



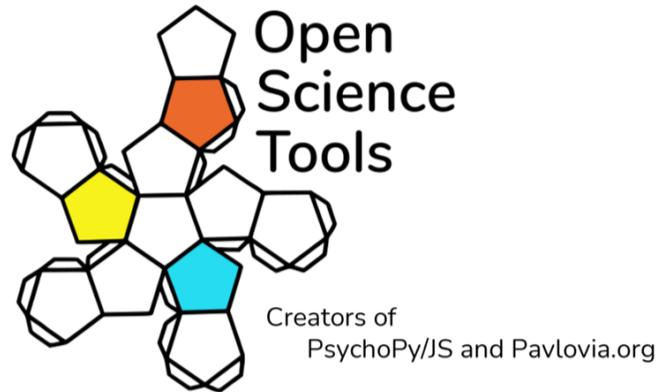
ADok 23

12. Doktorand*innenworkshop der Allgemeinen Psychologie

22.- 24.06.2023 UNIVERSITY OF GREIFSWALD



Special thanks to:



DGPs

Fachgruppe Allgemeine Psychologie

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Programm



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Abstracts



Posters

Transcranial magnetic stimulation to augment fear extinction learning processes

Lisa M. Cybinski, Aline Rabelo Evangelista, Julia Becker, Thomas Polak, Martin J. Herrmann
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Pavlovian approaches to fear conditioning and extinction learning have improved our understanding of the psychological and neurobiological mechanisms of anxiety disorders and their treatment. In particular, fear extinction is suggested as a key mechanism in exposure-based therapy and is associated with ventromedial prefrontal cortex (vmPFC) activation. Since anxiety disorders are the most prevalent mental health disorders and treatment is not effective in all patients, noninvasive brain stimulation techniques such as transcranial magnetic stimulation (TMS) are increasingly being discussed to modulate neural activation and enhance extinction learning. However, the available evidence is still insufficient. The aim of this quasi-randomized, placebo-controlled, double-blinded study is to investigate the effects of repetitive TMS (rTMS) on extinction learning and memory consolidation and to contribute to the improvement of rTMS in psychotherapy. For this, 99 healthy subjects underwent a three-day fear conditioning and extinction paradigm involving fear conditioning on the first day, extinction learning on the second day, and spontaneous recovery, reinstatement, and extinction retrieval on the third day. Before or after fear extinction learning, participants received either active or sham rTMS of the left posterior frontal cortex, which is functionally connected to the vmPFC (Raij et al., 2018). For stimulation, a neuronavigation system was used to target the MNI coordinates (-56, 2, 40). Fear responses were measured using skin conductance responses (SCR) during CS+ and CS- presentation and subjective fear ratings after each CS+/CS- presentation block(s). Data collection is still in progress, and preliminary results will be presented at the workshop.

Algorithmic vs. human decision-making: How does the method of decision-making and the level of communicated fairness influence justice perception? - A higher education perspective

Farid Fares, Christopher Esch, Elisabeth Kals, Christina Pfeuffer
Catholic University of Eichstätt-Ingolstadt

Over the past few years, artificial intelligence (AI) has increasingly taken over decision-making processes in our daily lives. However, prior studies in various contexts have found differences in the perception and evaluation of algorithmic decision-making (ADM) versus human decision-making (HDM). This highlights the importance of comparative assessments of ADM and HDM in various contexts prior to the implementation of corresponding AI-based decision-making processes. In our study, we investigated the influence of the decisionmaking mode on justice perception, trust, and emotional responses in students who were allocated university course topics based on ADM or HDM. Importantly, all topics were allocated according to the sample principles, but lecturers in the HDM condition pretended to decide themselves based on the information of a corresponding system, whereas lecturers in the ADM condition explicitly stated that the AI decided. Furthermore, we varied whether the corresponding decision-making process was explicitly communicated as fair or whether no comment was made on the process' fairness and assessed how favourable students' rated the outcome of the allocation process. Against our hypotheses, Bayesian evidence favoured the interpretation that whether a human or an AI allocates course topics did not impact on justice perception, trust, or emotional responses of students. The central determinant of students' evaluations of the decision-making process was the favourability of the outcome. Please note that these findings are still preliminary as not all effects have reached our Bayesian criterion for stopping data collection yet. Nevertheless, if the final sample confirms these data patterns, this implies that there is little reason not to adopt ADMs for the allocation of university course topics, as students' perceptions of ADM and HDM appear to be rather comparable regarding perceived justice, trust, and corresponding emotional responses.

Using gaze and eye information to recognize user intentions (withdrawn)

Valentin Foucher
University of Ulm

Recognizing user intentions has become extremely important in the field of Human-Computer Interactions. Especially the detection of implicit intentions that can be used for system adaptation can improve user experience. Inspired by mentalists that manage to mindread from the eyes, eye and gaze information might be a promising source to recognize an intention not explicitly revealed by a person. Latest advances in eye tracking have made eye features solid tools to investigate such complex cognitive behaviour. The goal of this doctoral project is to develop a methodology to consistently recognize user intentions based on their gaze and eye information. Specifically, we will investigate spatial and temporal relations of a variety of fixation-based and pupillometric eye tracking parameters e.g., pupil size, blinks, fixation, saccades, or micro-saccades to identify the more suited ones to reveal faking intentions. The first study will aim at investigating differences in eye tracking parameters when someone is instructed to tell, mask or fake the real value of a number on a previously picked card. If this study is successful, i.e. we are able to distinguish those three conditions by using eye features only, we would conduct multiple follow-ups to better understand faking intention. Specifically, future studies would focus on testing the validity of identified parameters when participants randomly choose the condition, as well as testing their reliability when varying stimulus type, experimental design, and situational context as lying in front of a human. The final stage of this project could be the conception of an assistive functionality that would predict faking behaviour using the previously identified parameters and artificial intelligence. Such findings would put a step forward into the detection of implicit intentions, that could ultimately be applied in a broad range of fields from clinical settings over vigilance monitoring to online browsing or video games.

Switch and compare: On the crossmodal loudness-number interaction in number discrimination tasks

Sarah Koch
Martin Luther University of Halle-Wittenberg

Several studies suggest the existence of a generalized magnitude representation system for different magnitude dimensions (e.g. A Theory of Magnitude, Walsh, 2003). Assuming a shared representation, two simultaneously presented magnitude dimensions should influence the processing of each other. Prior studies found cross-dimensional influences between numbers and the auditory dimension loudness (e.g. Hartmann & Mast, 2017). This indicates that loudness might be also represented on a generalized magnitude representation system. However, the underlying processes of a loudness-number interaction are still unknown. Therefore, I investigated the loudness-number interaction between visually presented numbers and simultaneously presented tones with different loudness levels in two experiments. In experiment 1, a target number and a simultaneously presented tone were preceded by a reference number with a fixed numerical value as well as a reference tone with a fixed loudness level. Participants had to decide, whether the target number was numerically smaller or larger than the reference number. Experiment 2 was a cued task switching paradigm. In each trial, participants saw a number and simultaneously heard a tone. They had either to classify the numerical value of the number or they had to classify the loudness of the tone depending on the colour of the preceding cue. There was a significant congruency effect in both experiments: Participants responded faster in congruent conditions (large number and loud tone or small number and soft tone) compared to incongruent conditions. Furthermore, the congruency effect increased from experiment 1 to experiment 2. I will discuss potential processes which might have lead to the loudness-number interaction as well as the implications for an assumed generalized magnitude representation system.

Habit formation reflects episodic retrieval

Matthäus Rudolph, Klaus Rothermund
Friedrich Schiller University Jena

According to the "law of recency", habits emerge as a result of episodic binding and retrieval processes. The contingency learning (CL) paradigm, in which an irrelevant stimulus feature is predictive for a categorization response, provides a measure for habit formation. Opposed to the predictions made by the "law of recency", Xu and Mordkoff (2020) found stable CL effects after controlling for response retrieval. In the present study, we used a new experimental design that allows a reliable estimation of CL and retrieval effects. Going beyond former studies, we investigated the role of stimulus-stimulus (S-S) bindings for habit formation. We observed a robust CL effect that was, for the most part, eliminated after controlling for S-S and S-R retrieval, supporting the claim that CL mostly reflects retrieval. Our findings question the necessity of reinforcement or repetition in the development of habits, thereby posing a challenge to classical learning theory.

Investigating affective conflict produced by emotional facial expressions of ingroup and outgroup members

Robert Huber¹, Julia Kozlik², Rico Fischer¹
¹University of Greifswald, ²University Medicine Greifswald

Affective conflict arises when stimuli or stimulus features of opposing valence are processed. A prototypical example is a negative picture paired with a positive word. Kozlik and Fischer (2020) hypothesized that emotional ingroup and outgroup faces can also create an affective conflict, when the emotional expression and the affective connotation of group membership mismatch, e.g., a happy outgroup member (but see Wentura & Paulus, 2022). To further test the hypothesis of an affective conflict, we used different stimulus configurations of assumed affective conflict and tested for congruence sequence effects across stimulus configurations. Two stimulus configurations were presented in random order: (a) pictures of ingroup vs. outgroup persons displaying positive vs. negative facial expressions and (b) pictures of ingroup vs. outgroup persons with neutral facial expressions superimposed by positive vs. negative words. In all trials, the task was to indicate the group membership of the depicted person. Although these stimulus configurations hold apparent differences, both contain two distinct affective features that either match or mismatch, and thus can result in an affective conflict. We found a significant congruence sequence effect, which was not further modulated by the stimulus configuration or switches and repetitions between stimulus configurations. We interpret this result as evidence for the processing conflict account, as conflict in both stimulus configurations seems to be the same affective conflict.

Putting the past behind: Dissociate whether control states at the level of task-set or response-conflict help to disengage from a no longer relevant task

Inga Mögling¹, Amelie Jung¹, Gesine Dreisbach², Rico Fischer¹

¹University of Greifswald, ²University of Regensburg

In a task switching setting, participants are required to maintain two different task sets in working memory but to engage in only one of the tasks in each trial. Curiously, if one of the tasks is labeled irrelevant, performance in the remaining task is still worse than when the same task is performed in a single-task context. This so-called fade-out cost demonstrates that the suddenly irrelevant task cannot be discarded directly (Mayr & Liebscher, 2001). In the present study, we used list-wide proportion manipulations to induce two different control states in a task switching experiment with a subsequent fade-out part (a) at the task-set level by manipulating the proportion of task switches (Experiment 1) and (b) at the response-conflict level by manipulating the proportion of response congruency (Experiment 2). If fade-out costs originate at the task-set level, fade-out costs should be smaller following many repetitions compared to many switches in Experiment 1. If fade-out costs originate at the response-conflict level, fade-out costs should be smaller following many incongruent compared to many congruent trials in Experiment 2. Experiment 1 indicates reduced fade-out costs after blocks with many repetition trials compared to many switch trials suggesting that fade-out costs derive at the task-set level. In Experiment 2, fade-out costs were not modulated by the response-conflict proportion. This suggests that fade-out costs derive at the level of task-sets and are not modulated by control changes at the level of response-conflict.

Talks I

The perils of being busy: A closer look at task load and clock checking behaviours in time-based prospective memory

Wiebke Hemming, Jan Rummel
Heidelberg University

Time based prospective memory describes the ability to remember to execute an intention at a predefined future time point while being engaged in an ongoing task. This study addressed the question of how increasing the difficulty of the ongoing task affects prospective memory performance. Participants (N= 149, Mage = 22.14, SDage= 3.53; 70.5 % women) were presented with a word-picture-matching task as an ongoing task. Participants were shown 2, 4 or 6 words at different screen positions (thereby increasing the difficulty by raising cognitive load condition). One of these positions was highlighted after word presentation. Participants had to decide whether the word at this position matched the picture that was presented afterwards. As a prospective memory intention, participants had to remember to press a key every 5 minutes (8 times in total). Participants could check a screen clock by pressing an additional key at any time while they performed the task indicating that they maintained prospective memory intention. Analyses were conducted using generalized linear mixed-effect models. Cognitive load in the ongoing task and clock checking frequency both account for variance in time-based PM performance. Clock checking seems to partially but not fully mediate the effect of cognitive load on PM performance.

Influence of cognitive demands on balance control: Event-related study

Anton Koger, Iring Koch, Leif Johannsen, Denise N. Stephan
RWTH Aachen University

Recent studies investigating cognitive-motor interference have developed an event-related methodology to measure postural sway and demonstrated that response conflict (i.e., the congruency effect) reduces short-term variability in balance control. Here, we used this event-related methodology to measure postural sway during the performance of a cognitive dual task. A visual short-term memory task requiring a delayed verbal response and an auditory-manual reaction time task were combined. We varied stimulus onset asynchrony (SOA), i.e. the timing of the cognitive load created by the interference of manual response delay and the maintenance of more than one task set (single task vs. dual task; task load). In addition, we manipulated the predictability of the task load per block. Performance differed in predictable vs. unpredictable blocks, but only for single-task trials, resulting in a mixing cost like pattern. Postural sway was reduced in single-task trials compared to dual-task trials, but only in blocks with predictable task load where only one task set had to be maintained. Maintaining more than one task set may temporarily suppress intermittent control impulses that underlie postural control processes, resulting in more postural sway.

The influence of trust on retrieval of observationally acquired SR bindings (withdrawn)

Kira Franke¹, Carina G. Giesen²

¹*Friedrich Schiller University Jena*, ²*Health and Medical University Erfurt*

Previous studies showed that observationally acquired stimulus-response (SR) binding and retrieval effects only occur when the observed person is socially relevant. This can, for example, result from task demands (e.g. cooperation or competition, Giesen et al., 2014) or the relationship between the interacting people (Giesen et al., 2018). An essential component of successful social relationships, which could therefore also increase the social relevance of another person, is trust (Lewis & Weigert, 1985). In the present study we investigate whether trusting vs. mistrusting the person one is interacting with modulates observationally acquired SR binding and retrieval effects. Trust was manipulated by a variation of the Investment Game (Berg et al., 1995). Interaction partners behaved either trustworthy or untrustworthy by keeping vs. violating a previous promise. After that, participants performed an online interactive color classification task to assess observationally acquired SR retrieval effects. Preliminary data shows no modulation of these effects by the level of trust. Currently, data collection is still ongoing. Results will be presented and discussed.

Talks II

A nest of students? - Classifier congruency effect within- and between language

Jing Tong, Andrea M. Philipp, Iring Koch
RWTH Aachen University

We focused on the classifier as semantic-syntactic language feature and examined the semantic classifier congruency effect in language production. In 5 experiments, participants first saw or heard a classifier (e.g., a pair of) and then had to name a picture (e.g., shoes). In Experiment 1 (n = 26), we explored whether semantic classifier effect existed in English monolinguals. Results showed better performance in the semantically congruent condition than in semantically incongruent condition (i.e., a semantic classifier congruency effect). In Experiment 2 – 5 (n = 40 for each experiment), Chinese-English bilinguals were tested and we investigated semantic classifier effect in bilinguals. When the language of the classifier language and naming language was the same, the semantic classifier congruency effect was replicated but was significantly larger for L1 than for L2. This effect was differed as a function of classifier modality, indicating a larger effect with an auditory than with a visual classifier presentation. Additionally, language switch costs were found in both semantically congruent and incongruent conditions but were smaller in semantically congruent as compared to incongruent conditions. When the classifier language and naming language could be same or different, the semantic classifier congruency effect was replicated again. Yet, this semantic classifier priming effect was found only when classifier and naming language were the same but not different. Thus, classifier as semantic primes only worked within-language but not between-language. We argued that classifier activated the concept matched to it and also the lexicon in specific language, which help bilinguals name the picture in that language but not both languages.

The impact of overlapping mappings on the acquisition and retrieval of word meanings

Matilde E. Simonetti¹, Megan Lorenz², Iring Koch¹, Tanja Roembke¹

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Studying statistical word learning in conditions mimicking bilingualism could give us further insights into how statistical regularities are accumulated if multiple overlapping mappings are acquired. Thus, our study investigates statistical acquisition of words with multiple overlapping mappings, and how their learning differs from words that only map onto one meaning. Participants (N = 56) completed a cross-situational word learning task, in which they acquired both one-to-one (1:1; one word maps onto one object) and one-to-two-mappings (1:2; one word maps onto two objects) in learning phase 1 (LP1). In learning phase 2 (LP2), each word acquired as part of LP1 received one new meaning (1:1), thus allowing us to investigate how easily both 1:1 and 1:2 mappings are remapped. In addition to accuracy, we will analyze reaction times as a measure of retrieval ease of word meanings. We predict that even as it will be harder to acquire 1:2 than 1:1 mappings, it will generally be easier to remap 1:2 than 1:1 mappings. In addition, we predict that 1:2 words will be harder to retrieve than 1:1 mappings due to the competition between the two associated referents. Data collection is currently ongoing.



How influential are odors on emotionality? (withdrawn)

Luisa Bogenschütz, Mohammad Hamzeloo, Ryan Hackländer, Christina Bermeitinger
University of Hildesheim

There is the long-standing notion that olfaction and emotion somehow have a special connection. This special relation might be due to the fact that the neural pathways of olfactory processing are of a unique nature. Olfaction is the only sense that directly projects into the amygdala-hippocampal complex which is thought to play an important role for emotional processing. Additionally, there is the idea that the only things humans process about odors is their hedonic valence and there is some evidence that odors elicit stronger emotional reactions compared to other stimuli. To test this notion, a series of studies will be conducted which assesses whether the presence of a positive or negative odor has an influence on the emotionality rating of pictures. Additionally, the effect of another very emotional and complex stimuli is contrasted with odors: music.



Talks III

The affective consequences of response inhibition determine no-go based crosstalk effects in dual tasks

Devu Mahesan, Rico Fischer
University of Greifswald

Backward crosstalk effects (BCE) are observed in dual-task studies when the characteristics of Task 2 (T2) influence Task 1 (T1) performance. One type of BCE, the no-go BCE, is reported when T2 is a go/no-go task. The usual observation is that when T2 is a no-go, T1 processing takes longer than when T2 is a go. No-go BCE is due to the response inhibition needed to inhibit an already prepared T2 response spilling over to T1 motor execution. Growing evidence shows that response inhibition causes affective devaluation of the associated stimuli due to the negative affect elicited by inhibition. It is unclear how no-go BCE based on response inhibition would interact with affective processing in T1. To test this, we recruited a dual-task paradigm, where T1 is a valence categorization task, and T2 is a go/no-go task. In Experiments 1 and 3, we presented positive and negative words as S1 and color (Experiment 1) and numbers (Experiment 3) as S2. In Experiment 2, we created an affective (mis)match between S1 (positive, negative, neutral) and S2 (high, low tone) through counterbalancing. Overall, we observed a large no-go BCE exclusively when Task 1 was positive but an absent or reversed no-go BCE when Task 1 was negative. Results are discussed in the context of an affective mismatch between S1 valence and T2 response type.

Motor demands and cognitive control: Does required response force modulate conflict processing?

Linda Bräutigam, Hartmut Leuthold, Ian G. Mackenzie, Victor Mittelstädt
University of Tübingen

In cognitive control research, it is often overlooked how decision-making and motor processes interact to regulate behavior in accordance with internal goals and situational demands. Specifically, previous findings have shown that distracting information can interfere with decision-making and motor processes, but the specific role of motor control in conflict resolution is not yet fully understood. To address this gap, we conducted a study utilizing a novel approach to investigate whether unpredictable differences in motor demands could bias conflict processing. More precisely, we developed a modified Simon task in which participants were required to make responses by moving a slider either to the left or right and randomly varied the required movement force within blocks (easy-medium and hard-medium blocks). Conflict effects in movement times were generally smaller in (a) medium than easy and (b) hard than medium force conditions, indicating reduced impact of distracting information with increased motor demands. Additional sequential analyses revealed that movements were biased by prior force requirements, and congruency sequence effects were generally observed for both repeated and changing motor demands. Overall, our findings emphasize the importance of considering motor processes when making decisions under conflict. Lastly, I will discuss theoretical implications for the interaction of cognitive control and motor planning by considering how reactive motor control might adjust the interplay between target- and distractor-processing in conflict tasks.

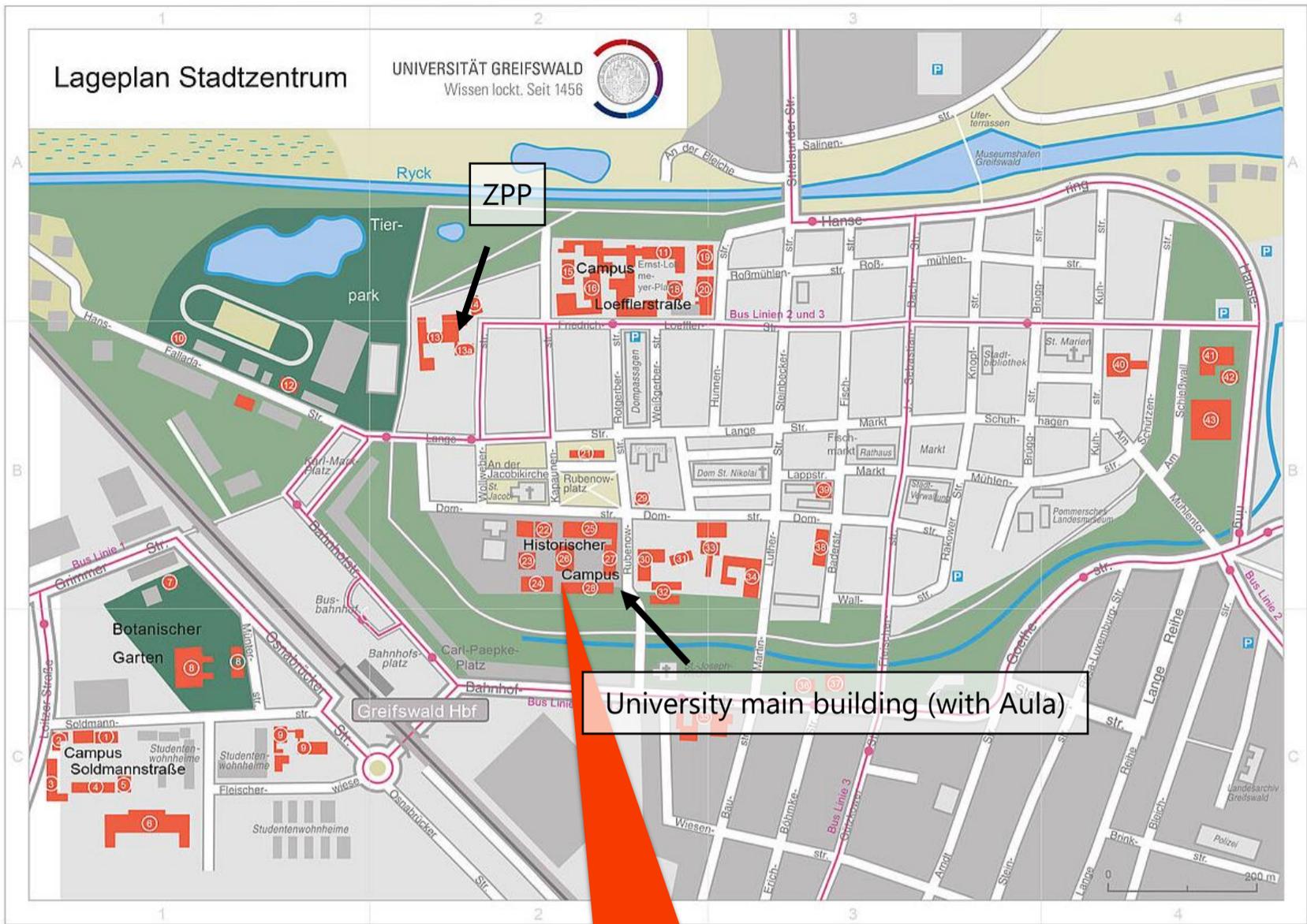
Is implicit knowledge about repeating SOA sequences used to reduce between-task interference?

Amelie Jung
University of Greifswald

Performing two tasks at the same time involves the risk of between-task interference. This risk is higher the more dimensional overlap the two tasks share and the more both tasks are presented at the same time, i.e., short stimulus-onset asynchrony (SOA). Fischer & Dreisbach (2015) found out that stimuli associated with short SOA facilitated task shielding of Task 1 leading to reduced between-task interference. Furthermore, Röttger et al. (2021) investigated to which extent implicit knowledge about sequences of SOAs can be learned and subsequently used to increase task shielding at short SOA within a spatial dual-task paradigm. They argued that a fixed sequence of three repeating SOAs should lead to a reduction of the backward crosstalk effect (BCE) over 3 consecutive blocks and an increase of the BCE when SOAs occurred in random order in a final block. However, their results only showed descriptively that implicit sequence knowledge was successful. Therefore, we adapted the study of Röttger et al. (2021) and implemented a dual task with stronger task overlap. Participants were trained to a repeating sequence of six SOAs (short-short-medium-medium-long-long) for four blocks and faced a random order of the same SOAs in a final random block. Results showed that the size of the BCE remained constant throughout the sequence blocks but increased for the random block, indicating that implicit knowledge about SOA sequences was used for task shielding. These preliminary findings are planned to be replicated by a second study which adds another sequential block after the random block.

Map





Festsaal & Aula

Hörsaal (HS 1)



Involved Persons



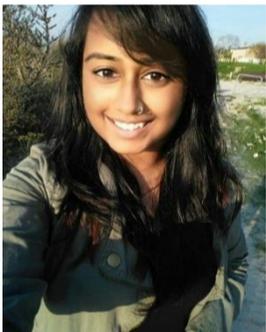
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