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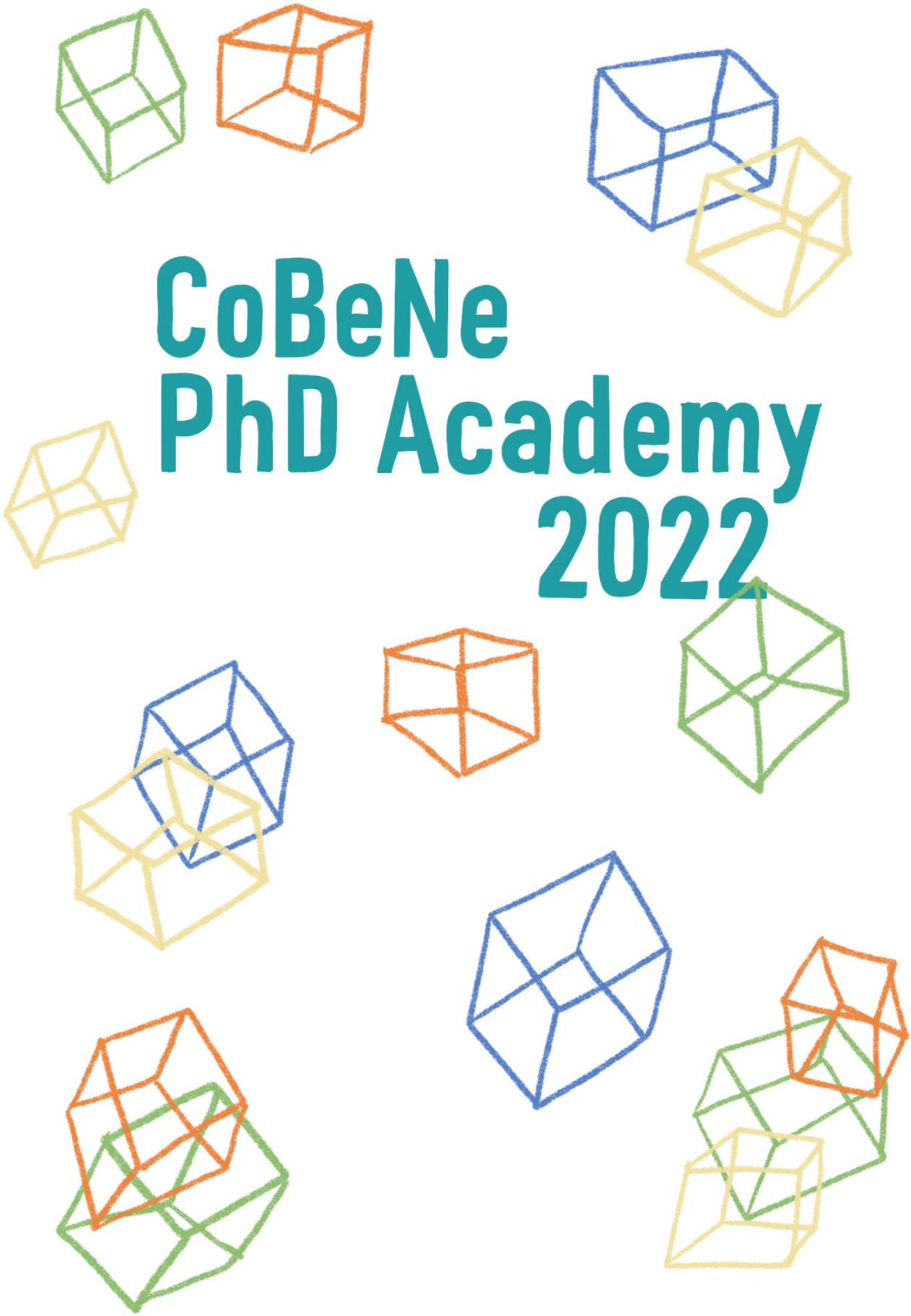
Vienna Doctoral School
Cognition · Behavior · Neuroscience
from Biology to Psychology and the Humanities



CoBeNe PhD Academy 2022

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	10:30-10:40	Break		
	10:40-12:00	Conservation & Sustainability 1	Acoustics & Communication 1	Brains & Biorhythm
Whova Intro 2 12:00-12:30	12:00-13:20	Lunch break		
	13:20-14:20	**PLENARY 2: Andreas Baumann**		
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Whova Intro 3 15:00-15:30	14:30-16:00	Learning & Decision-Making	Emotions, Empathy & Emotion Transmission	Music & Rhythm 1
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Click on the table to be redirected to the relevant section of the Booklet

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	Concluding Remarks & F**k-Up Night			

LINKS & CONTACTS

Whova — The conference will take place on the online platform *Whova* (https://whova.com). The platform will open after registrations are complete. If you have registered online, you should receive an email with your log-in data one week prior to the conference.

Q & A on Slack — For questions before or during the conference you can join the CoBeNe Slack channel. We created a Q&A section specifically for the event. The slack channel is intended for general networking within the doctoral school so make sure to explore other rooms and start connecting with fellow PhD candidates. You can join the Slack here.

You can also contact us at:

Lisa-claire.vanhooland@univie.ac.at (Cognitive Biology)

Julia.reiter@univie.ac.at (Psychology)

Anna.miscena@univie.ac.at (Cognitive Humanities)

lechner.stephan87@gmail.com (Neuroscience)

SOCIAL EVENTS

INTRODUCTION TO THE WHOVA PLATFORM

Feb 2

We will briefly show you around the conference platform and answer any open questions during these live meetings. The recordings of these introductions will be posted on whova and linked in the slack channel for you to consult later on.

Available slots are:

09:00-09:30 with Julia	zoom-link
12:00-12:30 with Stephan	zoom-link
15:00-15:30 with Lisa-Claire	zoom-link
17:45-18:15 with Anna	zoom-link

SPEED NETWORKING & QUIZ

Feb 2

We'll start the evening by grabbing some snacks and drinks from our goodie bags and speed networking - during a half-hour slot, you'll get to meet six random fellow CoBeNe PhD Candidates. After warming up and getting to know each other, it'll be time to form teams to compete in our pub quiz, complete with prizes for the winning team!

BIRDS OF A FEATHER ROUNDTABLES

Feb 3

On the first conference day, you'll have the opportunity to meet others with similar research interests to you by joining the birds of a feather roundtables. Since we'll already be in Gather.Town because the Master students' poster session takes place there, we will be forming several roundtables based on research topics there which you will be free to join for some informal discussion.

CONCLUDING CELEBRATION & F**K-UP NIGHT

Feb 4

To conclude our conference, we will meet online for some celebratory drinks - and then, since we're celebrating our successes, we'll turn to celebrating our failures! The idea of a f**k-ups night is to go around and each share a story of a time in our career we messed up and something went really wrong - think deleted data, lost laboratory animals, failed experiments. Don't worry, we'll go first - and then we invite you to join in and share any (hopefully, in retrospect, funny) failures you've had and, if you want, what you've learned from them. Depending on how the evening goes, powerpoint karaoke and other games are also on the table!

PLENARY TALKS

FROM STATIC FEATURES OF SOUND PRODUCTION TO SPEECH-RELEVANT VOCAL FLEXIBILITY

MAXIME GARCIA

Feb 3 9:30-10:30 Room 1

Department of Evolutionary Biology and Environmental Studies, University of Zurich

Animal vocal signals can encode various information about the emitter, such as static (e.g. age, sex) and dynamic attributes (e.g. arousal, emotional valence). Acoustic allometry investigates in particular the relationship between acoustic characteristics of vocalizations and the signaler's body size. While honest signaling entails accurate rendering of an animal's body size through its vocalizations, evolutionary drivers of animal acoustic communication have shaped sound production apparatuses in ways that differ across species to varying degrees. Such anatomical adaptations inherently constrain vocal signals' structure, and are necessary to account for when investigating the mechanisms and functions underlying species communication systems. However, acknowledging these constraints also have broader implications, in particular when investigating the cognitive underpinnings of speech-relevant traits such as vocal learning. The potential interplay between acoustic allometry and sound modulation illustrates how new theoretical frameworks can contribute to the discussion about the emergence of our own language.

MATHEMATICAL ACCOUNTS OF LANGUAGE CHANGE AND EVOLUTION

ANDREAS BAUMANN

Department of European and Comparative Literature and Language Studies, University of Vienna

Feb 3 13:20-14:20 Room 1

Modeling language change and evolution with mathematical tools from evolutionary ecology and epidemiology has a now-about-half-century-long history. In analogy with animal populations or spreading pathogens in the biological realm, linguistic change (like the emergence of new words) has been conceptualized and modeled as spreading phenomena driven by social, physiological, and cognitive biases. In this talk, I briefly review population-dynamic accounts of linguistic change before I present two case-studies involving such models from my own research. In both cases, models capture interactions among learners and users of a linguistic item (e.g., a word or a syntactic construction). The dynamical systems employed here are modified versions of susceptible-infected models used in mathematical ecology and epidemiology.

In the first study, I analyze how variability in the usage (drift) of a linguistic item affects its spread through the speaker population. I show that linguistic items are less reproductive if they are used at varying frequencies and test this result against diachronic lexical data from English, German, and Italian. The second study is about evolutionary pragmatics, i.e., language use in context. I investigate to what extent the desire to produce extravagant language (like the exaggerated compound phrase 'now-about-half-century-long history') influence linguistic diversification. This is done with the help of eco-evolutionary analysis. I show that extravagance biases can drive linguistic diversification, but only if individuals are sensitive with respect to linguistic variation. The theoretical results are backed up with English lexical and psycholinguistic data.

MOLECULAR ARCHAEOLOGY OF HUMAN COGNITIVE TRAITS

JOANNA KACZANOWSKA

Circuit Neuroscience, Research Institute of Molecular Pathology (IMP), Vienna Biocenter (VBC)

Feb 4 9:30-10:30 Room 1

Our human identity originated through neurocognitive evolution emerging from multigenic events across brain networks. However, these processes acted in brains of ancient ancestors inaccessible to in-depth exploration. Here, we addressed this by projecting nonsynonymous/synonymous rate ratios (ω-values) in mammalian phylogeny onto the ABA human brain reference atlas. This reconstructed ancestral traces of cumulative neurogenetic selections and co-evolving task-related functional brain networks (FNs) within the human brain. Neutral and positive selection in FNs was associated with excitatory neurons and synaptic function and alternated with purifying selection. Traces of adaptive evolution shifted from motor control in anthropoid ancestry (60-41 Mya) to dominant selection for language in an early hominin ancestor (7.4-1.7 Mya) and strategic thinking in recent hominin evolution (0.8 Mya – present) to anatomically modern humans (AMHs). This pattern reflects increasingly complex cognitive demands in ancient environments, while unique further co-selection for language and strategic thinking separated AHM from its even closest archaic relatives.

STUDYING ART…EMPIRICALLY?

EVA SPECKER

EVALab, Department of Cognition, Emotion, and Methods in Psychology,Faculty of Psychology,Universität Wien

Feb 4 13:20-14:20 Room 1

In my talk, I will give a brief overview of my research that is on the intersection of psychology and art history. Specifically, I will start with my work on "aesthetic effects" that I did for my doctorate in which we aimed to test art historical theories empirically. I will focus on two central papers, Specker et al., (2020) which was the main test of the art historical theory, and Specker, Fried, et al. (2021) in which I used network theory to build a formal model. In addition, I will address psychometric work on measuring art interest/knowledge which had an interdisciplinary starting point (Specker et al., 2018) and which I have since further developed (Specker, 2021, Specker et al., in prep) in part supported by a PostDoc Award of the Psychology Faculty. Finally, I will discuss field research I have done in museums/art exhibitions, e.g. in the Albertina Museum (Speckert et al., 2020), Belvedere Museum (Pelowski et al., 2018; Reitstätter et al., 2020), Venice Biennale (Pelowski, Specker et al., 2021), MUSA (Grüner et al., 2019) that has been a focus of my work from my days as a masters student (van Elk et al., 2016, Specker et al., 2017) until now.

This also functions as a stepping stone to illustrate my research work post-PhD that mainly focuses on understanding the difference between seeing art "in real life" vs. on a screen (Specker & Leder, 2021, Specker et al., 2021a, 2021b). Through the discussion of my work, I will also discuss the challenges and advantages of working interdisciplinary and the experience of doing a doctorate (in Vienna).

TRACK OVERVIEW

Conservation & Sustainability 1

How to motivate employees to act more pro-environmentally friendly
Eva Straus

Investigating the behavior of an invasive parasite, Philornis downsi, in the Galapagos Islands
Courtney Pike

Social norms of littering: Does Cialdini's finding replicate 30 years later?
Jana Katharina Köhler

Understanding Middle School Students' Connectedness with nature
Petra Bezeljak

Acoustics & Communication 1

Vocal flexibility in Asian elephants
Veronika Beeck

How communicative signals during joint attention promote mutual neural processes of infants and caregivers
Anna Banki

The Influence of Sociolinguistic Factors on the Phonoaesthetic Appreciation of Languages
Nikola Jokić

Acoustic information integration and dynamic decision making in common marmosets (Callithrix jacchus)
Julia Victoria Grabner

Brains and Biorhythms

Left or Right: Genetic dissection of brain lateralization
Johann Markovitsch

Sensorimotor transformation in the brain of C.elegans
Anton Parinov

From Chronotype to Cognition
Lakshmi Kalathinkunnath

Be prepared: How psychological reattachment buffers the effects of a bad night's sleep
Ricarda Schleupner

Learning and Decision-making

Two Action Task in kea (Nestor notabilis)
Elisabeth Suwandschieff

Information acquisition and decision processes in tax compliance decisions
Martin Müller

Learning about artificial predators in Common ravens (Corvus corax)
Christian Blum

Truly Implicit Implicit Theories of Intelligence: An Implicit Mouse-tracking Measure Predicts Learning Behavior after Failure
Kata Sik

Do dogs understand the role of a partner in a cooperative task?
Juliana Wallner Werneck Mendes

Emotions, Empathy, Emotion Transmission

Empathic Concern, Respiratory Sinus Arrhythmia, and Physiological Synchrony in 9-months old Infant-Mother Dyads
Markus R. Tünte

Measurement and transmission of emotional states in the black garden ant
Katharina Wenig

Can you feel or guess it? A cross-cultural study of Emotion transmission through art.
Margot Dehove

Social buffering but no emotional contagion between nestmates in Common raven (Corvus corax)

Lisa-Claire Vanhooland

Feeling politics at school: Antecedents and effects of emotions in a cross-curricular civic education context

Elisabeth Graf

Music and Rhythm 1

Acoustic properties of infant-directed singing and their relation to infant arousal

Susanne Reisner

Feeling polyrhythms by seeing: the role of visual stimuli in rhythm perception

Dhwani Sadaphal

Effects of music therapy on communication, participation, and functional connectivity in children with autism spectrum disorder

Alexander Groessing

Music, rhythm and relativity

Jeroen van der Aa

Can Music Benefit Stress Recovery?

Yichen Song

Music and Rhythm 2

The role of vocal harmonics in musicality across species

Bernhard Wagner

Synchronization as an indicator of 'openness to securely attach'? Physiological effects of rhythmic, attechment-sensitive interventions during music education in teenagers.

Christina Mayr

Explaining spectrotemporal differences between language and music - cognitive functions and mechanisms

Felix Haiduk

Is an ecological momentary music intervention feasible and effective in reducing stress in the daily life of Turkish immigrant women?

Stefanie Hirsch

Aesthetics, Art & Attractiveness 1

Learning to be attractive: investigating subordinate male behaviour in spotted bowerbirds (Ptilonorhynchus maculatus)

Giovanni Spezie

Who can benefit from online art, and how? Aesthetic Responsiveness and the mediating role of pleasure and meaningful experiences in online art interventions

MacKenzie Trupp

When Painting and Music Meet: The impact of multimodal experience of art on visitors' aesthetic enjoyment and subjective well-being in a museum.

Anna Fekete

Reading in the city: mobile eye-tracking and aesthetic evaluations of text in an everyday street setting

Kirren Chana

"Cognition" Mystery Box

Using changes in pupil size to measure mental workload

Daniel Gugerell

The intrinsic value of effort

Georgia Clay

Interdisciplinarity and Cognitive Science

Peter Hochenauer

Austria, the Odd One Out? When and Where Measuring Democracy-Autocracy-Preference Does and Does Not Work.

Julia Reiter

Mental health 1

Pandemic-related experiences across six European countries – Is there a silver lining?

Irina Novaković

Stress-eating and cognitive appraisal

Max Finger

Experiencing a Significant Life Event During COVID-19: The Role of Age and Perceived Control
Sonja Radjenovic

Physical and mental health are associated with cognitive ability: Evidence from a representative longitudinal survey in older adults
Jonathan Fries

Acoustics & Communication 2

Multimodal communication in African savanna elephants (Loxodonta africana): investigating vocal-gestural combinations in the context of greeting
Vesta Eleuteri

The Laughter of Alexa. Towards a philosophical theory of interface, exemplified by voice-based human-machine interaction.
Peter Rantasa

Acoustic and visual adaptations to predation risk: A predator affects communication in vocal female fish.
Isabelle Pia Maiditsch

Sociality: The advantages and challenges of social life 1

Please don't compliment me! – The role of fear of positive evaluation in social anxiety
Achilleas Tsarpalis-Fragkoulidis

Does overimitation behaviour in dogs have an affiliative purpose?
Louise Eleanor Mackie

Effects of play on tolerance in kea parrots
Melanie Henschel

Conservation & Sustainability 2

A prerequisite for nature protection: Interest in nature of adolescents and its measurement.
Anna-Lena Neurohr

Conservation and genetic assessment of the Vermillion Flycatcher in the Galapagos Islands
David Anchundia Gonzáles

More green than gray? Toward a sustainable overview of environmental spillover effects: A Bayesian meta-analysis
Sandra J. Geiger

Aesthetics, Art & Attractiveness 2

Choosing appropriate units of measure: Art as a tool in the Eye-tracking lab
Anna Miscenà

Do Museums Make You Fatigued? A cross-paradigm, cross-cultural study on repeated art viewing in the laboratory
Jan Mikuni

Keeping the Balance: The Inner Ear & Extreme Courtship Displays
Thomas MacGillavry

Sociality: The advantages and challenges of social life 2

How to cope with others? Inter- and intra-specific interactions in wild ravens (Corvus corax)
Silvia Damini

Social Memory, Grid Codes & Alzheimer's Disease
Luise Graichen

Shame on Me? Shame Proneness and Expressive Suppression Mediate Between Dysfunctional Family Cohesion and Adolescent Mental Health
Rahel Lea van Eickels

Mental health 2

Prolonged intrinsic neural timescales dissociate from reduced phase coherence in schizophrenia.
Stephan Lechner

The Neuropharmacology of Social Motivation in ASD
Raimund Bühler

"No one should look over my shoulder": Conducting Psychological Research on Sensitive Mental Health Topics in the Military.
Wolfgang H. Prinz

TALKS

CONSERVATION & SUSTAINABILITY 1

HOW TO MOTIVATE EMPLOYEES TO ACT MORE PRO-ENVIRONMENTALLY FRIENDLY

EVA STRAUS

Department of Occupational, Economic and Social Psychology

Feb 3 10:40-11:00 Room 1

The opinions concerning climate change issues and pro-environmental behaviors are diverse and often difficult to change (Davis & Challenger, 2013). One of the reasons leading to this problem is a mismatch with personal values (Stern et al., 1995). Unsworth and McNeill (2017) show that increasing self-concordance concerning personal values and the issue of climate change leads to enhanced pro-environmental behavior. Consequently, pro-environmental behavior can be motivated by appealing to the individuals' personal values. Concerning a study of Unsworth and McNeill (2017) people engage in pro-environmental behavior as soon as the pro-environmental instruction activates self-concordant higher-order values. Based on the SDT, Unanue et al. (2016) have shown that people with intrinsic values show more pro-environmental behavior. The question arises whether organizations should promote pro-environmental behavior by (1) just focusing on intrinsic values regardless of employee's values or (2) focusing on self-concordance, thus tailoring instructions for pro-environmental behavior concerning employee's values? To answer this question, we use an App which should motivate employees to act pro-environmentally friendly (at home and at work). With the aid of a between-subjects-design with repeated measures (2 weeks and a follow-up measure), this observational study is manipulated by separating participants in three random groups. Each group receives different reasons to act pro-environmentally friendly: (a) extrinsic reasons, (b) intrinsic reasons, or (c) no reasons at all. The study design and results of our pre-studies are presented.

INVESTIGATING THE BEHAVIOR OF AN INVASIVE PARASITE, PHILORNIS DOWNSI, IN THE GALAPAGOS ISLANDS

COURTNEY PIKE

Department for Behavioral and Cognitive Biology

Feb 3 11:00-11:20 Room 1

Philornis downsi is an introduced fly in the Galapagos Islands. This fly's larval stages parasitize nestling birds, causing blood loss, beak deformations, and up to 100% nest failure. Key to the control of this parasite and conservation of endemic landbird species in the Galapagos is the necessity to understand the basic behavioral biology and ecology of this fly. For this reason, we are investigating P. downsi behavior and mating activity at host nests in the Galápagos, using video data collected during active host nest stages and after fledging. After analyzing over 1400 hours of video data, findings of this study will be presented, along with a brief explanation of our upcoming video analysis.

Social norms of littering: Does Cialdini's finding replicate 30 years later?

Jana Katharina Köhler

Department of Cognition, Emotion, and Methods in Psychology

Feb 3 11:20-11:40 Room 1

In developing the focus theory of normative conduct (FTNC), Cialdini et al. (1990), proposed and demonstrated that social anti-littering norms reduced littering in 1) clean environments (signaling that others did not litter) and 2) by adding a single piece of litter to an otherwise clean environment. The assumption was that the single piece of litter would focus people's attention on the descriptive anti-littering norm, signaling that others did not litter. Despite the profound influence of Cialdini et al.'s (1990) paper, no attempt to replicate this "single piece of litter" effect has been reported. In two high powered and pre-registered field-experiments and one online experiment (ntotal = 1798), we attempted to replicate and then examine the processes behind both descriptive anti-littering norms and the single piece of litter effect. Results first supported FTNC by replicating less littering in clean compared to littered environments. Second, replications of the single piece of litter effect ran contrary to the original finding, showing as much littering in environments including a single piece of litter as in fully littered environments. Hence, littering increased rather than decreased by adding a single piece of litter in an otherwise clean environment. Supporting some theoretical assumptions of the FTNC, a follow-up experiment showed increased salience of an anti-littering norm and a perceived descriptive norm against littering in a single-piece-of-litter compared to a clean environment. However, in line with findings from our replications, the injunctive anti-littering norm appears to weaken as litter accumulates.

Understanding Middle School Students' Connectedness with Nature

Petra Bezeljak

AECC Biology

Feb 3 11:40-12:00 Room 1

Fostering pro-environmental behaviour to achieve a more sustainable society is one of the goals of Education for Sustainable Development. Previous studies show that a connection with nature correlates positively with pro-environmental behaviour (Kollmuss & Agyeman, 2002; Roczen et al., 2013). Therefore, it is important to know more about the connectedness with nature in pupils and gain insight in their reasons and concepts behind it. Our research questions are: 1) How are middle school students connected with nature? 3) Which reasons do they report to explain their level of connectedness with nature in detail? 4) In which way do their reasons and their level of connectedness interconnect? 676 Austrian students of ten schools in urban areas (grade 6, MAge = 11.6 y, SD = 0.85, female: 45.1%) completed a paper-and-pencil questionnaire which included the single-choice item "Inclusion of Nature in One Self" (INS) in a 7-step Likert scale (Schultz, 2002), accompanied by an open question about why they chose their specific INS level. The study showed medium to high INS-scores for the students (M = 4.30, SD = 1. 70). Contact with nature is the most mentioned explanation for high connectedness, followed by positive emotions and positive attitudes toward nature. Students with higher (5-7) and middle (4) INS scores often stated positive emotions and attitudes and reported higher frequencies of contact with nature as the reason for their level of connectedness with nature. Our findings can support curriculum development as well as teacher training in the field of environmental education.

ACOUSTICS & COMMUNICATION 1

VOCAL FLEXIBILITY IN ASIAN ELEPHANTS

VERONIKA BEECK

Department of Behavioural and Cognitive Biology

Feb 3 10:40-11:00 Room 2

Elephants demonstrate both biomechanical and cognitive flexibility in sound production being even among the few mammals capable of vocal production learning. Their vocal repertoire, however, is relatively small with 8-13 call types described but spans a wide acoustic range from infrasonic rumbles (F0 8-35 Hz) with variable information coding to higher pitched trumpets (F0 300-600 Hz) and in Asian elephants also species-specific squeaks (F0 300-2300 Hz). We used an acoustic camera to visualize sound emission across call types and analysed the related acoustic structure in Asian elephants that are far less studied than African savannah elephants. Our data suggest that squeaks are produced by vibration of the tensely closed lips, a sound production mechanism unique in the animal kingdom except for humans. One Asian elephant female produced squeaks through her narrowed trunk tip revealing a first of its kind flexibility of sound production even within one call type that points towards the involvement of learning in squeak production. Rumbles were emitted orally or nasally as previously described in African elephants, but in addition also simultaneously through the mouth and trunk. Our findings significantly extend the knowledge on the vocal flexibility and acoustic complexity across and within call-types in Asian elephants and set an important framework for future studies on biological relevant information coding.

HOW COMMUNICATIVE SIGNALS DURING JOINT ATTENTION PROMOTE MUTUAL NEURAL PROCESSES OF INFANTS AND CAREGIVERS

ANNA BANKI

Department of Developmental and Educational Psychology, Faculty of Psychology

Feb 3 11:00-11:20 Room 2

Communicative cues such as eye contact have been shown to increase infants' brain activation in response to visual stimuli (Hoehl et al., 2014) and promote shared attention in early development (Hoehl & Bertenthal, 2021; Siposova & Carpenter, 2019). In this study, we assessed whether communicative cues during joint attention between infant and caregiver enhance dyads' mutual neural processes. For this we applied rhythmic visual stimulation in a dual electroencephalography (EEG) paradigm measuring simultaneously the brain activity of 11-13-month-old infants and their mothers (N = 49). To track mutual visual processing, we presented images flickered at 4 Hz, depicting natural objects in front of a background (Cichy et al., 2016). Flickering images elicited neural responses at 4 Hz that were recorded with EEG (Köster et al., 2017) in order to assess dynamic changes in infants' and caregivers' shared attention. Dyads observed the images in two distinct conditions: in a joint attention (JA) condition mothers communicatively showed the images to their infants; whereas in a joint watching (JW) condition dyads watched the images without communicative engagement. Preliminary results (N = 23) revealed that infants show increased visual processing during JA vs. JW (β = .42, SE = .20, t(22) = 2.153, p = .043), suggesting that communicative cues in social interactions increase infants' attention, which can be captured even on the neural level. Further analyses will examine how communicative cues affect mothers' visual processing in such interactions; and whether they facilitate a greater similarity between the neural responses of infants and caregivers.

The Influence of Sociolinguistic Factors on the Phonoaesthetic Appreciation of Languages

Nikola Jokić

Department of Linguistics

Feb 3 11:20-11:40 Room 2

My PhD research sets out to investigate how sociolinguistic factors (familiarity, L2 knowledge, language education…) correlate with language judgement by examining the socio-cultural and individual consequences of this phenomenon. By addressing this question, the study plans to combine two spheres that are rarely combined, i.e., sociolinguistics with psychoacoustics. In my research, I plan to employ mixed methods research design in order to learn more about the sound aesthetic preferences for European languages. Therefore, a combination of qualitative and quantitative approaches would be adopted, where qualitative data can be used to interpret results extracted by quantitative methods. Furthermore, participants will be asked if they would like to participate in a sub-part study, which would include heart rate monitoring in order to explore further correlations between stimuli and pulse rate. The research questions that this project aims to address are: How does the lack of second/third foreign language learning affect the aesthetic appreciation of languages? What happens if the participants do not have pre-existing cultural stereotypes? How does this affect their judgements of languages? What is the physiological response to the processing of these languages as far as heart rate monitoring is concerned? The overarching aim would be to attempt to implement the findings in theoretical and empirical research that are already confirmed in phonoaesthetics/sociolinguistics and expand an existing knowledge base. The results of this study should provide us with further insights into the field of individual differences in language processing and phonoaesthetic appreciation.

Acoustic information integration and dynamic decision making in common marmosets (Callithrix jacchus)

Julia Victoria Grabner

Department of Behavioural and Cognitive Biology

Feb 3 11:40-12:00 Room 2

Perceiving and localizing acoustic information provided by the environment is crucial for both humans and non-human animals. Although sound localization cues have been studied in several animal species, research on sound localization behaviour is still sparse. Additionally, little is known about the processes of information collection, especially the integration of prior and current evidence in streams of sound. My project aims to investigate these underlying cognitive mechanisms of auditory estimations in common marmosets, a New World monkey. Using three experiments I want to answer the following questions: i) Are marmosets able to spatially locate artificial broadband sounds?, ii) Can marmosets estimate the location of a single sound stimulus following a stream of auditory information? and if so: iii) What information do marmosets use when they dynamically update their estimations about the location of a sound source?

To investigate these questions, I will observe common marmosets´ spontaneous reaction to sounds coming from a certain location within a half-circle array of speakers and afterwards train the monkeys to indicate the sound location by a) approaching the speaker and b) pushing a button in front of them. Lastly, I will test common marmosets´ ability to localize sounds in a dynamic sound stream. I predict that the individuals are able to localize sounds both in the simple sound localization task and following a stream of auditory information. Furthermore, I predict, that the speed and accuracy in learning to indicate the sound source location differs consistently between individuals and is linked to age and personality.

Brains and Biorhythms

Left or Right: Genetic dissection of brain lateralization

Johann Markovitsch

Neuroscience and Developmental Biology

Feb 3 10:40-11:00 Room 3

Although left and right hemisphere of the human brain appear mirror-symmetric from their overall anatomical structure, they specialize in different functions. As it turns out this is not only true for the human species, but is found in almost every animal species investigated: from apes to fish to flies to worms. While this revelation is quite stunning from a mechanistical standpoint, since all these animals are part of the phylum Bilateria and thus have left-right mirror symmetry as default developmental program – it is also not trivial: Reduction or reversal of brain asymmetry correlates with impaired function! Indeed, it seems to be a common principle within the Bilateria to ditch its mirror symmetry in favor of asymmetric neuronal circuitry, indicating an evolutionary advantage of this kind of central nervous system organization. In my PhD project I use a distinctly lateralized neuropile in the central brain of Drosophila melanogaster as a model system to address the key aspects of brain lateralization: How do individual neurons know whether to follow the left or the right developmental program, which behaviors are affected by circuit. Asymmetry and how does it influence cognition and what are its evolutionary dynamics and adaptive value?

Sensorimotor transformation in the brain of C.elegans

Anton Parinov

Department of Neuroscience and Developmental Biology

Feb 3 11:00-11:20 Room 3

The problem of processing a sensory stimulus and transferring this information to form an appropriate behavioral response and how single-trial and inter-individual variability arises is an unsolved problem in neuroscience. We use the nematode worm C.elegans as a model organism to provide new insights into this question. We focused on oxygen sensory circuits, which control locomotion responses to changes in environmental oxygen concentrations. Single cell resolution whole-brain calcium imaging recordings in immobilized animals were used to access the activity of most neurons across the brain while animal were stimulated with a periodic oxygen stimulus. By measuring motor circuit activity we validated that this paradigm leads to a successful fictive sensorimotor response. While we observed a reliable response of oxygen sensory neurons the motor response had a probabilistic character exhibiting substantial trial-to-trial variability. We investigated potential sources of this variability. We showed that internal state and past history of motor command interneurons define responsiveness of the system and accounts for part of the response variability. Next, we developed a systematic data mining approach; briefly, successful sensorimotor transformation ("Hit" trials) were separated from those where the response to the stimulus was not evoked ("Miss" trials). With this approach we revealed several interneurons, the activity profiles of which reflected the difference between "Hit" and "Miss" trials. Overall, we established experimental and analytical approaches for the investigation of the sensorimotor transformation in C.elegans which can be further extended for the research on different sensory modalities.

From Chronotype to Cognition

Lakshmi Kalathinkunnath

Department of Microbiology, Immunobiology and Genetics

Feb 3 11:20-11:40 Room 3

Organisms possess multiple biological timers that help them in adjusting their behaviour and physiology in accordance with the environment that they thrive in. Many studies have shown that a broad range of activities vary across the 24 hour time period in human beings (corresponding to their inner circadian clock). There is also evidence that points to an impact of seasonal and even lunar cycles on human physiology and behaviour (Patke, Young and Axelrod, 2019, Andreatta and Tessmar-Raible, 2020, Häfker and Tessmar-Raible, 2020, Bhattacharjee, 2007). Chronotypes are the differences in the circadian clock between individuals that can be measured by the start and end of sleep on days without temporal restrictions like alarm clocks (Roenneberg, Till, et al, 2015). Our project aims to understand to what extent the individual combination of chronotype, seasonal and lunar rhythms is linked to a person's cognitive ability and important psychological characteristics, and how individuals with a disrupted biological clock would respond to various psychology-based tasks. We aim to first systematically assess rhythmic characteristics (e.g. chronotypes) of healthy individuals as well as patients diagnosed with primary adrenal insufficiency who likely have a disrupted circadian clock as a result of the disease. The individuals assessed for their chronotypes will be then subjected to various psychology-based experiments performed at repeated intervals to allow for the analyses of possible relationships to annual/seasonal and/or monthly/lunar time. This is a collaborative project between the faculty of molecular biology and psychology, and hence, by nature, is an interdisciplinary one.

Be prepared: How psychological reattachment buffers the effects of a bad night's sleep

Ricarda Schleupner

Work, Economic and Social Psychology

Feb 3 11:40-12:00 Room 3

Psychological reattachment refers to the process of mentally tuning into one's work before initiating work in the morning. In the current diary study, we investigated a) the relationship between good sleep at night and psychological reattachment to work in the morning and b) the effects of sleep at night and psychological reattachment on work engagement and proactivity during the day. Furthermore, we considered two competing ideas regarding how sleep at night and psychological reattachment might be related. The first idea assumes an energetic process in which psychological reattachment might benefit from a good night's sleep by serving as a mediator in the relationship between sleep quality and work engagement and proactivity. The second idea assumes a cognitive, self-regulatory process in which psychological reattachment is independent of resource-replenishing sleep and instead serves as a moderator of the relationship between daily sleep quality and work engagement and proactivity. We conducted a daily diary study comprising two online surveys completed on 10 consecutive workdays. We collected data from 171 employees on 1,186 days. The results indicated that on days with both good sleep quality and high psychological reattachment, work engagement and proactivity were both higher. Daily psychological reattachment did not mediate the relationship between daily sleep quality and work engagement but buffered the negative effects of a poor night's sleep, supporting the second of our competing ideas. Thus, organizations should encourage and train their employees to psychologically reattach to their work in the morning.

Learning and Decision-making

Two Action Task in kea (Nestor notabilis)

Elisabeth Suwandschieff

Comparative Cognition, Messerli Research Institute, Vetmed Vienna

Feb 3 14:30-14:50 Room 1

Humans learn many of their skills by imitating others in their environment. Motor imitation, the copying of physical movements or interactions with objects, has been shown in a few species, although often under very specific conditions. Here we tested the kea parrot of New Zealand on their ability to imitate the actions of another kea. We utilized a standard two-action task, where conspecific demonstrators were trained to open a box in one of two ways. The two-action task we tested was a direct replication of the 2002 Heyes and Saggerson study "Testing for imitative and nonimitative social learning in the budgerigar using a two-object/two-action test".

Information acquisition and decision processes in tax compliance decisions

Martin Müller

Department of Occupational, Economic and Social Psychology

Feb 3 14:50-15:10 Room 1

Various economic and social psychological factors have been identified as determinants of tax compliance, such as audit propability, fine rate, social norms, and fairness considerations. However, these factors have an observable influence in some situations and not in others. Empirical studies do not show consistent effects of either purely economic factors (audits, fines) on tax payments or socio-psychological factors (social norms, fairness considerations). To determine when these factors have a stronger influence on tax compliance decisions and when their influence is suppressed, information processing must be considered in conjunction with actual decisions. To date, research in this area has neglected information processing and focused exclusively on decision outcomes. In two process tracing (MouselabWEB) studies, we tested whether tax decisions are influenced by expected value considerations as proposed by the most influential deterrence-based tax compliance models. Manipulating whether an explanation of expected value was provided combined with explicit numerical expected value information for each decision, we did not observe more model-conform choices in Study 1 and Study 2. Only when the expected value was presented as a more accessible visual cue in Study 2, participants made more model-conform choices. Introducing socio-psychological factors (i.e., service quality) in Study 3, we find no effect on compliance and information acquisition towards deterrence information as we would have predicted based on psychological theories. We conclude that individuals do not properly integrate provided economic information as assumed by economic models, but suggest that such considerations are not of primary concern in the first place. However, future studies have to show how psychological factors can be reveiled trough tax experiments in the lab.

Learning about artificial predators in Common ravens (Corvus corax)

Christian Blum

Department of Behavioural and Cognitive Biology

Feb 3 15:10-15:30 Room 1

Learning about novel predators allows individuals to adapt anti-predator behaviour to new threats. Previous studies showed wild American crows to be capable of remembering newly introduced artificial predators on a long-term basis. We used a similar approach on the closely related Common raven. Two groups of captive non-breeders (n=16) were exposed to masked humans subsequently walking past the aviary. The "predator mask" was worn while carrying a dead raven, while the "control mask" was presented in a neutral setting. After four initial training presentations all following presentations were

conducted without the dead raven for four years. We investigated i) whether ravens would discriminate between the masks, ii) potential selective long-term responses, and iii) influences of social dynamics on their alarm calling behaviour. Our results indicate a clear distinction between the masks for four years. Type of raising, kin and dominance status influenced the birds' participation in alarm calling.

Truly Implicit Implicit Theories of Intelligence: An Implicit Mouse-tracking Measure Predicts Learning Behavior after Failure

Kata Sik

Department of Occupational, Economic, and Social Psychology

Feb 3 15:30-15:50 Room 1

Experiencing setbacks in education is natural, however responses to them vary. Research on implicit theories of intelligence has shown that individuals endorsing a growth mindset - the belief that intelligence is improvable, rather than fixed - tend to react more constructively to setbacks and challenges. In turn, this more constructive reaction has been linked to more positive overall learning outcomes. However, recent studies have failed to replicate the association between growth mindset and positive learning outcomes. In recent years, governments, organizations and teachers have shown increasing interest in adopting and teaching a growth mindset, making the reporting of a growth mindset desirable. Therefore, it might be beneficial to augment the tipically used self-reported scale of growth mindset with an implicit measure that is less sensitive to self-presentation. In a pre-registered study (N=184), we used the mouse-tracking Propositional Evaluation Paradigm, to capture implicit theories of intelligence. After completing the implicit measure, participants experienced a setback after working on difficult IQ tasks. Subsequently, they could view possible solutions to those items, before proceeding to the main IQ assessment. The time spent on viewing those solutions and the number of items viewed served as proxies for learning behavior. We found that the implicit growth mindset predicted learning behavior in addition (and to a higher extent) to the explicit measure. Our results suggest that complementing future studies with implicit assessments of growth mindset may be beneficial to better understand the phenomenon and its effects.

Do dogs understand the role of a partner in a cooperative task?

Juliana Wallner Werneck Mendes

Feb 3 15:50-16:10 Room 1

Dogs are able to cooperate with both humans and conspecifics, but the mechanism which they use are still unclear. Economic games are a useful tool to investigate that, as they allow for simple and often dichotomic decisions of action which can be affected by the partner's behavior. A recent study used the assurance game, in which individuals can work individually for a low-value reward or cooperate for a high-value reward, and showed that dogs can match the choice of the partner. Yet, it was unclear if they were aware of the role of said partner or if they were operating on simpler rules. Therefore, we will investigate if dogs still match the choice of their partners when accounting for side bias and stimulus enhancement. We will use an adaptation of the rope-pulling task with a rotating apparatus – so there is not a set "left" or "right"; and a different task for each partner to obtain the food – so the subject cannot copy he exact action of the partner. If dogs understand the contingencies of the game and the role of the partner, it is expected that when eliminating side bias and stimulus enhancement, they will still match their partner's action. However, if they match their partner's choice based on these processes, we expect them to make the decision at chance level.

Emotions, Empathy, Emotion Transmission

Empathic Concern, Respiratory Sinus Arrhythmia, and Physiological Synchrony in 9-months old Infant-Mother Dyads

Markus R. Tünte

Department of Developmental and Educational Psychology

Feb 3 14:30-14:50 Room 2

Already in the first two years of life infants can respond to another person's pain with empathic concern. In the present study, we replicated an empathic concern paradigm in which mothers displayed simulations of distress by pretending to hurt either knee or finger while interacting with their child. Infant's behavior was video coded for self-distress, prosocial behavior, inquiry behavior, and concerned affect. We extended video coding of the distress simulation by rating length and intensity of the mother's behavior, and the extent to which the infant had witnessed the event causing the distress. Electrocardiogram was recorded from mother and infants during distress-episodes and neutral play-phase to compute respiratory sinus arrhythmia (RSA) and physiological synchrony, using a sliding window method. Regarding behavioral data, our preregistered analysis of the whole sample (N = 90) indicated that infants displayed stronger behaviors on all four scales during the distress episodes, compared to a neutral play-phase. Further, a longer and more intense maternal distress simulation was correlated to stronger empathic concern and inquiry behavior. Whether the infant had witnessed the event causing maternal distress did not have an impact on behavior. Regarding RSA, our preliminary analysis (N = 42) indicates no change in RSA and RSA-synchrony for distress episodes, compared to neutral-episodes. However, analysis of the whole dataset is needed to confirm these preliminary results. In summary, our results replicate previous findings, showing that empathic concern can be measured in 9-month-old infants by video coding reactions to maternal distress simulations and highlight the importance of incorporating the mothers' reaction.

Measurement and transmission of emotional states in the black garden ant

Katharina Wenig

Department of Behavioural and Cognitive Biology

Feb 3 14:50-15:10 Room 2

Whether animals have human-like emotional states is an important scientific and ethical issue. However, assessing emotional states in non-human animals can be very challenging. Besides their influence on behaviour and physiology, emotional states can also affect cognition, e.g., via biased judgements. Here, positive emotional states are associated with optimism and a propensity to anticipate positive consequences in response to ambiguous stimuli while negative emotional states are associated with pessimism and a tendency to anticipate negative outcomes when confronted with ambiguous information. Emotional states do not only influence the affected individual but can also be transmitted between conspecifics. The mechanism of transmission, emotional contagion, is believed to be specifically useful for socially living species as it promotes coordination and cohesion between group members.

In the present study, we aimed at developing a way to assess emotional states and to study its transmission in a socially living insect species - an animal class that is widely underrepresented in affective sciences. We established an easy and reliable assay to test for cognitive biases in the black garden ant (Lasius niger). After confronting subjects with a positive treatment, they showed optimistic judgements; however, in the negative treatment condition they did not choose more pessimistically in the cognitive bias task. Furthermore, we tested for social transmissions of emotional states by making

use of alarm pheromones (negative contagion) and trail pheromones (positive contagion) but did not find indications of emotional contagion in Lasius niger.

CAN YOU FEEL OR GUESS IT? A CROSS-CULTURAL STUDY OF EMOTION TRANSMISSION THROUGH ART.

MARGOT DEHOVE

Department of Cognition, Emotion, and Methods in Psychology

Feb 3 15:10-15:30 Room 2

Throughout the years, we – human beings – developed a certain from of expertise at making sense of our surroundings; and this is especially true for emotion recognition (ER) in other human faces or bodies. This ability to experience and identify other's feelings seems to be applicable to intermediary, more or less abstract, elements such as art for example. While this emotion transmission through art and its relation to the multidimensional notion of empathy - or someone's ability to step into someone else's shoes - started to be empirically studied (Dubal et al., 2014; Pelowski et al. 2018), nothing has been done yet about how this artist-viewer relationship varies across cultures. The present project explores this question by explicitly asking either Japanese or European non-professional artists to express feelings through simple black and white drawings. Produced drawing were used to design a first ER task, where viewers had to recognize the single emotion communicated in each of said drawings. To complete this approach, a second ER task with either Caucasian or Asian faces as stimuli was performed. Finally, viewers also completed other self-report questionnaires, more focused on empathic abilities. One expected outcome of this study is that subjects will be better at recognizing emotions portrayed in the drawings done by people from the same culture (In-group advantage postulated by Elfenbein and Ambady, 2002). Also, obtained results will bring new pieces of evidence to gain a better understanding of the mechanisms behind artistic ER and its universal vs. individual nature.

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SOCIAL BUFFERING BUT NO EMOTIONAL CONTAGION BETWEEN NESTMATES IN COMMON RAVEN (CORVUS CORAX)

LISA-CLAIRE VANHOOLAND

Department of Behavioural and Cognitive Biology

Feb 3 15:30-15:50 Room 2

In non-human animals, changes in emotional states can be assessed by measuring changes in the animal´s behavior, physiology or cognitive performance. Whereas many studies examine the sensitivity of particularly behavioral and physiological measures to negative emotional states, positively valenced emotional states, remain understudied in non-human animals. Emotional expressions are further inherently social and can be mediated by the presence of conspecifics who might e.g. dampen the stress response of an individual (i.e. social buffering) or align their emotional stated with one another (i.e. emotional contagion). In the present study we combined behavioral and infrared thermography measures to assess the response of ten raven nestlings (4 to 6 weeks of age) to differently valanced (i.e. positive, neutral, or negative) tactile manipulations carried out by a human when either left alone or when having access to a same-aged

social partner. We first assessed the effectiveness of our manipulation and the employed methods to measure the valence of emotional states in ravens. We subsequently addressed the questions whether the nestmate bystander 1) acts as a social buffer and 2) is affected by the manipulated nestling´s emotional state. We found treatment-specific behavioral and thermal patterns in the single condition including longer latencies to fall asleep after experiencing the negative manipulation, and a lack of recovery from the stress-induced hypothermia within the post-manipulation period after experiencing the negative manipulation. This effect, however, subsides in the paired condition, suggesting social buffering by the nestmate. Yet in turn, the nestmate did not exhibit conclusive signs of aligning their emotional state the one of their nestmate as it would be expected in the case of emotional contagion.

Feeling politics at school: Antecedents and effects of emotions in a cross-curricular civic education context

Elisabeth Graf

Department of Developmental and Educational Psychology

Feb 3 15:50-16:10 Room 2

Studies on voters have shown that emotions are an important factor in the process of political learning. However, emotions in the context of civic education at schools have rarely been investigated. One challenge for research are blurred boundaries to other subjects, especially if the approach to civic education is an integration into all subjects. Based on Control-Value Theory, we analyze the relationships between emotions and its antecedents and effects on learning in two situations of civic education: in-class political discussions and the processing of political information. More specifically, we hypothesize that academic and epistemic emotions experienced in civic education relate to control- and value-appraisals (e.g., internal political efficacy, personal importance) in correspondence with their valence and activation. Further, we expect positive-activating emotions (e.g., enjoyment and curiosity) to positively correlate with political engagement, motivation and knowledge, while the opposite is expected for negative-deactivating emotions (e.g., boredom). Data was collected in Austrian higher secondary schools with students (N = 549) from grade ten to thirteen. Results from the analysis of latent correlations broadly support the expectations, with latent correlations ranging from .12 to .79. The results contribute to current emotion research in politics by focusing on adolescents and provide insights for practitioners of civic education. Future studies should further investigate the relationships with longitudinal and causal methods.

Music and Rhythm 1

Acoustic properties of infant-directed singing and their relation to infant arousal

Susanne Reisner

Department of Educational and Developmental Psychology

Feb 3 14:30-14:50 Room 3

Infant-directed singing (IDS) has traditionally been divided into playsongs and lullabies, which supposedly have different functions: arouse and soothe, respectively. This study aims to search for the root of these different functionalities in acoustic structures. Playsongs are more dynamically variable, faster, higher in pitch, louder, and have greater pulse clarity than lullabies. However, although these acoustic properties seem established, the found effects of playsongs & lullabies on infant arousal have been discrepant. Rhythmic regularity could be a more reliable acoustic basis for the diverse physiological and behavioural outcomes of lullabies and playsongs. Rhythmic regularity can be analysed via event clustering, i.e., when "temporal events" are clustered closely together with larger gaps between distinct

clusters. Clusters can be nested across different timescales. It has been found that IDS is more clustered than adult-directed singing. However, the implications of event clustering in IDS on infant behaviour and physiology have not been investigated yet.

In my first study, I will examine if playsongs and lullabies differ in their amount of event clustering and how event clustering relates to infant affect, rhythmic movements, gaze, and arousal by reanalysing maternal IDS and coding infant behaviour from a previous study. In this study, mothers sang a playsong and a lullaby to their infants from whom EEG and heart rate were recorded. I aim to establish a framework that connects acoustic properties of IDS, infant behaviour and infant physiology on different timescales.

Feeling polyrhythms by seeing: the role of visual stimuli in rhythm perception

Dhwani Sadaphal

Department of Behavioural and Cognitive Biology

Feb 3 14:50-15:10 Room 3

Polyrhythms are complex rhythms involving two or more isochronous sequences with differing meters played simultaneously. While many amateurs and professional musicians can perform these rhythms with practice and training, they are generally unable to represent the separate isochronous rhythms independently, but rather do so by forming a Gestalt. True polyrhythm performance is, instead, marked by an ability to obtain independence in representing the composite rhythms of a polyrhythm, and is therefore an interesting phenomenon that is a feat of the human capability of abstraction.

There are several strategies that could be applied to arrive at a short-cut performing complex polyrhythms, most commonly, a strategy involving the memorization of the accent-pattern that arises from the interaction of two isochronous meters. However, it is possible that that visual accompaniments to rhythm can enhance the perception of rhythm, like in dance and dynamic lighting in concerts. Even so, there has been mixed support for the idea that rhythms can be processed visually. The current project aims to test whether different types of visual aids ranging on a continuum of artificial to naturalistic stimuli could encourage the independent representation of the composite meters that make up a polyrhythm.

Effects of music therapy on communication, participation, and functional connectivity in children with autism spectrum disorder

Alexander Groessing

Department of Clinical and Health Psychology

Feb 3 15:10-15:30 Room 3

Music therapy as a method of intervention in autism spectrum disorders is not a novelty. With Music considered a "social art" and many deficits of autism spectrum disorder located in the social domain, the use of music therapy seemed evident to many practitioners. However, systematic research into its clinical effects has only started after decades of application. While positive evidence for its clinical effects in autism spectrum disorder exists today, the assumed working mechanisms, the brain's underpinnings, and the connection to clinical results remain largely unexplored. This project - Music for autism (M4A), will address some of these gaps by combining clinical outcome measures with biomedical measurements. M4A is a randomized controlled trial that will compare music therapy to a play-based active comparison condition in a single-blind crossover design. At baseline and three subsequent time points, we will measure communication abilities, participation in different aspects of life, and symptom severity in a sample of 80 children diagnosed with ASD. Magnetic resonance imaging will be used to assess changes in functional connectivity, and grey/white matter volumes, which

are assumed to precede or accompany behavioral changes.

Music, rhythm and relativity

Jeroen van der Aa

Department of Behavioural and Cognitive Biology

Feb 3 15:30-15:50 Room 3

The cognitive and biological mechanisms underlying the perception and production of music are generally referred to as musicality. Unlike the musical activities shaped by culture, musicality can be studied using the comparative method to gain insights regarding the evolution of these capabilities. One of these capabilities, beat perception and synchronisation (BPS), has undergone a surge in scientific interest in non-human animals due to the vocal learning and synchronization hypothesis, followed by the discovery of Snowball the dancing cockatoo. Most studies however focussed mainly on the entrainment capabilities of non-human animals, while ignore the perceptual aspects. Those studies that did look into rhythm perception, have found a strong bias for the use of absolute features, not relative features, while listening to and making distinctions between rhythms. Humans on the other hand, prefer using relative features to extract rhythms, which is foundational to our broad dancing, rhythmic and musical capabilities. During my research I therefore want to further explore rhythmic processing in non-human animals, and its relationship with relative processing strategies and how this compares to human rhythm perception.

Can Music Benefit Stress Recovery?

Yichen Song

Department of Psychology

Feb 3 15:50-16:10 Room 3

Background: This study aimed to explore the effect of music on stress recovery using both subjective measurements and physiological indices.

Methods: One hundred and five healthy female participants underwent the Trier Social Stress Test before being randomly allocated to four groups: group 1 (n = 25) listened to a researcher-selected relaxing music; group 2 (n = 27) listened to self-selected relaxing music; group 3 (n = 26) listened to the sound of rippling water; and group 4 (n = 27) remained in silence. During the recovery, Visual Analogue Scales (VAS) were used for subjective stress measurement and saliva samples were collected for cortisol and saliva alpha-amylase (sAA) analysis.

Results: During recovery, the change of VAS scores was significantly different among groups ($F(3, 99) = 3.11$, $p = 0.030$, $d = 0.71$); the area under the curve with respect to increase (AUCi) of sAA was also significantly different ($F(3, 95) = 3.36$, $p = 0.022$, $d = 0.85$); whereas there were no differences for the AUCi of cortisol ($F(3, 72) = 0.90$, $p = 0.445$, $d = 0.53$). The planned contrasts revealed that, for VAS change, group 4 was higher than groups 1-3 ($t(99) = 0.049$, $r = 0.20$). For AUCi of sAA, group 1 was significantly higher than group 2 ($t(95) = 0.003$, $r = 0.30$).

Conclusion: Music or nature sounds decreased recovery compared to resting in silence. Self-selected music played a better role on sAA compared to researcher-selected music.

Music and Rhythm 2

The role of vocal harmonics in musicality across species

Bernhard Wagner

Department: Institut für Schallforschung / CogBio

Feb 4 10:40-11:00 Room 1

Harmonic sounds feature overtones which occur at integer multiples of the fundamental frequency. This harmonic series, as found, e.g., in the human voice, has been proposed to be relevant to musicality: the set of biologically determined traits that enable the human cultural construct of music. Specifically, the

harmonic series may be a biological basis for several cross-cultural aspects of musicality, such as e.g. preference to musical consonance and octave equivalence.

Importantly, however, not only human-produced sounds contain harmonics but the vocalizations of many non-human animals do too. If musical traits and abilities depend in part on the harmonic series, we may well find them in non-human animals as well. Studying these traits across-species studies is highly valuable as it gives us the opportunity to control for influences of culture in a way that studies with human participants cannot. In addition, they allow for an important perspective on the evolutionary origin of musical traits. I will share my PhD findings using this approach in studying budgerigars (Melopsittacus undulatus), common marmosets (Callithrix jacchus) and pigs (Sus scrofa) and the connection between the harmonic series and musicality. These findings in combination with a review of the relevant literature, suggest that while vocal harmonics play a crucial role for musicality, a more complex interplay of factors shape octave equivalence and consonance preference.

Synchronization as an indicator of 'openness to securely attach'? Physiological effects of rhythmic, attechment-sensitive interventions during music education in teenagers.

Christina Mayr

Behavioural and Cognition Biology

Feb 4 11:00-11:20 Room 1

School is not merely a place of knowledge transfer, it is a place of diversity and relationships.Secure bonding is a central element of trust and motivation and thus, the pupil`s openness to securely attach is a prerequisite of efficient pedagogical interactions. Rhythmic interventions during music education (RIME) are particularly promising in this context. The presented project intertwines the approaches of different disciplines to study stress regulation: behavior (indicators), physiology (mechanisms) and psychology (perception) with the aim of enabling inclusive pedagogical work in contemporary middle schools. We report (a) the results of a RIME case study on heart rate patterns of a teacher and upil, which indicate that 50 minutes of interactive music intervention may result in the synchronization of heart rates between the actors. Based on this, we present (b) the outline of a PhD-project, which aims at empirically testing the behavioral signs (from video recordings), the physiological mechanisms of the pupils` stress patterns (HR/HRV, salivary cortisol) and the effects of physiological synchronization on the pupils` openness to attach with the teacher (i.e. self-assessment of affective responses to the intervention). The sample consists of 21 boys (11-15 years old) with an insecure bonding anamnesis. In a control-group design the effects of familiarity with the teacher prior to the rhythmic intervention will be tested and the effects of RIME will be compared with non-rhythmic teaching time. Potentially, these results may put a new spin on pedagogical practice and frame the experiences of subsequent generation of pupils.

Explaining spectrotemporal differences between language and music - cognitive functions and mechanisms

Felix Haiduk

Department of Behavioural and Cognitive Biology

Feb 4 11:20-11:40 Room 1

Humans of all cultures engage in two elaborate cognitive systems for mediating social interaction, both exploiting the spectrotemporal auditory space in a way peculiar in the animal kingdom - language and music. Why do humans engage in these two systems, and why do music and language differ in some features but not others? In my PhD thesis I investigated several key differences between music and language at behavioural, cognitive and neural

levels, thereby focussing on their vocal output modes - speech and song. Chapter 1 of my thesis describes a study which found that auditory memory of vocal phrases - fundamental for both speech and song - is enhanced when pitch movement is discrete as in song rather than gliding as in speech intonation, indicating a possible functional difference. Chapter 2 is a review article that presents a novel theoretical framework based on information theory and a reverse-engineering perspective. It proposes that feature differences between language and music follow from a deployment along three dimensions - goal, novelty, and performance context -, examining evidence from both humans and non-human animals. Chapter 3 is an fMRI study that investigated the interaction of sung speech acoustics and domain-specific processing on brain connectivity. Based on a framework of spectrotemporal hemispheric specialisation, it compares evidence regarding four different hypotheses about neural sharing of music and language. My thesis contributes to the set of possible cognitive functions and mechanisms that help to explain why humans engage in two of the most fascinating bio-cultural phenomena.

Is an ecological momentary music intervention feasible and effective in reducing stress in the daily life of Turkish immigrant women?

Stefanie Hirsch

Outpatient Unit for Research, Teaching and Practice, Faculty of Psychology

Feb 4 11:40-12:00 Room 1

Perceived ethnic discrimination (ED) refers to the experience of unfair treatment because of one's ethnicity and is associated with mental and physical health impairments. It can be assumed that those health impairments are the result of repeated exposure to discriminatory events that might lead to dysregulations in psychobiological stress systems. To promote health, we developed a music-based ecological momentary intervention (EMMI-T) to reduce psychobiological stress levels in the everyday lives of affected individuals. In a first pilot study, we investigate the feasibility and the effectiveness of the EMMI-T. The study is divided as follows: baseline period (week 1), intervention period (weeks 2, 3, 4), post period (week 5). Using a smartphone-based app, participants (N=20 Turkish immigrant women) are signaled 3 times a day to report their momentary stress levels and perceived discrimination. Additionally, participants self-initiate data entries after the occurrence of every discriminatory/stressful event. Two additional data entries are triggered after 20 and 35 minutes. Every data entry is accompanied by the collection of a saliva sample for the analysis of biological stress markers (cortisol, alpha-amylase). During the intervention period, an intraindividual-randomized design is used to assign participants randomly (50:50) to either the intervention condition (i.e., music-listening for 20 minutes) or the control condition (i.e., no music-listening for 20 minutes) after every self-initiated data entry. To determine the feasibility of the intervention, qualitative data from semi-structured interviews is gathered. Data will be analyzed using multilevel modeling. By the time of the congress, information on the current progress will be available.

Aesthetics, Art & Attractiveness 1

Learning to be attractive: investigating subordinate male behaviour in spotted bowerbirds (Ptilonorhynchus maculatus)

Giovanni Spezie

Konrad Lorenz Institute of Ethology, University of Veterinary Medicine of Vienna

Feb 4 10:40-11:00 Room 2

Bowerbirds perform courtship dances on elaborate display structures – known as bowers – that are built and defended by one resident male. Several reports suggest that bower owners tolerate the presence of specific subordinate males on their display arenas. Subordinate males may learn the skills required for successful sexual signalling via prolonged social interactions at adults' arenas, but little is known about whether courtship proficiency is indeed refined with experience and/or whether subordinate males actively contribute to enhancing the resident male's mating success. The aim of this project is to investigate subordinate male behaviour in the spotted bowerbird (Ptilonorhynchus maculatus). We first sought to determine the role of learning by investigating whether courtship performance differs based on ownership status. We then examined whether social interactions between bower owners and subordinate males may qualify as courtship coalitions. Our analysis of courtship postural components did not reveal differences in temporal parameters between subordinate males and bower owners. We additionally show preliminary data based on automatic tracking of movements during courtship interactions which aims at tackling the same question at a finer resolution. By contrast, we show that male-male associations in spotted bowerbirds may provide an example of rudimentary coalitionary behaviour. In particular, higher subordinate attendance is associated with lower destruction rates by neighbouring rivals and with overall higher mating success, and male pairs are stable in subsequent years. This project provides novel information about life history and social dynamics in male bowerbirds, Ptilorhynchidae, and novel insights into the evolution of coalitionary behaviour in male displays.

Who can benefit from online art, and how? Aesthetic Responsiveness and the mediating role of pleasure and meaningful experiences in online art interventions

MacKenzie Trupp

Cognition, Emotion, and Methods

Feb 4 11:00-11:20 Room 2

When experienced in-person, engagement with art has been associated—in a growing body of evidence—with positive outcomes in wellbeing and mental health. Today, on the other hand, art viewing, cultural engagement, and even 'trips' to art museums can take place in several modalities via internet-enabled computers, smartphones, and even virtual reality. In a recent study (Trupp et al, 2021), our author team presented some of the first evidence that online art interventions, using an interactive art exhibition from Google Arts and Culture featuring waterlily paintings from Monet delivered through the internet, viewed in individuals' homes, could lead to wellbeing impacts. In the present project, we replicated our past findings, confirming the potential for art online to be a tool to support wellbeing by improving levels of negative mood and anxiety, while providing stronger evidence through a more rigorous design and pre-registered analysis plan. Second, we find trait level aesthetic responsiveness to be a predictor of wellbeing effects, whereas those who are more responsive to art, poetry, and music can benefit more from this online art intervention. Lastly, this effect is mediated by subjective experiences factors; pleasure and meaningfulness. We further discuss the importance of the participants' experience during art interventions and the differential influence of each

subjective experience factor on each wellbeing outcome.

When Painting and Music Meet: The impact of multimodal experience of art on visitors' aesthetic enjoyment and subjective well-being in a museum.

Anna Fekete

Department of Cognition, Emotion, and Methods in Psychology

Feb 4 11:20-11:40 Room 2

People assume that multimodal experiences of art (for example listening to music while viewing a painting) are more aesthetically pleasing and artworks might even be easier to understand as the two modalities can complement each other. But so far research focused on arbitrary perceptual congruency and evidence on the aesthetic aspect assumption is scarce.

The current study investigates whether music can enhance the aesthetic experience and understanding of a painting in a museum study of Gustav Klimt's Beethoven Frieze combined with Ludwig van Beethoven's Ninth Symphony which originally had inspired the Frieze. Furthermore, beyond improving aesthetic experience, we investigated if multimodal experience of art can promote subjective well-being measures of stress, anxiety, mood and fatigue more than visual art on its own. We used mixed design to compare two group of people who viewed the painting of Klimt's Beethoven Frieze in the Viennese museum of the Secession either on its own (N = 111) or in combination with the music piece of Beethoven's Ninth Symphony (N = 129) via headphones. We found that a short museum visit (M = 14.3 (± 6.6) minutes) was able to improve wellbeing in terms of reduced anxiety, stress and improved mood. We discuss how and which qualities of music can improve museum visit and subjective well-being indicators. Furthermore, we discuss how individual characteristics such as art expertise can influence art experience in the museum.

Co-authors:

Specker, E [1]., Mikuni, J [1,2]., Trupp, M. D [1]., & Leder, H [1, 3].

[1] Department of Cognition, Emotion, and Methods in Psychology, Faculty of Psychology, University of Vienna, Vienna, Austria

[2] Department of Psychology, Keio University, Tokyo, Japan

[3] Vienna Cognitive Science Hub, University of Vienna, Vienna, Austria

Reading in the city: Mobile eye-tracking and aesthetic evaluations of text in an everyday street setting

Kirren Chana

Cognition, Emotion and Methods in Psychology

Feb 4 11:40-12:00 Room 2

Reading is often regarded as a mundane aspect of everyday life; however, little is known about the natural reading experiences in daily activities such as walking through the city. Here we study its specific relation to aesthetic features of script elements in natural environments. Research has previously demonstrated in real-world scene viewing that text draws visual attention (Cerf, Frady & Koch, 2009). It can be suggested that the scenario in which text is presented may influence our experience of it, and perhaps cause us to be more or less attentive (Wang & Pomplun, 2012). However, in the experience of reading and everyday scene perception, the aesthetic value placed on text has yet not been considered. The current study extends from a free exploration paradigm in a natural environment containing urban art (Mitschke, Goller & Leder, 2017). In a similar task, we explore where people look when walking along a city street, and their evaluations for particular text as they orient themselves along this path. Participants (N = 39) engaged in a walk with portable eye-tracking glasses along a well-known Viennese shopping street. Following from this field experiment, we conducted a follow-up session to assess the recall, recognition and the aesthetic evaluations of text elements that were present during the walk. We examine whether there

is a predictive effect of aesthetic value on viewing behaviour and memorability of text. The results and practical implications of assessing natural reading experiences and the use of mobile eye tracking in ecologically valid settings are discussed.

"Cognition" Mystery Box

Using changes in pupil size to measure mental workload

Daniel Gugerell

Department of Psychology

Feb 4 10:40-11:00 Room 3

The dissertation examines the reliability of using changes in pupil size as a measurement of mental workload. For this, three experiments have been developed that mimic "real life scenarios" to test a product which should be able to determine whether a participant has had higher- or lower levels of mental workload during the task. An algorithm has been developed to subtract the light elicited pupil changes, making this prototype useable in field conditions.

The three scenarios are following:

1) training of conducting clinical interviews

2) learning via an online-seminar

3) training of pilots

The end-product should be able to deliver a feedback-system in which users are able to see at which point they were over- or under stimulated by their task, and change the task difficulty accordingly.

The intrinsic value of effort

Georgia Clay

Department of Occupational, Economic and Social Psychology

Feb 4 11:00-11:20 Room 3

Current models of mental effort in psychology, behavioral economics, and cognitive neuroscience typically suggest that exerting cognitive effort is aversive and people avoid it whenever possible. The aim of this research was to challenge this view and show that people can learn to value and seek effort intrinsically. Our experiments tested the hypothesis that effort-contingent reward in a working-memory task will induce a preference for more demanding math tasks in a transfer phase, even though participants were aware that they would no longer receive any reward for task performance. In laboratory Experiment 1 (N = 121), we made reward directly contingent on mobilized cognitive effort as assessed via cardiovascular measures (β-adrenergic sympathetic activity) during the training task. Experiments 2a-2e (N = 1.457) were conducted online to examine whether effects of effort-contingent reward on subsequent demand seeking replicate and generalize to community samples. Taken together the studies yielded reliable evidence that effort-contingent reward increased participants' demand seeking and preference for the exertion of cognitive effort on the transfer task. Our findings provide first evidence that people can learn to assign positive value to mental effort. Results challenge currently dominant theories of mental effort and provide evidence and an explanation for the positive effects of environments appreciating effort and individual growth on people's evaluation of effort and their willingness to mobilize effort and approach challenging tasks.

Interdisciplinarity and Cognitive Science

Peter Hochenauer

Department of Philosophy

Feb 4 11:20-11:40 Room 3

Cognitive science is typically presented as the interdisciplinary study of the mind, integrating insights from philosophy, psychology, artificial intelligence, neuroscience, linguistics, and anthropology. In academic practice, however, collaborative interdisciplinary research projects play only a minor role in comparison to disciplinary basic research on cognition. There are many reasons for this, but in addition to institutional barriers, there is often a lack of theoretical knowledge and practical know-how for conducting inter- and transdisciplinary research projects. As a result, opportunities for potential innovative research are lost. I therefore argue that the loosely multidisciplinary structure of cognitive science – which is characterized by disciplinary experts – offers new opportunities for practice-oriented philosophers of cognitive science: As on-site specialists on the theory and process of inter- and transdisciplinary research to facilitate knowledge integration across disciplines. Performing such a role requires specific knowledge, competences, virtues, and mindsets, as well as 'getting into the field' and supporting disciplinary experts 'hands-on'. The goal is to foster innovative research by anticipating potential interconnections and interactions between different disciplinary research areas and by facilitating the development and implementation of collaborative inter- and transdisciplinary research projects.

Austria, the Odd One Out? When and Where Measuring Democracy-Autocracy-Preference Does and Does Not Work.

Julia Reiter

Department of Educational and Developmental Psychology

Feb 4 11:40-12:00 Room 3

The Democracy-Autocracy-Preference (DAP) scale is a very popular instrument; it contains three autocracy items intended as a unidimensional measure of support for autocratic modes of government. A fourth item measuring support for democracy is supposed to complete the unidimensional scale measuring the preference between autocracy and democracy. However, in a sample of 1430 Austrian adolescents and young adults (49.8 % female, 48.0 % male, ages 16 – 20, M = 18.3 years, SD = 1.3) surveyed in 2021, the scale's structure is bidimensional, with support for expert governments structurally detached from support for strong leaders and military governments as well as democracy. First, Austrian data from the WVS/EVS and AUTNES are used to trace the development that led to this change in scale structure over the past 20 years; the change is discussed in relation to the recent political history of Austria, specifically the "expert government" of 2019 (Chancellor Bierlein). Subsequently, a cross-sectional comparison between Austria and 76 other countries is made using WVS data, revealing that the DAP scale does not tap into the same construct in different countries. While the items do form a unidimensional scale in almost all countries, the ratio of the factor loadings (that is, strongly the item is connected to the underlying factor) differs fundamentally. There is a group of countries where the expert government item contributes substantially less to the scale (in the sense that the values of the factor loadings of the other two items are at least twice as high as that of the expert government item): Albania, Austria, Croatia, Hungary, Iran, Poland, and Slovenia. Possible explanations are discussed and suggestions for alternative ways to measure support of democratic

and autocratic forms of government are made based on a follow-up study (N = 630, age range 14 – 18).

MENTAL HEALTH 1

PANDEMIC-RELATED EXPERIENCES ACROSS SIX EUROPEAN COUNTRIES – IS THERE A SILVER LINING?

IRINA NOVAKOVIĆ

Department of Clinical and Health Psychology

Feb 4 10:40-11:00 Room 4

Background: The COVID-19 pandemic has radically changed daily lives of the global population, provoking a broad range of psychological reactions. Although numerous studies have investigated the mental health impact of COVID-19, qualitative psychological research and cross-country comparisons are still rare. To address this knowledge gap, the present study investigated pandemic-related experiences, challenges and opportunities across six European countries.

Method: The study included N = 7309 participants from Austria, Croatia, Georgia, Greece, Poland and Portugal. Qualitative content analysis by Mayring was performed to analyse open-ended questions regarding straining events, positive and negative aspects of the pandemic, and recommendation to cope with the pandemic situation. MAXQDA software was used for data management and analysis.

Results: The sample was well-educated and dominated by women. Participants' responses were largely consistent across the countries. The most prominent themes regarding straining and negative pandemic-related aspects included: Restrictions and changes in daily life, Emotional reactions, and Work and finances. Answers about positive pandemic consequences were mainly centred around the themes Reflection and growth, Opportunity for meaningful/enjoyable activities, and Benefits on interpersonal level. Key themes identified from participants' recommendations to cope with the pandemic included: Beneficial behavioural adjustment, Beneficial cognitive-emotional strategies, and Social relations.

Conclusions: Apart from various challenges, participants in all countries identified an array of positive pandemic consequences and enunciated several recommendations to cope with COVID-19. Amid global challenges, positive reappraisal and small changes in daily routines may be essential for maintaining well-being and adapting successfully.

STRESS-EATING AND COGNITIVE APPRAISAL

MAX FINGER

Department for nutritional sciences

Feb 4 11:00-11:20 Room 4

Stress is pervasive and associated with many different diseases, particularly obesity. One explanation for its link to obesity is an altered eating behavior through stress, termed stress-eating. To our knowledge, it's currently unknown if cognitive processes and character traits influence eating in response to stress, especially in an ecological valid setting. Therefore, we are interested, if foods are appraised differently, when being stressed. We further wanted to examine if a distinction between stress-over- and undereating is evident.

We chose the academic examination phase as an ecological valid stressor and thus we proposed that students' exposition and perception to stress is higher in the examination phase, compared to a time point in the semester. At both times of measurement, the student participants visited our lab fasted. After assessing their health, anthropometric and cardiovascular parameters, they had to rate food pictures on liking and wanting. After the fasting assessment, an oral glucose tolerance test was performed. Meanwhile the participants filled a cassette of questionnaires amongst others including sociodemographics, personality traits (e.g.,

mindfulness), stress perception of the previous month, stress-eating behavior and a Food Frequency Questionnaire.

Firstly, we expect the participants to perceive more stress during the examination phase compared to the semester phase. Further an increase in consumption of high calorie foods such as snacks due to stress is expected to be higher in stress-overeaters than in undereaters. Ultimately, we will investigate if the effect is due to a higher wanting of those foods.

Experiencing a Significant Life Event During COVID-19: The Role of Age and Perceived Control

Sonja Radjenovic

Department of Developmental and Educational Psychology

Feb 4 11:20-11:40 Room 4

Background: COVID-19 influences people's well-being. However, results concerning age differences are heterogeneous. We argue that if people of different age are in a similar life situation (i.e., they experience a similar life event), the pandemic has a similar impact on their experience. We further argue that perceived control is a significant predictor for people's experience, irrespective of their age, and is impacted by the pandemic as well.

Methodology: An online sample of N = 882 participants aged 18–82 years reported a significant life event that occurred during the COVID-19 pandemic. The participants described whether the pandemic influenced the life event, to what extent they perceived to control the life event and how they experienced it.

Findings: The self-reported COVID-19 influence and perceived control were significantly associated with people's experience of the life event beyond age. The reported COVID-19 influence was significantly associated with perceived control.

Conclusion: Perceived control seems to be a more important predictor of the life-event experience during the pandemic than age. These findings underscore the role of context – in this case the pandemic - while experiencing significant life events.

Keywords: coronavirus, pandemic, lockdown, life circumstances, age differences

Physical and Mental Health are Associated with Cognitive Ability: Evidence from a Representative Longitudinal Survey in Older Adults

Jonathan Fries

Department of Developmental and Educational Psychology

Feb 4 11:40-12:00 Room 4

Background: Intelligence is known to predict health. However, the mechanisms underlying this association are still subject of debate, especially regarding older adults. Environmental and behavioral risk factors have been suggested to play an instrumental part in shaping this relationship. Here, our aim was to assess the link of cognitive ability and physical and mental health along with potential risk factors in an aging population.

Methods: To this end, we made use of the SHARE (Study of Health and Retirement in Europe) dataset, a large-scale, longitudinal assessment of EU residents older than 50 years (N range = 10,000-30,000+). We estimated intelligence via the cognitive function variables mathematical ability, verbal fluency, and memory. Physical and mental health indicators (e.g., number of doctor visits; self-reported depression) along with environmental and behavioral risk factors (e.g., workplace environment risk, smoking) were included as potential moderators.

Results: Higher scores in cognitive abilities were modestly but consistently associated with more favorable health outcomes (rs = .13-.29). Conversely, cognitive abilities showed negative, but less

consistent correlations with risk factors (rs = |<.01|-|.38|). Mixed-model Poisson regression yielded an 11 percent decline in self-reported physical symptom count with each unit of increase in mathematical ability. We found no significant moderation by risk factors.

Discussion: We find that physical and mental health are positively associated with intelligence in a representative sample of older European adults. Moderation by risk factors could not sufficiently explain this relationship, lending support to recent evidence indicating a common genetic origin of both health and intelligence.

Acoustics & Communication 2

Multimodal communication in African savanna elephants (Loxodonta africana): investigating vocal-gestural combinations in the context of greeting

Vesta Eleuteri

Department of Behavioural and Cognitive Biology

Feb 4 14:30-14:50 Room 1

Animals communicate using vocalizations, gestures, and other signals such as olfactory cues. Most studies on animal communication explore signal modalities separately. Yet, communication in many species relies on the combination of different modalities. But why did such an integrated communication system evolve? What do animals specifically communicate when combining signals of different modalities? Signal combinations might, for example, enhance or refine the information transmitted. Elephants are long-lived, large-brained, social mammals living in a multi-level society, possessing complex cognitive behaviour and a rich communicative repertoire of signals. African elephants use a variety of chemical signals, 8-10 vocalization types, and over 80 gestures, which they often combine in elaborate multimodal behavioural displays. However, a systematic investigation of multimodal signalling in elephants has never been conducted. In my PhD project I aim to investigate African savanna elephant (Loxodonta africana) vocalizations and gestures to explore when and how they are integrated in multimodal combination events, and whether individual, social, and contextual factors affect the use and pattern of these combinations. For the VDS CoBeNe PhD Academy I will present my PhD pilot work on the use of vocal-gestural combinations in the context of greeting between individuals of a group of semi-captive African elephants in Victoria Falls (Zimbabwe). Specifically, I am investigating which vocalization and gesture types are combined during greeting behaviour and whether combinations happen in a specific order or pattern. Exploring vocal-gestural combinations in elephants will help elucidate the functions of multimodal communication and potential factors that led to the emergence of this integrated form of communication during evolution.

The Laughter of Alexa. Towards a philosophical theory of interface, exemplified by voice-based human-machine interaction.

Peter Rantasa

Department of Philosophy

Feb 4 14:50-15:10 Room 1

The central question of this thesis explores the boundaries and interfaces between humans and technology as they appear in technical voices and how they shape our world.

The term interface originates in physics and refers to common boundaries of bodies, systems, or phases of physical matter. In computer science and IT, interfaces connect separate components of a technical system. They appear as hardware interfaces, software interfaces, or peripheral input and output devices. Information in electrical, mechanical, or logical form communicates via interfaces across the boundaries of interacting

components to enable processes of semiosis and to form a whole.

User interfaces enable the exchange of information between machines and human users. The design of the material and informational "affordances" (Gibson, 1986; Norman, 1988) of user interfaces specifies the open relationship between technical information and its semantic use and shapes it. In the case of Alexa, these are the principles of voice production and perception.

The methodological approach chosen for this study is the postphenomenological analysis of human-technology-world relationships as developed by Don Ihde, and others, extended and deepened by Enactivism and 4E cognition from Cognitive Science.

This talk offers a critical introduction to the postphenomenological method and demonstrates its limitations for the analysis of interfaces using the example of Alexa and the human cognitive abilities it exploits. Secondly, it addresses the cascaded processes of semiosis using a model from biosemiotics. Finally, it proposes extending the postphenomenological approach by enactivist aspects to describe the impact of technology on human intentionality.

Acoustic and visual adaptations to predation risk: A predator affects communication in vocal female fish.

Isabelle Pia Maiditsch

Department of Behavioural and Cognitive Biology

Feb 4 15:10-15:30 Room 1

Predation is an important ecological constraint that influences communication in animals. Fish respond to predators by adjusting their visual signaling behavior, but the responses in calling behavior in the presence of a visually detected predator are largely unknown. We hypothesize that fish will reduce visual and acoustic signaling including sound levels and avoid escalating fights in the presence of a predator. To test this we investigated dyadic contests in female croaking gouramis (Trichopsis vittata, Osphronemidae) in the presence and absence of a predator (Astronotus ocellatus, Cichlidae) in an adjoining tank. Agonistic behavior in T. vittata consists of lateral (visual) displays, antiparallel circling, and production of croaking sounds and may escalate to frontal displays. We analyzed the number and duration of lateral display bouts, the number, duration, sound pressure level, and dominant frequency of croaking sounds as well as contest outcomes. The number and duration of lateral displays decreased significantly in predator when compared with no-predator trials. Total number of sounds per contest dropped in parallel but no significant changes were observed in sound characteristics. In the presence of a predator, dyadic contests were decided or terminated during lateral displays and never escalated to frontal displays. The gouramis showed approaching behavior toward the predator between lateral displays. This is the first study supporting the hypothesis that predators reduce visual and acoustic signaling in a vocal fish. Sound properties, in contrast, did not change. Decreased signaling and the lack of escalating contests reduce the fish's conspicuousness and thus predation threat.

Sociality: The advantages and challenges of social life 1

Please don't compliment me! – The role of fear of positive evaluation in social anxiety

Achilleas Tsarpalis-Fragkoulidis

Department of Clinical and Health Psychology, Clinical Child and Adolescent psychology research group

Feb 4 14:30-14:50 Room 2

Theoretical background: Fear of negative evaluation has long been considered a core component of social anxiety. However, fear of positive evaluation has recently been associated with a variety of features

related to the disorder, most notably the general positivity impairment observed in socially anxious individuals, above and beyond fear of negative evaluation. Furthermore, several maladaptive emotion regulation strategies, such as expressive suppression, are frequently employed by socially anxious individuals, leading to negative consequences. The aim of the present study is to elucidate the prospective associations between both types of fear of evaluation, emotion regulation and social anxiety.

Method: Using a multimethod approach, this project aims to provide a comprehensive understanding of the topic, using a variety of state-of-the-art statistical methods. Drawing a sample from German-speaking adolescent population in Austria and Germany, I will conduct three studies with different designs. The first study will be an online longitudinal study that will include three measurements over a six-month period, for which I will be calculating random-intercepts cross lagged panel models. The second study will be a daily diary study conducted over a two-week period. The generated data will be analysed by calculating multilevel moderated mediations, giving insight into the day-to-day effects of feedback reception. Lastly, the third study will be an experiment, which will allow for the testing of different effects of positive and negative feedback in a socially stressing situation.

Does overimitation behaviour in dogs have an affiliative purpose?

Louise Eleanor Mackie

Messerli Lab - Veterinärmedizinische Universität Wien

Feb 4 14:50-15:10 Room 2

Overimitation — the copying of another's unnecessary or irrelevant actions towards a goal — is largely considered to be uniquely human, due to an apparent lack of this behaviour in non-human primates. However, recent studies have revealed that dogs are capable of overimitation, thus they can be promising candidates to explore this behaviour's purpose in species other than our own. In humans, overimitation has been found to have a social purpose, as we tend to increase their copying fidelity (including irrelevant actions) after experiencing social exclusion. Overimitation can therefore serve as a means to affiliate or associate with the person who is demonstrating their actions to the observer. To test whether overimitation in dogs is facilitated in the same manner as humans, we will invite their human caregiver to demonstrate an action sequence right after dogs experience a stranger-approach event. By exposing the dogs to an unfamiliar person in a mildly threatening context, the dog's attachment-system is activated, thus creating a need to affiliate with their caregiver. Because human children and dogs have similar relationships with their respective caregivers, we expect that overimitation behaviour in dogs also has an affiliative purpose, and that dogs will increase the copying of their caregiver's irrelevant actions after experiencing a threatening event. This study will progress our understanding of the overimitation behavioural phenomenon and establish whether its social purpose is shared with non-human animals, particularly dogs.

Effects of play on tolerance in kea parrots

Melanie Henschel

Department of Behavioural and Cognitive Biology

Feb 4 15:10-15:30 Room 2

Play can be observed in a variety of species but we still do not know with certainty why animals play, especially as adults. The kea parrot (Nestor notabilis) is a suitable model species to investigate this question, since it exhibits a lot and complex play behavior which resumes to adulthood. Although kea live in a fission-fusion social structure, they fight surprisingly little. A study by Schwing et al. (2017) showed that playback of the kea's play vocalization induces playfulness in wild kea, indicating that kea play has an important social component. Therefore, we hypothesize that kea use play as a strategy to ease the social tension caused by the rapid-changing group composition to reduce aggression. This study aims at,

first, testing if the effect found by Schwing et al. can be replicated with captive kea and, second, examining the effect of experimentally increased play on social tolerance. Play was induced via call playback and confrontation with novel objects. In a subsequent competitive feeding situation, we predicted increases in affiliative and/or decreases in agonistic behaviour due to preceding play behaviour compared to a control without play induction. An all-adult, an all-juvenile and a mixed group of kea were tested. We predicted that experimental manipulation will increase play in juveniles more than in adults but that play will increase tolerance in adults more than in juveniles. In the mixed group, we predicted that juveniles will additionally increase play in adults which will increase tolerance compared to all other groups.

Reference:

Schwing, R., Nelson, X. J., Wein, A., & Parsons, S. (2017). Positive emotional contagion in a New Zealand parrot. Current Biology, 27(6), R213-R214.

Conservation & Sustainability 2

A prerequisite for nature protection: Interest in nature of adolescents and its measurement.

Anna-Lena Neurohr

Austrian Educational Competence Centre Biology (AECC Biology)

Feb 4 14:30-14:50 Room 3

Many studies examine that the experience in, and the connection with nature are important factors for the development of environmental attitudes and behavior. Individual studies indicate that learners are prepared to act with sustainable and environmental awareness only if they are interested in nature and recognize it as worthy of protection. However, there is still no standardized and consistently utilized instrument that measures adolescents' interest in nature. To address this, we developed a new measure, the Scale for Interest in Nature (SIN). It consists of 18 items and is based on the Item-Response-Theory. The scale was validated based on the known group approach based on a sample of N = 351 (MAge: 12.6 y., 41.9% females) consisting of three groups with increasing involvement with nature or its protection, with A ranking the highest. The results show significant differences in interest in nature among the three different groups (group A: M=.50, SD=1.47; group B: M=-.38, SD=1.61; group C: M=-.98, SD=1.61). Reliability was .81 and MS-Infit mean .99. Bivariate Pearson correlations between the SIN and the Connectedness to Nature Scale (INS), as well as the 2-Major Environmental Values model (2-MEV) demonstrated the scale's construct validity. The validated scale is ready to use and can be applied economically in different settings. For instance, it could be used in educational interventions, e.g. in the context of environmental education, that address adolescent's interest in nature.

Conservation and genetic assessment of the Vermillion Flycatcher in the Galapagos Islands

David Anchundia Gonzáles

Department for Behavioral and Cognitive Biology

Feb 4 14:50-15:10 Room 3

Currently, several species of land birds in the Galapagos Islands are experiencing a rapid reduction in the size of their populations. The Vermilion Flycatchers from the Galapagos Islands (Pyrocephalus nanus & Pyrocephalus dubius) previously distributed in eleven islands, are currently one of the groups of birds with the greatest population reduction. The species Pyrocephalus dubius, endemic to San Cristóbal Island, has already gone extinct, and it is the first endemic bird extinction in modern times in the Galapagos Islands. Populations of the other endemic species, Pyrocephalus nanus, are declining at an alarming rate. It has disappeared on two islands: Floreana and Santa Fé, and on three islands where their populations were abundant, they are on the

verge of local extinction: Santa Cruz, Santiago and Rábida. The reasons for the decline are related to habitat alteration and parasitism of hematophagous larvae of the invasive fly Philornis downsi. During 2020 and 2021, our experimental study of habitat restoration and control of the impact of the Philornis downsi parasite significantly helped to improve the breeding success. Therefore, this method with will be implemented on a larger scale to avoid the extinction of this species in Santa Cruz Island. Also, due to the extreme reduction in the size of these populations, we are evaluating their current genetic diversity and assessing the gene flow between islands to see if individuals from other islands can be incorporated into highly affected populations to help recover their population size.

More green than gray? Toward a sustainable overview of environmental spillover effects: A Bayesian meta-analysis

Sandra J. Geiger

Environmental Psychology, Department of Cognition, Emotions, and Methods

Feb 4 15:10-15:30 Room 3

In response to climate change, interventions have been implemented to encourage sustainable behavior. Such interventions may not only promote the target behavior but also increase (positive spillover) or reduce (negative spillover) non-targeted outcomes. This pre-registered meta-analysis integrated the experimental research on environmental spillover to update a previous meta-analysis (Maki et al., 2019). Database searches in several languages supplemented by searches to retrieve unpublished literature yielded 63 aggregated effect sizes from 38 studies and 29 articles (N = 26,613 unique participants). A three-level Bayesian meta analysis provided weak support for no spillover on intentions and strong support for no spillover on behaviors. If spillover was present, it would likely be small and positive for intentions, δ = 0.15, 95% CrI [-0.01, 0.31], but negligible for behaviors, δ = 0.01, 95% CrI [-0.13, 0.16]. Positive spillover was most likely when interventions were autonomy-supportive (very strong evidence), provided a rationale (moderate to strong evidence), did not use financial (dis)incentives (weak to strong evidence), and addressed normative (extreme evidence) or a combination of normative and personal gain goals (strong evidence). Spillover was similar across research settings (moderate evidence) and partly across samples (weak to moderate evidence), which may suggest generalizability. To set standards for robust spillover research, we developed the Power-Reporting-Open science (PRO) guidelines. The Bayesian approach allows for robust conclusions and continuous updating with new evidence. We hope that this supports future revisions toward a sustainable overview of robust and high-powered spillover studies that independent researchers can easily update.

Aesthetics, Art & Attractiveness 2

Choosing appropriate units of measure: Art as a tool in the Eye-tracking lab

Anna Miscenà

Department of Art History

Feb 4 15:40-16:00 Room 1

In the past ten years, the exponential increase of empirical investigations in Aesthetics has enriched this field of a new set of methods. Questions which have traditionally been approached theoretically can now be look at under a new light and even radically re-shaped. Eye-tracking is a tool which has been used to experimentally test how we understand art at the level of gaze – yet eye-tracking research often struggles to be adapted to the investigation of the artistic image; the first relies on quantitative parameters - the second, on the other hand, is

traditionally defined and described purely qualitatively. As such, experimental investigation is faced with a recurrent challenge; studying artworks which have no measurable features that allow a quantitative comparison. In this talk, I will illustrate how art-historical knowledge can be used to locate common units of measure between artworks and guide eye-tracking research in art perception. After comparing a few methods employed in the field, I will report the results of a study performed at the CReA Lab at the University of Vienna which allowed us to study Klimt's pictures and test aesthetic principles on his art, which had so far only been postulated theoretically.

Do Museums Make You Fatigued? A cross-paradigm, cross-cultural study on repeated art viewing in the laboratory

Jan Mikuni

Department of Basic Psychological Research and Research Methods

Feb 4 16:00-16:20 Room 1

Repeated art viewing is tied to reduced engagement towards artworks. Past studies have pointed out the decreased engagement towards art may interrupt our satisfaction or effective learning, and hence, it might bring negative consequences to the art beholders.

In this talk, I will present two laboratory-based experiments, where I examined if this phenomenon is a basic and universal consequence of interaction with media via cross-cultural comparisons, what is its actual cause and how to counteract it.

Study 1 revealed that participants from Austria and Japan showed a general decrease in art engagement after repeated art viewing, showing that this phenomenon can be found regardless of the cultural background of the art beholder.

Study 2 revealed that increasing the stimulus novelty in the presented sequences might mitigate the decrease in the art engagement, suggesting habituation is one of the keys to cause this phenomenon.

Keeping the Balance: The Inner Ear & Extreme Courtship Displays

Thomas MacGillavry

Cognition and Communication

Feb 4 16:20-16:40 Room 1

Sexual selection can drive the evolution of phenotypic extremes that often reach the limits of physiology. Some bearded manakins (family Pipridae), for example, are able to snap their wings up to 60 times per second, and the courtship dives of some hummingbirds (family Trochilidae) reach speeds of up to 27.3m s-1, equating to an astounding 385 body lengths s-1. Though these examples demonstrate that mate-choice can often drive the evolution of extreme behaviour, comparatively little work has investigated the evolution of traits in courting individuals that allow them to perform such feats. For instance, the wing-bones of male club-winged manakins are solidified and unusually large, which likely prevents breakage during wing-snap displays.

My research concerns the birds-of-paradise (family Paradisaeidae), which represent a clade with an extraordinary diversity of sexual displays, often involving apparently physiologically extreme performances. For example, the riflebirds (genus Ptiloris) of Australia and New Guinea perform a 'wing-clap' display, during which the wings and head are rapidly jerked in alternating motions. This is likely highly demanding for the balancing ability of males, which is regulated by the vestibular system of the inner-ear.

I am working on a project that uses 3D endocasts of the vestibular system to investigate morphological adaptations in birds-of-paradise species that incorporate rapid head movements in their courtship displays. If such a relationship were to be discovered, it would represent a novel way in which males are adapted to perform extreme displays.

SOCIALITY: THE ADVANTAGES AND CHALLENGES OF SOCIAL LIFE 2

HOW TO COPE WITH OTHERS? INTER- AND INTRA-SPECIFIC INTERACTIONS IN WILD RAVENS (CORVUS CORAX)

SILVIA DAMINI

Department of Behavioural and Cognitive Biology

Feb 4 15:40-16:00 Room 2

Ravens are scavengers, so they rely on other animals to access food. When one species forages on resources made available by another species, producer-scrounger dynamics take place. For example, ravens might feed at the carcass of an animal killed by a predator. In this case the predator would be a producer, but also a competitor and a possible predator for the ravens themselves. Moreover, other ravens might be present at the foraging site, and they might act as both collaborators (by working together/distracting predators) and scroungers (by stealing the food that has already been secured from predators). While ravens have been shown to possess a profound knowledge about conspecifics, little is known about what determines their choices in interspecific interactions.

I will look into the foraging behavior of wild ravens when in competition with heterospecifics that pose a high or low risk to them, i.e. wolves and wild boars. Using a combination of observational and experimental approaches, I will examine the plasticity/consistency of the behavioral choices expressed by individuals in the different risk conditions. Furthermore, I will test if the ravens differentiate among individual heterospecifics (e.g. between different wolves), and how this might impact their feeding strategies. Finally, I will investigate whether inter-specific scroungers also make good intra-specific scroungers, as stealing food from a predator might rely on different skills than stealing food from conspecifics. In my presentation, I will specify the hypotheses underlying these questions and explain my predictions.

SOCIAL MEMORY, GRID CODES & ALZHEIMER'S DISEASE

LUISE GRAICHEN

Department of Cognition, Emotion, and Methods in Psychology

Feb 4 16:00-16:20 Room 2

Social memory includes social recognition, i.e. the recognition of other individuals, and social navigation, i.e. the representation of others in space. It is essential for everyday interactions such as observational learning or navigation in a group. Relying on specific brain regions and neuromodulators, social memory engages neural representations in the rodent brain that differ in part from non-social representations. Among these neural representations are spatially tuned cells in the medial temporal lobe, place cells in the hippocampus and grid cells in the entorhinal cortex.

While hippocampal place cells encode the specific position of an individual, entorhinal grid cells respond to multiple specific positions in space, thereby creating a holistic representation of an individual's current environment. Evidence from animal studies suggests the existence of social place cells, which exclusively encode the position of conspecifics. The activity of these social place cells might in turn rely on social grid cells indicating that grid cells may be involved in social memory processes.

Neural representations for social memory appear altered in various diseases that are related to deficits in social memory such as Alzheimer's Disease (AD). AD is associated with severe (social) memory loss, coupled to pathology that first emerges in the entorhinal cortex, which hosts grid cells. Moreover, genetic risk for AD was shown to compromise entorhinal grid cell representations in healthy young individuals.

Using fMRI and additional behavioral measures, the connection between grid cell coding, social memory and genetic risk for AD will be explored in several studies.

Shame on Me? Shame Proneness and Expressive Suppression Mediate Between Dysfunctional Family Cohesion and Adolescent Mental Health

Rahel Lea van Eickels

Department of Clinical and Health Psychology

Feb 4 16:20-16:40 Room 2

Adolescence is a time when the self develops, but also when psychological problems increase. The family remains one of the most important relationship systems until early adulthood; thus, dysfunctional family interactions can promote internalizing and externalizing problems in adolescents. The family also affects adolescents' self-concept as well as their strategies for coping with emotional challenges. Shame is a negative and aversive self-evaluation, which is often followed by dysfunctional emotion regulation strategies such as expressive suppression. Shame can also occur across situations in the sense of a shame-proneness and negatively impact mental health. We examined the mediating role of shame-proneness and emotion suppression in the associations between family cohesion and internalizing and externalizing problems in adolescents aged 14 to 18 years. A total of 537 German-speaking adolescents from Germany, Austria, and Switzerland participated in an online self-report survey. Using a path model, we confirmed hypothesized associations between family cohesion and shame-proneness, expressive suppression, and internalizing and externalizing problems. We found a significant dual mediation in the link between family cohesion and internalizing and externalizing problems via shame-proneness and expressive suppression. Our findings provide a model for the mechanism by which impaired family cohesion might be related to adolescent mental health problems.

Mental health 2

Prolonged intrinsic neural timescales dissociate from reduced phase coherence in schizophrenia.

Stephan Lechner

Feb 4 15:40-16:00 Room 3

Input processing in the brain is mediated by its intrinsic neural timescales (INT) and phase synchronization. Recent findings show abnormal INT in schizophrenia as well as strong evidence for reduced phase synchronization. The relationship of both findings in schizophrenia remains unclear, though. Recruiting a large schizophrenia EEG sample (n=149, 93 schizophrenia patients and 56 healthy controls), we here investigate INT, as measured by the autocorrelation window (ACW), and phase synchronization, as measured by intertrial phase coherence (ITPC) during both rest and task states (oddball paradigm). Our findings in schizophrenia show (i) abnormally prolonged ACW in both rest and task states including decreased rest-task differences; (ii) decreased ITPC in response to both standard and deviant tones in the oddball paradigm; and (iii) a positive correlation of ITPC and ACW in healthy subjects while such correlation is no longer present in schizophrenia. An additional mediation analysis showed that ITPC mediates ACW.

Together, we demonstrate evidence of abnormally long INT in the EEG of schizophrenia as well as their dissociation from phase synchronization. Reduced phase coherence over trials reflects decreased temporal precision in input processing which co-occurs with their increased temporal integration as indexed by prolonged INT. Generally, our data provide further evidence for a basic temporal disturbance in schizophrenia on different temporal levels including phase synchronization and INT, with the former being more fundamental than the latter.

The Neuropharmacology of Social Motivation in ASD

Raimund Bühler

Institut für Klinische und Gesundheitspsychologie

Feb 4 16:00-16:20 Room 3

Autism spectrum disorder (ASD) is a heterogenous disorder characterized by deficits in social communication and social interaction as well as restricted and repetitive behaviors, interests and activities. Despite substantial efforts, the etiological mechanisms of this disorder remain poorly understood and clinical interventions to improve social deficits are sparse. Social impairments in ASD have been approached in terms of social motivation, which in turn can be understood as differences in the processing of rewarding social stimuli, mediated by neural substrates such as the opioid system. A long line of research has attempted to explore the relationship between opioids (OP) and social motivation, albeit studies using OP antagonists such as naltrexone (NAL) in ASD have found only weak effects on social symptoms and results have generally been inconsistent. An intriguing explanation for the weak effects of OP antagonists lies in the less explored interaction with oxytocin (OXT). In particular, OP inhibits both the synthesis of OXT in the hypothalamus as well as OXT release in the pituitary. Exploring the effect of a combined application of NAL and OXT on social attention and social motivation is therefore the main goal of this research project. Using eye-tracking methodology, reinforcement learning paradigms and computational modelling approaches, this combination of drugs is expected to have larger effects on social attention, motivation and learning than any of the two drugs administered in isolation.

"No one should look over my shoulder": Conducting Psychological Research on Sensitive Mental Health Topics in the Military.

Wolfgang H. Prinz

Department of Clinical and Health Psychology

Feb 4 16:20-16:40 Room 3

Military service can be associated with an increased risk of deployment-related mental disorders, such as posttraumatic stress disorder (PTSD) or complex posttraumatic stress disorder (cPTSD). Investigating mental health in the military, however, presents unique challenges. As an example, studies indicate that mental health measures developed in civilian samples oftenly lack psychometric properties in the military. Moreover, research on stigma, helpseeking and healthcare utilization among military personnel suggests that soldiers could tend to an underreporting of mental health symptoms. Such response tendencies may not only mask the true prevalence of mental disorders in the military, but also distort the importance of risk- and resilience factors. In order to investigate a possible bias in assessing military mental health, the presented study examines the perceived sensitivity of survey questions on mental health symptoms among soldiers of the Austrian Armed Forces. In this context, sensitivity refers to survey questions which are perceived as "taboo" or socially undesirable and might provoke concerns about negative consequences if an answer becomes known to a third party. Furthermore, associations of sensitivity perceptions with soldier identity and stigma-related beliefs are examined and qualitative data on effective research strategies in this specific field of research are obtained. Preliminary results show that survey items on mental health are perceived as more sensitive compared to control items on working conditions. Moreover, sensitivity ratings show considerable variation across different mental health symptoms and qualitative data suggest that differentiated strategies are required to accurately assess mental health in the military.

POSTERS

Monkey see, monkey do... or do they? Social learning in common marmosets and the influence of present conspecifics on learned preference

Margarita A. Milidakis
Department of Behavioral and Cognitive Biology

Co-Authors: Vedrana Šlipogor, Thomas Bugnyar

Pair bond quality in female homosexual consortships in Japanese macaques (Macaca fuscata)

Pia Boehm
Department of Behavioral and Cognitive Biology

Co-Authors: Lena S. Pflüger, Katharina E. Pink, Michael A. Huffman, Bernard Wallner

The acoustic influence of human voice on phonaesthetical perception of a foreign language

Žiga Bogataj
Department of Linguistics

Co-Authors: Susanne Reiterer, Jörg Mühlhans

Do domestic pigs understand the need for a partner in the joint log-lift task?

Kimberly Brosche
Institute of Animal Welfare Science, Department for Farm Animals and Veterinary Public Health, University of Veterinary Medicine

Co-Authors: Clémence Nanchen, Dr. Jim McGetrick and Prof. Dr. Jean-Loup Rault

Cardiac Automatic Imitation

Carolin Drewes
Department of Developmental Psychology

Co-Authors: Markus Tünte

Development and individual variation in food associated calls in the common raven

Anna Luise Fabbri
Department of Behavioral and Cognitive Biology

Co-Authors: Sonia Kleindorfer, Thomas Bugnyar, Mauricio Nicolas Adreani, Palmyre Boucherie, Gabriela Bernatovic

Effects of Sexist Memes on Gender Stereotyping

Maximilian Hofleitner
Department of Educational Psychology

Monday I laugh – A pilot study on the effect of clown visits on stress and mood in youth psychiatry

Lorena Holzmeier and Amos-Silvio Friedrich
Department of Clinical and Health Psychology

Co-Authors: Univ-Prof. Martina Zemp

The Ephemeral Reward Task in Kea (Nestor notabilis)

Tilmann Lange
Department of Behavioral and Cognitive Biology

Co-Authors:

Sense & Sonority - The Influence of Sonority on Language Perception

Lukas Nemesthothy
Department of Linguistics

Co-Authors: Prof. Susanne Reiterer

What can common marmosets perceive from self-live video? A comparison among different video conditions

Juan Pablo Pimiento
Department of Behavioral and Cognitive Biology

Co-Authors: Vedrana Šlipogor, Jorg JM Massen & Thomas Bugnyar

Interaction With Intelligent Tutoring Systems in the Context of Social Cognition: Extended, Embedded, Embodied, or Enactive?

Katharina Roetzer
MeiCogSci

Co-Authors: Paolo Petta

Personality in Ravens? Insights from the Novel Environment Task

Alexander Ruf
Department of Behavioral and Cognitive Biology

Co-Authors: Palmyre Boucherie, Lisa-Claire Van Hooland, Mario Gallego-Abenza, Aníta Rut, Thomas Bugnyar

Social Learning in Common Marmosets (Callithrix jacchus) via Video Demonstrations.

Markus Stasek
Department of Behavioral and Cognitive Biology

Co-Authors: Thomas Bugnyar and Vedrana Slipogor

Workload allocation between breeding partners during nest building in common ravens (Corvus corax).

Saskia Trenk

Department of Behavioral and Cognitive Biology

Co-Authors: Palmyre Boucherie, Lisa-Claire Vanhooland, Thomas Bugnyar

Music Therapy for Autism

Asena Umay Koçan

Department of Clinical and Health Psychology

Co-Authors: A. U. Koçan, A. Grössing, C. Gold & G. Silani

Individual differences in problem-solving in Common Marmosets (Callithrix jacchus)

Marion Varga

Department of Behavioral and Cognitive Biology

Co-Authors: Vedrana Šlipogor, Thomas Bugnyar

Social versus non-social information use in common marmosets (Callithrix jacchus, L.)

Lea Vodjerek

Department of Behavioral and Cognitive Biology, University of Vienna and Department of Biology, Faculty of Science, University of Zagreb

Co-Authors: Vedrana Šlipogor, Thomas Bugnyar

Phonaesthetics and Personality: Why we do (not only) especially like Romance languages

Anna Winkler

Department of Linguistics

Co-Authors: Prof. Susanne Reiterer