotypes of Depression

Laura Pauline Gschwandtner (Department of Cognition- Emotion- and Methods in Psychology, University of Vienna)

Hörsaal 30 | February 26 | 16:00-16:20

Keywords: computational psychiatry, depression, subtyping, behavioral tasks, fMRI

Depression constitutes a major public health burden, with a lifetime prevalence of around 5-17% and a high risk for suicide. However, pharmacotherapy is based on trial-and-error and many patients do not respond to first-line treatment. In absence of an objective biomarker, the term depression refers to a broad set of symptoms, the individual expression of which may differ significantly from patient to patient. This diagnostic heterogeneity suggests disparate underlying brain dysfunctions and the need for a more personalized approach in diagnosis and treatment. For example, mood disorders in females may sometimes be related to sex hormone sensitivity and show different neurocomputational and behavioral characteristics compared to other depressive subtypes. This research project seeks to use computational methods, behavioral tasks and fMRI measurements to uncover biotypes of depressive disorders for more effective treatment stratification. I will utilize computational models (i.e. Bayesian hierarchical models) to investigate behavioral and neurocomputational patterns corresponding to distinct

symptoms of depression (e.g., anhedonia, cognitive appraisal, emotion regulation) and individual outcome. This project aims to provide insights into behavioral characteristics and neural correlates of depressive symptoms. Within my PhD I try to answer the question: Can computational modeling of behavior be utilized to group participants into meaningful subtypes that correlate with mood symptoms, neural activity patterns and disease course? The findings may contribute to a better understanding of different subtypes of mood disorders, aiding more personalized diagnostics and treatment.

Co-Authors: Claus Lamm, Nace Mikus

Animal Behaviour III

Common marmosets (Callithrix jacchus) do not differentiate between familiar and unfamiliar individuals on pitch contour information alone

Julia Victoria Grabner (Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria)

Hörsaal 31 | February 26 | 15:00-15:20

Keywords: vocal communication; prosodic information; pitch; common marmosets; non-human primate

Prior studies suggest that humans and other vocal learners use prosodic variation, such as changes in pitch, to convey meaning and emotion as well as to recognize individuals. While it is known that marmosets' long-distance contact calls ("phee") exhibit prosody-like variation, evidence of prosodic information usage in this species only recently started to emerge. Here, we tested 18 captive marmosets' reactions to playbacks of phee calls from familiar and unfamiliar conspecifics. Specifically, we measured relative looking time and vocal responses during and shortly after playbacks. Additionally, in a second phase we studied whether individuals´ responses to these categories differed when presented with only prosodic information (pitch contour). The playbacks consisted of 1) natural phee calls from group members or unknown conspecifics, and pure tones of similar frequency and length or 2) synthesized pitch contours of familiar or unfamiliar phee calls following a natural or artificial syllable order. We predicted that in the first phase looking times would be longer during playbacks of unfamiliar individuals´ calls compared to familiar individuals´. We expected similar responses to pitch contour playbacks, though less prominent. Our findings revealed that although individuals´ reactions to familiar and unfamiliar stimuli differed, individual preferences outweigh group level differences. Furthermore, we found that individuals did not differentiate between pitch contour stimuli and control sounds, suggesting that they did not categorize them as conspecific calls.

Co-Authors: Emma Pigmans, Animal Sciences, Institute of Biology, Leiden University, Leiden, The Netherlands; Thomas Bugnyar, Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria; Michelle Spierings, De-

partment of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria, Animal Sciences, Institute of Biology, Leiden University, Leiden, The Netherlands

Investigating learning and memory of dogs (canis familiaris) using a touchscreen-based matching-to-sample task

Siqi Yang (Domestication Lab, Konrad Lorenz Institute of Ethology, Department of Interdisciplinary Life Sciences, University of Veterinary Medicine Vienna, Vienna, Austria)

Hörsaal 31 | February 26 | 15:20-15:40

Keywords: Learning, memory, canine cognition

Learning, the process by which animals acquire new knowledge, behaviours, or skills, and memory, the ability to retain and recall this information, are fundamental to how animals interact with their environments. Dogs, in particular, are hypothesized to have evolved rapid learning and cognitive flexibility through natural and artificial selection, enabling them to thrive in complex environments. This study aims to examine this by assessing learning and memory in pet dogs using a touchscreen-based matching-to-sample task. Eight pet dogs will be trained twice per week to respond to geometric shapes of different colours and will be tested on their ability to choose the correct match from a pair of options without human guidance. We hypothesize that dogs will demonstrate faster learning of the task relative to non-human species previously tested in similar paradigms. By comparing their performance to published results on other species, this research seeks to clarify dogs' cognitive adaptations to domesticated life. Results are expected to contribute to the domestication process, with implications for training protocols, animal welfare and the use of dogs as model species in cognitive science.

Intraspecific competition alters life-history strategies in the Avian Vampire Fly Philornis downsi

Barbara Kofler (Department of Behavioral & Cognitive Biology)

Hörsaal 31 | February 26 | 15:40-16:00

Keywords: life-history, competition, host-parasite interaction, Philornis downsi, Darwin's finches

The invasive Avian Vampire Fly *Philornis downsi*, introduced to the Galapagos Islands, poses a serious threat to native bird species like Darwin's finches. In recent years, this obligate nestling parasite has advanced its oviposition timing to infest nests during incubation (early oviposition), intensifying its impact on nestling survival. This study hypothesized that density-dependent intraspecific competition drives early oviposition in *P. downsi* to enhance host exploitation. Over two field seasons, data on host nest density, infestation patterns, and early oviposition were collected. GLMM models analyzed these factors to investigate the drivers of early oviposition, infestation intensity, and reproductive success. Additionally, the study assessed whether early oviposition occurs in P. downsi's ancestral population on mainland Ecuador, gathering comparative data there.

Results showed that while higher host density promoted early oviposition, this effect weakened with increasing fly abundance, making infestation prevalence the primary driver of oviposition timing. Infestation intensity and larval survival also varied with host density, moderated by fly abundance, suggesting a competitive threshold where reduced infestation and longer nest duration occur, indicating adaptive changes. Contrasting dynamics emerged in Ecuador's mainland populations, where early oviposition was not observed. Despite greater Philornis species diversity, lower competition there contrasts sharply with Galapagos conditions, pointing to rapid adaptation under high competition in the latter. This study underscores the role of competition in shaping behavioral adaptations in the Avian Vampire Fly, suggesting that early oviposition could be a critical factor influencing the trajectory of the dynamic host-parasite system in Galapagos.

Co-Authors: Denis Mosquera, George Heimpel, Charlotte Causton, Heinz Richner, Sabine Tebbich

Fit for alignment? To what extend does object assymmetry affect shape fitting in Goffin's cockatoos (Cacatua goffiniana)

Jeroen Stephan Zewald (Messerli Research Institute, University of Veterinary Medicine Vienna)

Hörsaal 31 | February 26 | 16:00-16:20

Keywords: Shape fitting, spatial alignment, object combinations

Efficient alignment of an object to substrate shape is a crucial skill in behaviours like nest building and tool use. Frequently, alignment skills and their development are investigated in humans and other tool-using primates using shape fitting paradigms in which subjects need to insert objects into a complementing shaped aperture. For both, the asymmetry of an object seems to drive the difficulty of properly aligning it with a corresponding substrate (e.g. sphere vs cross shape), although humans tend to use visual alignment techniques while non-human primates use haptic techniques. The Goffin's cockatoo, an avian model for tool use, has shown to be able to insert simple object shapes. However, their alignment techniques and the effect of shape asymmetry are unknown. We investigated their alignment skills in more detail by presenting them with 18 different shapes with different degrees of asymmetry. Using markers on these shapes, we used a machine learning model to track the orientation of the shapes during the trials. We found that the cockatoos had greater difficulty and improved slower with more asymmetrical shapes, mainly using a haptic strategy. Their performance was comparable to the non-human primates, which seem to reflect the complexity of their tool use as well.

Co-Authors: Sabina Kozik, Joel Colbourne, Alice Auersperg

POSTERS

Interspecific Interactions Between Crows and Vienna Zoo Visitors

Christopher Skolaude (University of Vienna)

Keywords: human-animal interactions visitor recognition

The high intelligence and social complexity of corvids make interspecific interactions between crows and humans particularly interesting. The local crow population in Vienna Zoo, consisting of the species *Corvus cornix* (hooded crow) and *Corvus corone* (carrion crow), has made itself part of the visitor experience, which leads to the question of the nature of these interspecific interactions and their effects on the behavior of its participants. This study aims to identify the initiators and influencing factors behind the interactions between humans and crows. Over the course of 10 weeks, I will collect data at 4 different locations within the zoo and categorize any interaction according to who initiates the interaction, what the outcome is, as well as visual characteristics of the visitor participating in the interaction (e.g. age, sex, accessories). I will discuss the factors facilitating interactions between zoo visitors and local free-flying corvids in the context of human-animal interactions in urban environments.

CAiT - a tangible AR app for AI literacy in early childhood education

Stefanie Alice Hofer (Department of Philosophy, University of Vienna)

Keywords: Ai literacy, early childhood education, tangible AR, 4E cognition, explainable Ai

Given that AI-powered devices, such as Google Home and Alexa, are increasingly embedded in daily life, children are exposed to AI interactions from a young age, shaping their understanding of technology and social norms. However, despite the growing influence of AI, there is a notable gap in formal AI literacy education for children and educators. To address this, we are developing CAiT, an AI literacy application using tangible augmented reality (AR), designed to facilitate playful, experiential learning in informal settings. Tangible AR merges physical and digital elements, enhancing engagement while promoting cognitive, motor, and socio-emotional development. CAiT's curriculum is structured into three core learning domains: i) understanding AI mechanisms, ii) responsible and risk-aware AI usage, and iii) safe and effective AI interaction. This study is currently in progress and investigates the development of an AI literacy curriculum for children aged 4–8, addressing the question: How can foundational AI knowledge and socio-technological norms be effectively introduced in early childhood? The theoretical framework integrates principles from 4EA cognition, explainable AI, and human-computer interaction. Using open observations, exploratory interviews, and participatory design methods, we are co-developing the app with parents, children, and caregiv-

ers. Data collection and analysis focus on early interactions with AI to inform curriculum design, contributing empirical insights toward structured, evidence-based AI literacy education for early childhood.

Co-Authors: Katharina Roetzer, MSc BA

Exploring Temporal Vocalisation Patterns and Social Dynamics in African Savanna Elephants (Loxodonta africana)

Julia Peham (Department of Behavioral and Cognitive Biology, University of Vienna)

Keywords: Bioacoustics, African elephants, Acoustic communication

While research has extensively focused on the acoustic properties of African savanna elephant (*Loxodonta africana*) vocalisations, such as the frequency and amplitude of calls, gaps remain in understanding temporal patterns. This completed study investigates these temporal patterns of rumbles—a specific low-frequency vocalisation central to elephant communication—in a semi-captive mixed-sex group of seven elephants in South Africa, addressing the research question: can rumble interval analysis identify true communicative events and their role in social dynamics? Acoustic data were collected across 18 spatial separation experiments, where calls were recorded and later categorised based on call type, vocalising individual, timing, and context. Analyses included call interval-based models to define temporal categories, such as overlapping and antiphonal turn-taking interactions, as well as a social network analysis evaluating centrality measures based on social exchanges between individuals. Results revealed significant variations in what was considered true communication depending on statistical models applied, with overlapping calls representing collective vocalisations, and antiphonal calls indicating potential communicative exchanges that require further validation. The social network analysis further revealed that age significantly influenced calling rates and network centrality, suggesting an age-related hierarchy in this mixed-sex group. Refined statistical models and consistent terminology are needed to clarify vocal categories and further enhance our understanding of elephant communication.

"I see you": Pupillometric assessment of the causal role of affect sharing in vicarious fear learning

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Keywords: Vicarious fear learning, empathy, pupillometry, psychophysiological modeling, fear conditioning

Vicarious fear learning, the process of acquiring fear responses through observing others' aversive experiences, is crucial for social species and has clinical relevance for anxiety-related disorders. Affect sharing (AS), an important component of empathy, is thought to play a role in vicarious fear learning through shared representation of the observed person's emotional state. This study consists of additional analyses of data collected in a previous multi-method (fMRI, skin conductance response, pupillometry) experiment. Our aim was to investigate the causal role of AS in vicarious fear

learning using model-based analysis of pupil data. In a within-subjects design participants were exposed to high and low AS conditions elicited via hypnosis. During a learning phase, participants watched videos of demonstrators receiving electric shocks paired with conditioned visual stimuli predictive (CS+) or non-predictive (CS-) of the shocks. Fear memory strength was measured through differences in pupil size responses to the visual stimuli during a subsequent test phase (N = 44 subjects; 5 male, 39 female; mean age 21.23 years, range 18-29 years). Data were analyzed using Psychophysiological Modeling (PsPM) and linear mixed effects models. Although results confirmed successful fear conditioning, fear memory strength did not differ between AS conditions. However, additional analyses suggested possible confounding factors. Moreover, the experiment was not optimized for pupillometry. In conclusion, we could not confirm that AS fosters vicarious fear learning. Future research should refine experimental design specifically for pupillometry and triangulate multiple measures to clarify the role of empathy in the social transmission of fear.

Co-Authors: Alexa Müllner-Huber, Tibor Stöffel, Claus Lamm

Conservation research towards an acoustic monitoring system for African elephants

Viktoria Staufer (Mammal Communication Group, Acoustic Research Institute, Austrian Academy of Sciences; Department of Behavioral and Cognitive Biology.)

Keywords: elephants, human-elephant conflict, acoustic-monitoring, early-warning system, conservation.

The decline of African elephant (*Loxodonta africana*) populations is alarming. With habitat loss and the resulting human-elephant conflict (HEC) posing a major challenge. One solution to mitigate HEC might be an acoustic early-warning system for people living near elephant habitats to avoid unexpected confrontations. Elephants use infrasonic calls (rumbles) that can travel distances of up to several kilometers. This makes elephants well-suited for acoustic monitoring because it enables detection even if elephants are out of sight. The aim of this thesis was to explore the presence of cues in elephant rumbles that could be further incorporated into an early-warning system. Data were collected from an elephant population that was not recorded so far in Marataba NP, South Africa, to enhance existing datasets forming the basis for automatic recognition of elephant vocalizations. The analysis focused on 1) whether the sex of a caller can reliably be distinguished based on acoustic cues, and 2) whether rumbles produced by male elephants can be used as indicator of musth, a male-specific state, characterized by elevated androgen levels and aggressive behavior. The results demonstrate that the acoustic features of rumbles can be used to determine the sex of the caller. The acoustic properties of social rumbles generated by males in musth are indistinguishable from those of males not in musth. The findings potentially contribute to the early-warning system by improving the algorithm for more effective acoustic detection rates. This promising approach could enable humans to take timely precautions, decreas-

ing human-elephant interactions in shared home ranges.

The Role of Interpersonal Brain Synchrony and Liking in Joint Action: An fNIRS Hyperscanning Study on 5-Year-Olds

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Keywords: interpersonal brain synchrony, liking, joint action, preschool children, fNIRS

Research investigating the underlying neural mechanisms of social interactions has experienced a paradigm shift from a one-person perspective towards a multiple-person perspective. Interpersonal brain synchrony (IBS), a phenomenon where the brain activity of two or more individuals synchronizes during social interaction, is often measured with functional near-infrared spectroscopy (fNIRS). Studies have consistently linked effective cooperation and joint action between dyads and small groups with higher IBS in prefrontal and temporoparietal cortex areas. IBS has also been associated with higher levels of liking between two individuals. However, the directionality of the effect remains unclear with some studies suggesting a positive feedback loop. A positive effect of liking on cooperative joint action has been investigated in a smaller number of studies. This thesis aims to investigate the interplay between liking and IBS and their effects on success in a joint action task in dyads of 5-year-old preschool children. It hypothesizes a positive correlation between liking and IBS as well as a mediation of the changes in liking over time by IBS. Furthermore, a positive effect of both liking and IBS on success in a joint action task is hypothesized. Liking will be rated on a three-item composite scale and IBS will be measured with fNIRS devices. This research is the first to investigate dyads of preschool children and contributes to understanding the developmental aspects of IBS, liking, and joint action in peers. The data has been collected and by February 2025 the thesis should be completed.

The Neural Correlates of Attention Networks in normally developing Preschoolers

Darlene Alicia Hörle (University of Vienna; Department of Developmental and Educational Psychology / Medical University of Vienna; Department of Biomedical Imaging and Image-guided Therapy)

Keywords: Attention Networks, Functional MRI, Neurodevelopment, Neuroimaging

Healthy development of attention networks is essential for cognitive, social, and academic success. Attention, a key neuropsychological function, is thought to be organized into three networks: alerting, orienting, and executive control, which gradually matures from infancy through adolescence. This study explores the development of these networks in children aged 5.5 to 6.5 years using the Attention Network Test for Interactions (ANTI) to determine whether they can be distinguished at this age and how brain activation relates to task performance. A total of 16 healthy children (ages 5 to 6) underwent a comprehensive assessment, which included clinical, behavioral, and socio-demographic measures.

The child-friendly ANTI-Birds task was administered during functional magnetic resonance imaging (fMRI) using a 3T Prisma scanner. Prior to scanning, the children were thoroughly prepared with playful and interactive training sessions to ensure their comfort and cooperation during the scan. Imaging data were processed using fMRIPrep with age-appropriate brain templates and analyzed using fixed-effects models in FitLinS. Preliminary results from six typically developing children indicate that the alerting network engages right frontal and parietal regions, while the orienting network involves the frontal eye fields, inferior parietal cortex, midbrain, and thalamus. The executive control network activates regions such as the anterior cingulate cortex, lateral prefrontal areas, and basal ganglia. These findings provide early insights into the organization of attention networks in preschool children. Data collection is expected to be completed by December 2024. A completed study will be presented at the time of the conference.

Co-Authors: Kathrin Kollndorfer, Sophie Weinmüller, Alfredo Spagna, Galatee Reme, Vito Giordano, Karin Pichler, Gregor Kasprian, Stefanie Höhl, Florian Ph.S. Fischmeister

Social network development in carrion and hooded crows

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Keywords: social ontogeny, social network analysis, crows

Living in social groups offers advantages such as predator protection and enhanced foraging opportunities. However, navigating social relationships can be cognitively demanding, particularly in unstable social environments characterized by fission-fusion dynamics (i.e., changes in group size and composition over time). In social species, individuals often have preferred social partners, such as kin, and form various kinds of relationships. To investigate the development of social relationships in highly social carrion and hooded crows, I recorded the social behaviors of a group of six juvenile crows for 12 weeks post-fledging. Using social network analysis, I will discuss how kinship and temporal dynamics influence affiliative and agonistic relationship strength, special association patterns as well as the number of main social partners. This research provides insights into the social development of carrion and hooded crows, contributing to the broader understanding of avian sociality and its evolutionary implications.

Co-Authors: Ass.-Prof. Barbara Klump

Acoustic communication in wild African savannah elephant calves

Sara Bosch (Department of Behavioral and Cognitive Biology, University of Vienna)

Keywords: communication, bioacoustics, Loxodonta Africana

Acoustic signals function as an important communication channel for many animals because of a need to communicate beyond visual contact. African elephants exhibit a diverse vocal repertoire, comprising 9-10 vocalisation types across a broad frequen-

cy range, and have the ability for vocal learning. Elephant vocalisations encode socially relevant information on caller identity, sex, arousal and reproductive state. Young elephants are also vocally active and possess a diverse call repertoire, from harmonic rumbles containing low frequency components to loud broadband roars. Previous studies have described the vocal repertoire, early vocal development and that acoustic features correlate with arousal levels of captive and semi-captive elephants. Yet, verry little is known about vocal ontogeny and the vocal behaviour of calves, particularly of those living in the wild. My master thesis aims to acoustically describe the vocal repertoire of free-roaming African savannah elephant (Loxodonta africana) calves, and to explore whether the acoustic properties of their vocalisation types differ across behavioural contexts. At the VDS CoBeNe PhD Academy I will present preliminary results of my ongoing thesis. Acoustic data were collected over two months from a population of free-roaming elephants in the Addo Elephant National Park in South Africa. I am currently annotating about 160 hours of recordings, with the sound processing tool STx. Investigating the vocalisations of wild elephant calves will contribute to deepen our knowledge of their communication system and may provide insight into the vocal ontogeny of African savannah elephants.

Co-Authors: Dr. Angela Stöger, Vesta Eleuteri, MSc

Relationship Quality and Cooperation in Raven Breeding Pairs

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Keywords: ravens, relationship quality, cooperation, breeding season, loose string task

Social relationships play an important role in cooperation. Previous studies in mammals and corvids have shown that individuals prefer to cooperate with familiar individuals. Ravens as a long-term monogamous species are highly social and well known for cooperation. So far, no studies have yet been conducted on the effect of relationship quality on cooperative success during the breeding season. In the present study, eight raven breeding pairs were tested in a loose string task with six different conditions (varying in number and distance between pieces of reward) over three different breeding phases. The effect of relationship quality on the proportion of successful trials and on tolerance regarding distance between pieces of reward and reward equity was tested. In addition, the effect of breeding phase on success and on relationship quality was analysed. Significant three-way interactions were found in models with proportion of success in the presence of both partners depending on relationship quality components, reward distance and reward equity. It was further found that the breeding phase had a significant effect on both relationship quality and cooperative success. These findings are consistent with previous research on non-breeding ravens, according to which social relationships have a positive influence on success of individuals in performance of a cooperative task. Taken together, it has been shown that ravens are cooperative in an experimental problem solving task during the breeding season and that their tolerance regarding reward distance and equity is depending on their social relationship.

Exploring the relationship between parental interoception, mutual regulation, and social cognition in parents

Regina Ori Stöckl (Department of Developmental Psychology, University of Vienna)

Keywords: parental interoception, mutual regulation, empathy

Research on interoception, the perception of internal body signals (e.g., hunger, heartbeat), highlights its importance for early childhood. Parents, through their ability to perceive and regulate their child's internal bodily signals – referred to as parental interoceptive perception – influence the development of their child's interoception and self-regulation through mutual regulation. While mutual regulation has been studied in relation to maternal depression, anxiety, and sensitivity, its connection to parental interoceptive perception is unclear. Specifically, how parental interoceptive perception contributes to children's physiological regulation and how parents' social cognitive abilities are linked to their parental interoceptive skills remains unknown. This poster will present results on how mothers' active regulation of their infant's physiological state predicts their parental interoceptive perception and social cognitive abilities and on the relationship between these factors. Parental interoception and social cognition will be assessed through an online questionnaire administered to two samples of parents with children aged two to six years. In one sample (N = 54), mutual physiological regulation has already been measured using respiratory sinus arrythmia (RSA) obtained via electrocardiogram (ECG) during an empathic concern task. We predict that a greater increase and subsequent decrease in maternal RSA will be associated with higher parental interoception and social cognitive abilities, and a positive relationship between these factors. Data collection for the second sample (N = 300) is ongoing, and the findings will provide novel insights on how parental interoceptive perception and social cognition influence physiological regulation and contribute to the understanding of how parenting quality support child development.

Testing the CONIC-Model: How Long Do People Persist in a Never-Ending Experiment?

Tamara Huber (Department of Occupational, Economic and Social Psychology, University of Vienna)

Keywords: persistence, self-control, CONscientiousness × Interest Compensation Model

This master's thesis investigates how conscientiousness and interest interact to predict persistence, using the CONscientiousness × Interest Compensation (CONIC) model. Conscientiousness (the tendency to be organized, disciplined, and goal-directed) and situational interest (the level of engagement and enjoyment in a task) are expected to compensate for each other. For instance, a highly conscientious person may persist in a task even if it's not very interesting, while a highly interested person may persist despite lower self-discipline. The study has been preregistered and data collection is currently in progress with a sample of approximately 200 participants. It uses the Big Five Inventory-2 (BFI-2) to assess conscientiousness and the Situational Interest Scale (SIS) to measure task-

specific interest. Participants complete a never-ending Stroop task, where they can choose to disengage at any time. Prior research on persistence has primarily focused on measuring time spent on a task, but since persisting longer does not always equate to higher productivity, persistence is measured by time spent on the task, total correct trials, and correct trials per minute. Multiple regression analysis will explore how conscientiousness and interest jointly predict persistence. It is hypothesized that individuals with high levels of either trait will persist longer and perform better, while those with low levels of both will show minimal persistence with the two components interacting and compensating for each other.

The Moralization of Effort: Gendered Judgments in Work and Care Contexts

Thea Marlene Fischer (Department of Occupational, Economic and Social Psychology)

Keywords: Effort Moralization, Moral Judgments, Gender differences

This study examines the moralization of effort, specifically focusing on gender differences in how effort is judged in both work and caregiving contexts. Previous research has shown that individuals are perceived as more moral based on the amount of effort they exert, even when the effort does not impact the outcome of their actions. However, much of this research has been conducted in work settings and primarily with male participants, leaving significant gaps in understanding how these dynamics play out for women as well as in caregiving contexts. The research consists of two experimental studies with several hypothesized models proposed to predict how effort will be moralized across gender and context. The first study investigates whether the moralization of effort in a work setting replicates previous findings and explores whether gender moderates these judgments. The second study extends this inquiry to caregiving, where societal expectations often differ by gender. Both studies employ a 2x2 mixed-design ANOVA to analyze the effects of effort (high vs. low) and gender (male vs. female) on moral character judgments and cooperation partner satisfaction. By examining how gender moderates effort moralization across different contexts, this thesis aims to provide deeper insights into the generalizability of the effect. The results will help clarify whether existing models of effort moralization hold in caregiving and how gender influences moral character judgments in both domains. The findings may have broader implications for addressing gender bias in both professional and personal domains, particularly in how effort is recognized and rewarded.

Co-Authors: Leopold Helmut, Otto Roth, Tassilo Tom Tissot, Sophie Charlotte Masak

Does harmonic clarity in species-specific vocalizations influence preference for harmonic sounds?

Melina Maria Witt (Acoustics Research Institute of the Austrian Academy of Sciences; University of Vienna)

Keywords: Vocal learning; Comparative cognition; Timbre; Musicality

Music and speech are both uniquely human communication systems rooted in human biology. However, it is unclear whether evolutionary prerequisites specific to music exist. Cross-species studies can help to explore music's evolutionary underpinnings, because shared abilities between species might result from similar selective pressures. For example, it was hypothesized that production and perception are linked such that species prefer sounds similar to vocalizations of their conspecifics, supporting faster recognition. Music, across cultures, predominantly uses sounds that contain little noise (random spectral frequency distribution), and, similarly, human vocalizations are clear (prominent harmonic spectrum with little noise). In contrast, budgerigars (*Melopsittacus undulatus*), a vocal learning species, mainly produce noisy vocalizations. Thus, we predicted that budgerigars would prefer noisy sounds, while humans would prefer clear sounds. To test this, three experiments were conducted using a place preference paradigm in which we measured the time spent with different sounds as an indicator of preference. If an individual moved on one of the three options in a place preference arena (Budgerigars: perches; Humans: mats), playback of noisy or clear sounds was triggered; One option remained silent. Unexpectedly, budgerigars showed no preference for either sound in two experiments using different stimuli. In contrast, humans preferred clear over noisy sounds, as predicted. We will discuss how comparing humans with clear vocalizations to budgerigars, a phylogenetically distant species that shares analogue traits but has noisy vocalizations, can provide insight into the possible evolutionary functions of music. The study is planned to be submitted soon.

Co-Authors: Oliver Tab Bellmann, Bernhard Wagner, Marisa Hoeschele

Social learning of courtship movements in spotted bowerbird: can attending time predict similarities between individuals?

Claudia Cristani (University of Vienna)

Keywords: Bowerbirds, courtship behaviour, social learning

Chlamydera maculata, or spotted bowerbird, is a bird known for its peculiarity of building a structure called bower, made of wooden sticks and straw and decorated with a set of colourful objects. The utility of the bower is to attract the female into it, subsequently producing the multicomponent courtship display, a set of behavioural elements composed of postural movements and harsh vocalizations, with the final aim of copulation. Despite their strong territoriality, spotted bowerbirds accept the presence of some male bowerbirds' visitors at their bower, called auxiliaries. These ones help the owner in the maintenance of the bower, moreover the owner can take advantage of their presence to perform and practice its courtship. But the mechanism through which bowerbirds learn their elaborate courtship behaviour remains unclear. This study aims to deepen our understanding of the social interactions between the bower owners' and their auxiliaries, to understand whether spotted bowerbirds are capable of visual social learning and therefore learn the courtship behaviours from the owner. The analysis will be conducted by analysing a minimum of 1000 videos

recorded in the Taunton National Park (Australia), on 13-25 bowers and between the period 2018 and 2019. The software utilized to detect the movements is Loopy (loopbio), and the statistical analyses will be performed with R-studio. The study will also consider the genetic characteristics and the duration of interaction between the owner and their auxiliaries, in order to obtain a better overview of their interaction.

Co-Authors: Cliodhna Quigley, Morgan Job Knoester

Parental Intraguild Predation Risk affects Offspring' Personality in Phytoseiulus Persimilis

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Keywords: Parental effect, offspring behavior, predator mites

Animal personality describes the consistency of behavior within individuals coupled to consistent variability among individuals over time and contexts. Typical behaviors used to characterize animal personalities are sociability, exploration, boldness, activity, and aggressiveness. Transgenerational effects on personality trajectories are poorly known. We hypothesized that the personalities of predatory mites *Phytoseiulus persimilis* are affected by early-life intraguild predation (IGP) risk experienced by their parents. For the parental generation (F0) of *P. persimilis*, eggs were placed in groups in leaf arenas harboring spider mites with or without the IG predator *Amblyseius andersoni*. Half of *P. persimilis* experienced IGP risk as larvae and protonymphs while the other half experienced no IGP risk. After becoming adult, each female (F) was paired with a male (M) that had experienced IGP risk (+) or not (-), resulting in four parental treatments (F+M+, F+M-, F-M+, F-M-). Offspring (F1) were separately reared on spider mite-infested leaf arenas. Mated female offspring were tested for their personalities in boldness, exploration, and sociability. To this end, each female was subjected to three tests for each trait and the intraclass correlation coefficients (ICC) were calculated. The ICCs suggest that parental early-life IGP experience affects offspring' personality in boldness and exploration, but not in sociability. Offspring showed personality along the shy-bold axis only when both parents had a matching IGP experience (F+M+,F-M-), whereas offspring personality in exploration was contingent upon paternal experience. Our study highlights that transient early-life experiences by parents can have long-lasting, transgenerational impacts on offspring' personality trajectories.

Co-Authors: Peter Schausberger

Investigating first-order intentionality in African elephant (Loxodonta africana) agonistic gestures

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Keywords: Gestures, Intentionality, Communication

The origin of human language is a topic of interest of multiple scientific disciplines. One key feature of language is the ability to communicate intentionally. Intentionality is categorized into different levels. Zero-order intentionality refers to signals that are elic-

ited as automatic reactions to stimuli, with no intention of conveying a goal. First- order intentionality refers to signals that communicate a goal that elicits a behavioural reaction in the recipient, while second-order intentionality regards signals used to change the recipient's mental state. Great apes and some other primates produce a wide range of gestures that meet first-order intentionality criteria (i.e., audience directedness, response waiting, persistence). Nonetheless, little is known about gestures and their potential intentionality outside the primate lineage. Wild African savannah elephants have been described using visual and tactile gestures across contexts. Semi-captive elephants demonstrated audience directedness by targeting visual gestures at attentive experimenters and adjusting their gesture modality based on conspecifics' visual attention during greetings. However, whether elephant gestures show other criteria for first-order intentionality is unknown. At the VDS CoBeNe PhD Academy, I will present the results of my master's thesis, which aims to (a) describe the gestures used by free-roaming elephants in agonistic contexts, and (b) assess whether these gestures meet the criteria for first-order intentionality. I analyzed videos of wild elephants collected in the Addo Elephant National Park in South Africa using the video-acoustic coding software Elan. This thesis will expand our understanding of elephant gestural communication and provide insights into the evolution of intentionality across species.

An Initial Study into the Acoustic Behaviour of the Critically Endangered Bavarian Pine Vole (Microtus bavaricus)

Elizabeth Rosalind Wilkinson (Acoustics Research Institute, Austrian Academy of Sciences, Vienna, Austria)

Keywords: Microtus bavaricus, ultrasonic vocalisation, behaviour

The Bavarian Pine Vole (*Microtus bavaricus*) is among Europe's most endangered rodent species. An important element of social communication in many Microtus species are vocalisations, especially ultrasonic calls. However, the acoustic behaviour of *M. bavaricus* has not yet been studied. We aimed to investigate its vocal behaviour during social interactions and provide the first detailed acoustic analysis of its vocalisations. We recorded five breeding pairs housed in separate cages over the course of three weeks at Alpenzoo Innsbruck. Initially, 19 hour-audio recordings (2pm - 9am) of each pair were taken on two dates. Next, to investigate the effect of social cues on their acoustic behaviour, each pair was recorded under one of three conditions: placing a smaller cage with an unfamiliar male (1) or female (2), or placing faeces taken from all other cages (3), into the focal pair's cage. The resulting data was analysed in STx, S_TOOLS-STx (Acoustics Research Institute, Austria), using a custom-built template and an automatic mouse ultrasound detection tool. The vocalisations of *M. bavaricus* are mainly found in the ultrasonic range (>20 kHz), consistent with findings from many murine rodents3. We identified several distinct call types and we observed that the calling rate in social encounters depended on the sex of the

unfamiliar individual. In conclusion, our research provides important initial insights into the acoustic behaviour of *M. bavaricus*. We provide a foundation for further research into their social behaviour which could aid current captive breeding programs and future conservation projects in wild conditions.

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Understanding the event construal behind social verbs in English and German

Tiziana Srdoc (Department of Philosophy, University of Vienna; Department of Linguistics, University of Vienna; Department of Cognitive Science, Central European University)

Keywords: Social event cognition, Verb semantics, Cross-linguistic analysis

The question of how language affects cognition has engaged researchers in linguistics, philosophy, and cognitive science for many decades, yet its influence on various cognitive domains remains underexplored. One such domain is social event cognition - a fundamental human ability that allows us to identify socially relevant events in a matter of just a few hundred milliseconds. From a linguistic perspective, language encodes social events flexibly, with different languages imposing different grammatical and semantic constraints that shape how speakers interpret the nature of social events. In this project, we focus on the sociality and reciprocity of events encoded by verb meaning. Our aim was to develop the Linguistic Interpretation of Social Events Database (LISEDA), capturing how native speakers of different languages interpret verbs along these two dimensions. We conducted two online studies (N=120ea, n=240) in two languages, English and German, in which participants judged either whether verbs typically denote social or independent actions, or whether verbs typically denote mutual or self-directed actions. In this presentation, we will outline the conceptual framework used to construct the database and present the results of a hierarchical cluster analysis on participants' ratings that reveals language-specific patterns in how verb meanings encode social events. This empirical data will allow us to analyse cross-linguistic differences and shared cognitive schemas that guide the construal of social events, laying the groundwork for future research on how this construal emerges in real-time processing of language and visual, dynamic social events.

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Neural mechanism underlying the hypnotic modulation of affect sharing in vicarious fear learning: assessing between network functional connectivity

Sara Kubale (SCAN Unit, Department of Cognition, Emotion, and Methods in Psychology, University of Vienna)

Keywords: Social learning, empathy, fear conditioning, fMRI, functional connectivity

Vicarious fear learning (VFL), where individuals acquire knowledge about dangers by observing others, offers survival advantages for social species by enabling indirect threat detection. Recent research has shown that individuals induced into a highly empathic state through hypnotic suggestions during vicarious Pavlovian fear conditioning demonstrate more efficient fear learning. Building on this evidence, our current study seeks to investigate the neural mechanisms underlying different states of empathy during VFL, specifically focusing on changes in brain functional connectivity. This study consists in additional analyses of data collected in a previous Magnetic Resonance Imaging (MRI) study. Our analysis focuses on empathy-related connectivity changes between pre-established brain networks, emphasizing the role of the anterior cingulate cortex (ACC), a key region in a well-established network associated with empathy for pain and affect sharing. As part of a preregistered project, data from 44 participants who underwent vicarious Pavlovian fear conditioning in an MRI scanner will be analyzed. We hypothesize that during high affect sharing, there will be increased connectivity within networks involving the ACC compared to low affect sharing states. Utilizing dual regression in fMRI data analysis, we aim to calculate individual connectivity maps to assess patterns between the ACC and other networks under both conditions. The expected results include greater ACC connectivity during high affect sharing, which would support existing literature on the ACC's role in integrating emotional experiences. This study contributes to a deeper understanding of empathy and its neural underpinnings during VFL, offering insights that may inform future research and cross-species comparisons.

Co-Authors: Alexa Müllner-Huber, Tibor Stöffel, Claus Lamm

Perceiving the Invisible: Exploring Visual Inference of Heart Rate and Respiratory Patterns in Social Interactions

Tela Ravnikar (Department of Developmental and Educational Psychology, University of Vienna; Department for Cognitive Science, University of Ljubljana)

Keywords: Heartbeat perception, Respiratory patterns, Social cognition, Physiological signals

Bodily signals, such as the heartbeat, play a crucial role in our lives and are closely linked to emotional experiences. But how do others perceive these signals? Recent research suggests that we can perceive the heartbeats of others. In this context, this study replicates and expands on findings by Galvez-Pol et al. (2022) and Arslanova et al. (2022), which showed that individuals can visually infer heart rates from facial cues. Going beyond, we aim to investigate whether participants can also perceive respiratory patterns. This is a work-in-

progress study, designed to fill a research gap in understanding how humans detect physiological signals through visual information. Participants will be presented with videos displaying real-time cardiac and respiratory data in two-alternative forced-choice tasks. Participants will be asked to identify the heart and breathing rates of individuals based on these cues, with their confidence and reasoning strategies recorded. The study's main goal is to explore whether the combination of heart rate and respiratory signals enhances the ability to perceive internal states. We hypothesize that the integration of multiple physiological signals will improve accuracy in detecting internal states compared to heart rate alone. We aim to understand how and why humans can detect these subtle cues. Evolved sensitivity to physiological signals like heart rate and breathing may enhance social cognition and empathy. Integrating sensory inputs, such as visual cues or skin color changes, helps predict internal states. This sensitivity aids in interpreting emotions, detecting anxiety or excitement, and improving non-verbal emotional recognition in social interactions.

Evaluation of the effect of experience on chickens' emotional response

Sarah Juarez (Precision Livestock Farming Hub, The University of Veterinary Medicine Vienna (Vetmeduni Vienna); Centre for Animal Nutrition and Welfare (Vetmeduni Vienna))

Keywords: Experience-driven emotional regulation in chickens

Emotions promote animal adaptation by triggering behavioural, physiological and cognitive changes in response to aversive or attractive stimuli. The intensity of emotional responses gets reduced over time due to, among other factors, experience-related neuroplasticity. However, the impact of the amount of experience on emotional regulation remains to be studied. This study explores whether different levels of experience with emotion-evoking stimuli impact the emotional responses of domestic chickens (Gallus gallus domesticus), hypothesising that increased exposure will reduce the intensity of the responses. This was evaluated by measuring physiological parameters to determine emotional arousal, i.e. intensity of the emotion, and behaviour indicators were recorded to determine valence, i.e. the positive or negative connotation of the emotion. Furthermore, given that manual behavioural observation is time- and resource-intensive, a skeleton-based Convolutional Neural Network was trained to automate the behavioural classification, with a target mean Average Precision of 0.85 and an F1 score of 0.80. Twenty-four chickens were divided into two groups at 29 days of age and individually exposed to different levels of experience for 21 days. High-Experience chickens were exposed to positive and negative stimuli three times more frequently than the Low-Experience chickens. The chickens' behavioural responses to stimuli were video recorded, and their eye temperature was measured through infrared thermography before and after the exposure to stimuli. The results of this study will deepen the understanding of the role of experience in emotional development and showcase the

potential of automated behaviour detection in advancing poultry welfare research.

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The Role of Caudate Nucleus and Nucleus Accumbens in Cognitive Flexibility and Creative Cognition

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Keywords: Caudate Nucleus, Nucleus Accumbens, Cognitive Flexibility, Creative Cognition

Cognitive flexibility and creative cognition represent central aspects of adaptive cognition. However, the neurobiological underpinnings of these processes remain largely unexplored. The caudate nucleus and nucleus accumbens, both integral structures of the striatal portions of the dopaminergic system, have been identified as significant contributors to the regulation of these cognitive processes. Literature indicates that these dopaminergic regions are strongly associated with cognitive flexibility and creativity, though much of the evidence remains correlational. The present study aims to conduct a thorough scoping review of the relevant literature to gain further insight into the roles of the caudate nucleus and nucleus accumbens in cognitive flexibility and creative cognition. Insights gleaned from this review will inform future low-intensity focused ultrasound (LIFUS)-based interventions designed to clarify the causal relationships involving these brain structures. A systematic search strategy will be employed, utilizing databases like PubMed, to identify pertinent studies through targeted keywords, such as "caudate nucleus," "nucleus accumbens," “cognitive flexibility,” and "low-intensity focused ultrasound.” By synthesizing and expanding on existing findings, this review will enhance the understanding of the functions of the caudate nucleus and nucleus accumbens in cognitive flexibility and creative cognition, thereby informing the hypotheses and study design that will underpin forthcoming LIFUS-based interventions.

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