Investigating neurophysiological correlates of joint action

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In social interactions, people often share tasks with others. This type of interaction is usually examined in joint action tasks in which two humans are asked to perform an experimental task conjointly. In this research, we aimed to describe neurophysiological correlates of joint action. To this end, participants performed an orientation discrimination task in either a competitive or cooperative setting while their EEG data was recorded. On each trial, the display included two oriented targets with distinct colors indicating if it is the participant's own target, the partner's target, or neutral distractors. One of these stimuli was presented laterally to measure attention deployment by means of lateralized event-related potential components, while the other stimulus was presented on the vertical midline. In the ERP analysis, we observed an N2pc component in the parieto-occipital region when subjects are presented with their own target in Go trials. In the time-frequency analysis we found that the upper alpha band in the same region is more lateralized in the competitive condition compared to the cooperative condition. These results indicate that performing a task with a partner in different social contexts affects the way humans perceive their visual environment.

Swearing and Taboo Word Production: Behavioral and Electrophysiological Correlates

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The selection of words that best express intended preverbal messages depends not only on semantic factors, but also on communicative contexts that determine the social appropriateness of verbal utterances. Specifically, the mental lexicon contains swear and taboo-words that, albeit being produced more or less frequently, are highly inappropriate and unwanted in many social situations. Thus, for the speaker it is essential to assess the appropriateness of planned utterances before articulation. In the present study we used electrophysiological measures to characterize the production of swear and taboo words. Compared to well-matched neutral words, swear and taboo words were produced slower and quieter, suggesting that the potential social inappropriateness affects pre-articulatory as well as articulatory stages during language production. In ERPs an early positivity at posterior regions is taken to reflect modulations of lexical access, and a later positivity at central regions suggests enhanced evaluative processes related to internal speech monitoring. Our findings demonstrate that the emotional valence and social appropriateness of swears and taboo words is appraised during speech planning at the level of lexical selection and via self-monitoring at a later stage. As a result of the latter, swear and taboo words are produced more hesitantly.

Potential models of allocentric coding for reaching in naturalistic visual scenes

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Previous studies showed that the combination weight of allocentric and egocentric information is dependent on contextual factors when planning to reach to visual targets. However, the principles of this integration and the impact of different parameters are not clear. Therefore, we propose two modeling paradigms (global vs. local clustering) for allocentric coding to explain reported experimental data. The first model encodes the scene by creating a cluster point and calculates the distance of objects from this cluster. The second model creates Barycentric coordinates and encodes the position of the target object with respect to local clusters of objects. At the decoding phase, the goal is to infer the position of the target object from a new scene by taking into account remembered information from encoding. The first model makes this inference by combining the remembered egocentric cluster point, from encoding, and the new allocentric cluster point extracted from the new scene. The second model estimates the allocentric position of the missing object based on the new scene and then combines it with the remembered egocentric position. Both models reproduced the reported human data. Future experiments should examine which of these strategies, if any, the brain might use.

Confidence, distance, and consistency: Towards a reliability account of advice taking

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Confidence is both an important determinant and outcome of advice taking. Specifically, lower confidence increases individuals' advice weighting. At the same time, advice that is close to an individual's initial judgment leads to an increase in confidence. What has not been investigated is how confidence affects and is affected by advice seeking. Across four experiments, we investigated individuals' confidence before and after seeking and taking advice. In all experiments, we manipulated advice distance either categorically (close vs. distant; Exp. 1 & 2) or continuously (Exp. 3 & 4). Additionally, we manipulated costs of advice (Exp. 2) and consistency of advice among advisors (Exp. 4). Lower confidence predicts increased advice seeking, beyond distance, costs, and consistency of advice. Close advice leads to an increase in confidence. Additional sampling increases this confidence gain, but more so when advice is consistent among advisors. The results are compatible with the assumption that advice seeking and utilization depend on the reliability (i.e., amount and consistency) of individuals' task-related knowledge and change thereof upon integration of advice. We propose this change of reliability as a common process underlying the effects of knowledge, confidence, advice distance, and advisor consistency on advice taking.

Is it possible to reverse the Spatial Agency Bias?

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Spatial Agency Bias (SAB, Maass, Suitner, & Nadhmi, 2013) refers to people's tendency to perceive actions flowing from left to right in western countries. The SAB has multiple consequences with regard to human perception and cognition. Part of the SAB can be explained by word order. In a typical active sentence the grammatical subject represents an agent and precedes the object, e.g., Luca (subject) insults Giulio (object). Within most western languages, it is also possible to switch positions of agent and patient by using passive voice. Passive voice will also turn the patient into the grammatical subject and the agent into the object: E.g. Giulio (subject) was insulted by Luca (object). In two experiments, grammatical voice (active vs. passive) of a scene description was manipulated in a within-subject design (study 1) and a between-subject design (study 2). We replicated a preference for the agent on the left in the active voice condition. In the passive voice condition we found a preference for the agent on the right. Thus, we found evidence for a reversal of the Spatial Agency Bias.

The advantage of being less protected: children's spatial orientation in the city of Jakarta

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Path integration is a very basic cognitive competence: to update the spatial position while walking. Self-directed wayfinding experience is needed to develop this competence in children (Neidhardt & Popp, 2010). In Jakarta, the influence of parental protection on path integration competence was tested. Additionally, h a mental rotation test (PRT) and children's embedded figures test (CEFT) were given. Three groups of pre-school children (n=29) from very poor families were tested in three different places: The children walked along a path. At three locations on the forward run and on the same three locations on the way back they were asked to point to the origin of the path. Two of the groups consisted in children who are used to roam freely in their daily life. They managed this task extremely well. The third group – with more protective parents – did less well ($F(2,27)=9.72$, $p<.01$, $\eta 2=.42$). Although there are small significant correlations between spatial tests and path integration competence ($r=.23$ for the Picture Rotation Test, $r=.35$ for the embedded figures test), the experience of moving freely in everyday life is by far more important to explain path integration performances. Highly protected children are impaired in developing this very basic spatial competence.

Unstacking judgments: What response distributions reveal about the cognitive process in multiple-cue judgments

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Exemplar and cue-abstraction models are well-established tools to understand categorization and judgment processes. However, many models in this area are limited by paying little attention to (1) the finding that judgments are often the result of a mixture of exemplar and cue-abstraction processes and (2) that in case of exemplar processes an outcome could be the results of a competitive retrieval process. We developed a new exemplar-based competition model with cue-abstraction (CX-COM) that addresses both these limitations. CX-COM assumes that past exemplars compete for retrieval and the retrieved judgments are adjusted following a cue-abstraction process. We tested the new model in two experimental studies. Across the two studies we found qualitative response pattern consistent with CX-COM's predictions. As predicted by a competitive retrieval mechanism underlying exemplar processing, judgment variability varied systematically with the distance in judgment values between likely retrieval candidates. Extrapolation and interpolation behavior was consistent with a cue-abstraction mechanism working in direct conjunction with exemplar retrieval. Qualitative results are corroborated by a quantitative analysis testing CX-COM against seven competitor models. The results suggest CX-COM as a viable new model for quantitative judgments and show the importance of considering variability in addition to mean values in judgment research.

Neo's spoon and Newton's apples: What material properties are part of object representations?

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Through repeated interactions with real-world objects, we develop priors about their properties. We rely on these priors to efficiently predict future outcomes (e.g. falling wine glasses may shatter), indicating that prediction ability is critical for survival. We investigated whether observers make predictions about the kinematics of materials based on object shape and surface properties. Stimuli were computer-rendered familiar objects (teacup, jelly, chair, etc.) that we hypothesized would generate strong expectations about their material kinematics when dropped from a height (shattering, melting, etc.). Utilizing a 'violation-of-expectation' paradigm, participants were shown videos of an object falling and impacting the ground. The motion was either 'congruent' with the object and material, behaving as expected (e.g. a falling Jelly wobbled), or 'incongruent', where the kinematics violated potential predictions (e.g. a falling Jelly wrinkled like cloth). Using a visual rating scale, observers rated each video on four adjectives: 'hard', 'gelatinous', 'heavy', and 'liquid'. We find that unexpected outcomes generate larger surprise effects/longer RTs, suggesting that kinematic properties of materials are an integral part of our representation of familiar objects.

Evaluative Blocking in EC

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Evaluative conditioning describes the transfer of valence from a positive or negative stimulus to a neutral stimulus by mere co-occurrence (De Houwer, 2007). In research on classical conditioning and predictor-outcome learning, it is known that learning is not a mere function of CS-US co-occurrences but also influenced by interfering stimulus ccurrences (cue competition, e.g., blocking, highlighting, overshadowing). However, there is little research on stimulus interference in EC, a fact that has been described to hinder progress of explanatory concepts in EC (De Houwer, et al., 2001). The present work is a first step to close this gap and presents a novel, general, and robust effect of stimulus interference in EC. This effect is driven by the serial position of the CS and the redundancy of its USs with previously encountered CSs. In 5 experiments, we show that redundant (i.e., repeated) relative to non-redundant USs have a decreasing influence on the evaluation of the CS. This effect occurs even though repeated USs do not lose their affective potential and in spite of participants' more accurate memory for redundant compared to non-redundant CS-US pairings. We discuss different possible cognitive processes underlying the effect as well as implications for existing EC theories.

Impulsivity and inhibitory control in the context of Internet-pornography-use disorder

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Individuals with Internet-pornography-use disorder (IPD) suffer from a loss of control over their Internet-pornography consumption albeit experiences of negative consequences. Following a recent theoretical model, impulsivity and inhibitory control are personality and cognitive factors that contribute to the development and maintenance of IPD. Moreover, inhibitory control might be affected by situational factors such as viewing pornographic cues. The current study aimed to investigate the role of impulsivity and inhibitory control on symptom severity of IPD. Fifty male, heterosexual, online-pornography users performed a modified stop-signal task measuring impulsive action tendencies and inhibitory control ability. The task includes two blocks, one with pornographic and one with neutral pictures. Impulsivity and symptom severity of IPD were assessed using questionnaires. The results show that males with high impulsivity and with high impulsive action tendencies when confronted with pornographic material also had higher symptom severity of IPD. However, this interaction effect of impulsivity and impulsive action tendencies on symptom severity was not present in the neutral picture condition. Results indicate that cognitive factors in specific situations such as viewing pornographic cues moderate the effect of personality on symptom severity of IPD. Results are discussed in the context of underlying neural mechanisms.

Altered network connectivity in ASD during emotional face processing

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A core symptom of people with Autism spectrum disorder (ASD) is weakness in social interaction and communicative abilities. One obstacle for the development of social skills may be down to an altered perception of human faces. People with ASD demonstrate difficulties with emotion recognition from faces and reveal deviant ways of focusing socially relevant face details. These behavioral alterations in ASD are assumed to arise from aberrant neural mechanisms. Recent structural and functional imaging studies point toward attenuations of the connectivity between face regions and regions involved in the processing of emotions in ASD. So far, however, all functional imaging studies applied correlation analysis techniques. Furthermore, most research focuses the face-dominant right hemisphere. With a different methodological approach, we investigate the effective connectivity between bilateral regions of the "core system of face perception" and the amygdala. The method, dynamic causal modelling (DCM) for fMRI, allows assertions about the direction of informational transfer, including feedback/feedforward loops. We aimed at differentiating lower-order perceptual from integrative perceptual-emotional mechanisms. Our results indicate an altered transfer of facial and emotional information from right to left FFA in people with ASD. Further, we found a reduced coupling of "core regions" of the face perception system.

When does background knowledge inform causal conditional reasoning?

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Some judgments involving conditionals (if p, then q) are well approximated with a causal model in which the antecedent (p) causes the consequent (q). Previous experiments suggest that participants rely on background knowledge to judge the strength of causal links and the probability of alternative causes. We tested the use of background knowledge in the suppression paradigm: Participants judged conditionals without cues or with cues that mentioned additional antecedents or alternative causes. We further manipulated whether participants could rely on background knowledge to inform their judgments. Typically, the suppression paradigm produces a distinctive data pattern such that Modus Ponens, for example, is suppressed if additional antecedents are mentioned. For the present experiment, we predicted that participants would exhibit the typical suppression pattern if experimental conditions prevented the use of background knowledge. Conversely, we expected a weaker suppression effect if participants could rely on their background knowledge. However, these predictions were not supported by the data. In the present experiment, a typical suppression pattern appeared, regardless of experimental condition. We conclude that reasoners' use of relevant background knowledge and the conditions of its use remain poorly understood and a puzzle for future research.

Gaze behavior as an indicator for user competence and state in human-technology interaction

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In a world that is increasingly pervaded by technology, the ability to successfully interact with technology is of crucial importance for participation in everyday life. However, this interaction constitutes a challenge for a considerable amount of users with low technological competence. The growing field of affective computing offers fruitful methods to automatically recognize user competence and state and subsequently provide tailored assistance. However, rooting user competence and state recognition into psychological theory is currently incomplete. By introducing a framework of human-technology interaction from a perspective of self-regulation, we describe the behavioral and affective outcomes of the interaction between the user and the technical system as a function of task difficulty and coping resources (e.g., task competence, system competence). As a first step to experimentally test the framework, we investigated users' (N = 72) gaze behavior as a possible information source for automated state and competence recognition. Participants with different competence levels solved four tasks with varying task difficulty in the statistic software SPSS. Results indicated that gaze behavior varies with task difficulty, users' task and system competence as well as with self-reported user state.

Fixation durations in natural scene viewing are guided by peripheral content

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Fixation durations provide insights into processing demands; however, for free-viewing of natural scenes, data on the factors controlling fixation durations are relatively scarce. Here, we investigate the relationship between fixation durations and image features. In experiment 1, observers viewed images of natural scenes and experimentally modified versions. We varied scene contrast (from original contrast to isoluminant) and saturation (from original saturation to grayscale). Fixation durations increased with decreasing contrast; moreover, at low contrasts, fixation durations were prolonged when color information was absent. In sum, fixations durations increased when less information (color or contrast) was available. In experiment 2, we tested whether this difference resulted from increased processing demands at fixation or from reduced salience at peripheral locations. We designed "checkerboard" stimuli, for which half of the checks contained the unmodified scene, while the remaining checks were made isoluminant preserving color. Fixation durations were substantially prolonged when the next fixation fell on an isoluminant check. By comparison, the manipulation at current fixation had a small effect. Our results highlight the importance of peripheral information in controlling fixation durations. The data concur with the notion that gaze is guided by competition among the current and potential future fixation locations.

Should I sit or should I stand – On the relevance of motor demands on decision making under objective risk

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Previous studies out of the field of decision making focused on the influence of additional cognitive task performance, stress, diseases, and the process of aging. For some reason the effects of simultaneously performing motor demands have been widely neglected. However, previous motor / cognitive dual-task studies provide evidence for both negative as well as facilitating effects of simultaneously performing cognitive and motor tasks. The study at hand aimed to investigate the effects of decision making under objective risk while performing additional motor demands. Seventy-two participants ranging from 18-30 years performed the Game of Dice Task either while sitting or while standing on one leg. The results revealed a significant main effect for 'choice', as well as a significant interaction of 'choice' x 'group'. People standing on one leg more frequently selected the most disadvantageous choice (one single number), whereas the sitting group most often selected the advantageous combination of four numbers. The findings at hand need to be considered under the aspects of executive functions, working memory, stress and somatic markers. Furthermore, the findings highlight an increasing relevance of the impulsive system in dual-task decision making under objective risk.

Is EC possible for objectively aware, but subjectively unaware CSs?

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Evaluative conditioning (EC) refers to the phenomenon that neutral stimuli (CSs) are evaluated more positively (negatively) after repeated co-occurrence with positive (negative) stimuli. The question of whether EC can occur under subliminal CS presentation is of great theoretical importance, as subliminal CS presentation precludes conscious awareness of the CS-US contingency. Propositional accounts of EC require CS-US contingency awareness and therefore cannot explain subliminal EC. Establishing EC under subliminal conditions would strongly support the assumption of a second non-propositional learning process. Previous research did not find subliminal EC when CSs were presented below the objective awareness threshold. The present research investigates subliminal EC using a subjective criterion of conscious awareness – participants' impression of (not) having seen the CS. Subjective awareness is assumed to lag behind objective awareness, and hence allows for higher CS durations. It therefore constitutes a fairer test of subliminal conditioning. In a series of experiments we found that EC was possible under supraliminal conditions with suboptimal visibility, but obtained mixed results for conditions which were subliminal according to the subjective criterion of conscious awareness. We discuss potential features of the learning procedure that may moderate subjectively subliminal EC.

Simon and his friends: Evidence for multiple reference frames

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Studies using the Simon task have consistently reported faster stimulus-response compatible trials referring to the compatibility in regard to the body midline of the responding agent (egocentric). We have recently developed a variant of the Simon task (Baess & Bermeitinger, submitted) simultaneously allowing the formation of multiple spatial reference frames. Using stick-figure manikins as stimuli, we found evidence for Simon effects based on the egocentric and allocentric (ball in the left or right hand of the manikin) reference frame, which were further modulated by a non-spatial reference frame (one manikin vs. nine manikins). Here, we present a new series of experiments using photos of human agents as stimuli. In line with those results from the stick-figure manikins, egocentric and allocentric Simon effects were obtained. However, the allocentric Simon effect was inverted providing evidence for taking the human agent's perspective on the photo into account (e.g., my right hand equals his right hand). Implications will be drawn on basis of the findings from the stick-figure manikin and the human agent experiments.

Language Effects in Top-Down Search for Colors

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To investigate the role of language in top-down search for colors, I compared different color and color-word stimuli in a series of contingent capture experiments. The contingent capture hypothesis states that attention capture depends on the match between stimulus and top-down search template. Attention capture is reflected in shorter search-times for validly than invalidly cued targets, selectively for top-down matching cues. In experiments 1 and 2, I compared effects of color cues and color-word cues in top-down search for a color target (experiment 1) or a color-word target (experiment 2). Only cues of the same stimulus category as the target (color stimuli/color-word stimuli) captured attention. In experiment 3, both color and color-word targets were combined in one experiment. In line with experiments 1 and 2, contingent capture effects emerged exclusively for targets of the same stimulus category as the cue. These results support feature-based rather than language-based search templates. In experiment 4, I compared color-word cues of different fonts. As color-word cues captured attention regardless of the match between cue and target font, search templates cannot solely be based on feature representations. Further investigations regarding phonological and semantic aspects will narrow down the role of language in top-down search templates.

Time course of inhibition in motor imagery

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Motor imagery (MI) entails the mental simulation of movements without their actual execution. One mechanism contributing to inhibition of actual execution is effector-specific inhibition. We investigated the time course of effector-specific inhibition by analyzing trial sequence effects of imagined and executed hand movements from two start buttons to two target buttons. Response stimulus intervals (RSIs) were manipulated. Thus, trial sequences differed depending on current action mode (imagination, execution), previous action mode (imagination, execution), hand (same, different), target (same, different), and RSIs (200ms, 700ms, 1300ms, 2000ms). Results showed that in imagination-imagination sequences hand repetition costs occurred at the shortest RSI. This indicates that effector-specific inhibition occurred in the previous trial, resulting in costs when the same effector was used in the current trial. With increasing RSIs hand repetition costs decreased and eventually disappeared, indicating that effector-specific inhibition might decay over time. At the longest RSIs hand repetition benefits occurred. In execution-execution sequences hand repetition benefits were observed in all four RSIs. In conclusion, effector-specific inhibition and effector-specific activation may occur simultaneously in motor imagery. Effector-specific inhibition may be initially stronger, but may decay faster than effector-specific activation.

Lateralized alpha-power indicates selective forgetting in a retro-cuing paradigm

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Attentional shifts based on retroactive cues (retro-cues) facilitate performance in working memory (WM) tasks. However, the contribution of target enhancement vs. distractor suppression mechanisms of attention are still unclear. Therefore, we measured lateralized effects of the EEG during a delayed estimation WM task. A retro-cue indicated the lateralized or midline item to be required for retrieval. Analyses revealed an increase of alpha power contralateral to a lateralized item becoming irrelevant after cuing while no comparable effect was observed when a lateralized target had to be selected. This indicates the inhibition of the irrelevant information as a core mechanism of selective attention within working memory. In contrast, target enhancement processes were evident in an anterior contralateral negative shift of the ERPs. These results enable a first impression on the interplay of attentional sub-processes in the context of visuo-spatial working memory updating.

Blind-walking and distance estimation

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What happens if pedestrians look at their mobile phones and not at the environment especially the traffic around them. Not only car drivers but also pedestrians are an important part of the traffic in cities and cause accidents by not estimating distances correctly. In our field experiment we wanted to know if participants estimate distances in three blind-walking conditions differently. 90 participants were assigned randomly to three different groups with 30 persons in each group: walking forward, walking forward and wearing a backpack or walking backward blindly. Each participant had to guess 8 distances between 4 and 45 meters varied according to a Latin square. Every person had to walk blindly until the thought reaching of the distance. Experimenters measured the walked distance. In a 2 distance (short(4 m, 8 m, 12 m, 16 m, 20 m) vs. long (35 m, 40 m, 45 m)) X 3 conditions MANOVA significant mean effect of distance ($F(1, 86) = 383.981$, $p < .000$, $\eta_p^2 = .817$) and a significant interaction between distances and conditions ($F(2, 86) = 4.683$, $p = .012$*, $\eta_p^2 = .098$) was found. Post Hoc comparisons of Tukey show a significant difference between the conditions of blind-walking forward and backward.

Clear moral judgments based on unclear evidence: Person evaluation is strongly influenced by untrustworthy gossip

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Affective information about other people's social behavior may prejudice social interactions and bias moral judgments. The trustworthiness of person-related information, however, can vary considerably, as in the case of gossip, rumours, lies, or so-called "fake news". Here, we investigated how spontaneous person-likeability and explicit moral judgments are influenced by trustworthiness, employing event-related potentials as indexes of emotional brain responses. Social-emotional information about previously unknown persons was verbally presented as trustworthy fact, (e.g. "He raped a woman") or marked as untrustworthy gossip (by adding e.g. allegedly). In Experiment 1, spontaneous likeability, deliberate moral judgments and electrophysiological measures of emotional person evaluation were strongly influenced by negative information, yet remarkably unaffected by the trustworthiness of the information. Experiment 2 replicated these findings and extended them to positive information. Our findings demonstrate a tendency for strong emotional evaluations and moral judgments even when they are knowingly based on unclear evidence.

Explaining human decision making in optimal stopping tasks

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Optimal stopping problems are a class of decision-making tasks in which people have to choose the best option out of a set of alternatives. Options are presented sequentially and a rejected option cannot be recalled. Behavioral research has found that human choices can be described by threshold strategies. Despite their descriptive strength threshold models are agnostic to the underlying cognitive processes that guide human behavior in an optimal stopping task. Here, we use a drift diffusion model (DDM) to understand how preferences change over the sequence and which cognitive processes drive them. In an online experiment, participants performed a sequential decision-making task in which they had to find the cheapest airplane ticket out of 10 tickets. We varied the value of the options and on which positions they were presented. In a second step we fitted the DDM to the data. The drift rate increased with position in the sequence and cheaper offers. But neither value nor position had an effect on the bias or threshold parameter. These results suggest that people may not decrease their decision threshold, but rather discount future options due to increasing uncertainty over the sequence.

Perzeptuelle Sichtbedingungen beeinflussen unsere Fähigkeit, adäquat auf ein versagen automatisierter Fahrfunktionen zu reagieren

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Zukünftige automatisierte Fahrzeuge (d.h., SAE-L3 und höher) sollen es Fahrern ermöglichen, Aktivitäten auszuführen, die nicht fahrrelevant sind, und dabei ihre Aufmerksamkeit nicht durchgängig der Überwachung der Fahrsituation widmen zu müssen. Hinter diesem Ziel steht die implizite Annahme, dass diese automatisierten Fahrzeuge (i) erkennen, wenn sie ihre Systemgrenzen erreichen bzw. ausfallen, und (ii) die Fahrer rechtzeitig zur Übernahme der Fahraufgabe auffordern. Die Frage dieses Forschungsprojekts ist: Können Fahrer adäquat eingreifen, wenn die Automation versagt und die Fahrer mit einer fahrirrelevanten Aktivität beschäftigt sind und keine Warnung durch die Automation erfolgte, weil sie ihr Versagen nicht erkannte? 20 Teilnehmer führten während einer simulierten Fahrt mit einem automatisierten Fahrzeug in einem Fahrsimulator eine verbale komplexe Gedächtnisspannen-Aufgabe aus und mussten eingreifen, sobald die Automation ohne Warnung ausfiel. Die Sichtbedingungen wurden variiert (klar vs. nebelig) und ein LED-Display zeigte die augenblickliche Reliabilität der Automation an (niedrig vs. hoch). Die Ergebnisse zeigen, dass die Teilnehmer schneller unter nebeligen Sichtbedingungen auf ein Automationsversagen reagierten als bei klarer Sicht. Die angezeigte Reliabilität der Automation hatte keinen Effekt. Diese ersten Ergebnisse weisen darauf hin, dass Umweltbedingungen, die die Fähigkeit, rechtzeitig einzugreifen, beeinflussen, einen größeren Einfluss auf das Übernahmeverhalten haben als präsentierte Informationen über die Ausfallwahrscheinlichkeit der Automation.

I'm all ears: ERPs and pupil size in response to learning novel labels for novel sounds

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Previous research using behavioural measures or ERPs has shown that the meaning of words can be learned by a variety of cues and procedures. Yet, whether and how the modality of the referential cue impacts on the outcome of measures of learning has not been investigated up to date. In order to address this gap, we tested the lexical-semantic learning abilities of adults during word-sound association learning. Participants' EEG and pupil size were recorded during an experiment with a training phase and a subsequent testing phase. The training phase was composed of a passive listening task in which participants were exposed to consistent and inconsistent word-sound pairs. The following testing phase contained congruent and incongruent pairs from both item categories. We will report learning-related changes over time and effects related to consistency of sound pairs. Further, the reported data will show whether the expected ERP measure, the N400, is correlated to pupil size during learning and testing. The data will provide first evidence on how novel meanings related to non-visual referents can be mapped to novel words. Further research could aim to study this specific associative learning modality in different age ranges and contexts.

The role of sensorimotor experience in the formation of novel word meanings

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Embodied cognition theories postulate that conceptual processing partly recruits the same brain areas as the experience with the concept's referent. Supportive evidence arose from training-studies, in which laboratory-controlled experiential information was integrated in conceptual representations of novel objects. This study aimed to extend these findings to the linguistic domain. In three training sessions, 22 participants gained active manipulation or merely visual experience with novel tool-like objects while learning names (pseudo-words) referring to the objects. In a post-training fMRI session, the novel object names had to be distinguished from unfamiliar pseudo-words in a lexical decision task. Novel object names activated a broad semantic network comprising frontal, parietal and temporal regions, mirroring the activation pattern elicited by processing real object names. Pseudo-word processing elicited medial-superior parietal activations when compared to novel as well as real object names. Thus, training seemingly induced word meaning by linking novel names to newly formed conceptual object representations, comparable to real word meaning. However, the activation pattern did not differentiate between manipulation and visual experience. The activation elicited by novel object name processing after three training sessions seemingly reflects a preliminary stage in conceptual representation formation, not yet distinguishing between the types of experiential information.

HPA axis and SNS activity are differentially related to the primacy and recency effect of the serial position curve

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The aim of our study was to investigate whether the diurnal rhythm of cortisol, as an indicator for hypothalamic-pituitary-adrenal (HPA) axis activity, or the diurnal rhythm of salivary alpha-amylase (sAA), as an index for the activity of the sympathetic nervous system (SNS), are related with long-term memory or working memory performance in adults with subclinical levels of chronic stress. For this purpose, the primacy effect and the recency effect of the serial position curve were investigated. Participants were n = 67 healthy adults who reported that they did not perceive their lives as stressful (mean age: 24.9 ± 8.4 years; n = 23 male). For cortisol, the area under the curve (AUC), as an index of whole daily cortisol concentration, was negatively related with the primacy effect (as an indicator for long-term memory performance; $r = -.28$, $p < .05$). For sAA, positive relationships were found of AUC and diurnal increase of sAA concentrations throughout the day with the recency effect (as an indicator for working memory capacity; $r = .25$ and $r = .29$, both $p < .05$). We conclude that both stress pathways affect long-term memory and working memory processes differently.

The link between social categorization and prejudice: A matter of the situationally activated mental contents?

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Previous research has produced conflicting evidence for the extent to which social categorization contributes to a person's prejudice apart from being a necessary condition for it (cf., e.g., Park & Judd, 2005). In two studies (joint N=200), one exploratory, the other confirmatory, we advance the hypothesis that the context in which outgroup members are encountered is an important moderator of the relationship between categorization and prejudice: More specifically, the amount to which participants process category information in a discussion in the "Who Said What?" paradigm (Taylor et al., 1978) covering topics where it is an asset to be black was reliably associated with positive evaluations of blacks in an Evaluative Decision Task (Fazio et al., 1995). This association was reversed for topics where it might be seen a detriment to be black. We suggest several avenues how subsequent research might explore the causal relationship between categorization and prejudice (e.g., does the extent of prejudice determine the extent to which people process either negative or positive information about the outgroup?). So far, we interpret our tentative results as suggesting that categorization needs to remain a viable player in theoretical accounts of prejudice.

The effect of auditory distractors on face recognition

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It is well established that verbal short-term memory is disrupted by auditory distractors. The changing-state effect refers to the observation that sequences of different auditory distractors disrupt performance more than distractor repetitions. The interference-by-process account claims that the automatic processing of the auditory distractors selectively interferes with the short-term maintenance of order information. The attentional account, in contrast, assumes that distraction occurs because attention is diverted away from the primary task, suggesting that the auditory distractors generally disrupt memory binding. Here, we examined whether face recognition is affected by the presentation of auditory distractors at encoding. Faces were encoded either in quiet or while word repetitions or short sentences had to be ignored. In a subsequent face recognition test, faces encoded in quiet were better recognized than faces encoded in background noise, suggesting that the binding of facial features was impaired by auditory distraction. Face recognition was more impaired by sentences than by word repetitions, showing that the changing-state effect generalizes beyond verbal material. The results have important theoretical as well as applied implications that are discussed.

Reward Driven Visual Attentional Capture in Adult ADHD Patients

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Clinical research on ADHD demonstrates that patients with ADHD process reward different compared to healthy controls. Studies on visual selective attention have demonstrated that reward can influence visual search performance in various ways e.g. distractors signaling reward can decrease search performance. We assumed that search performance might decrease stronger in patients with ADHD than in healthy controls. A visual search task was adopted from a study by Feldman-Wüstefeld, Brandhofer and Schubö (2016). It consisted of homogenous or heterogeneous contexts in which an orientation target and a colored distractor were embedded. After each correct trial participants were given a monetary reward that depended on the color of the distractor. Target response times and questionnaire data were assessed. Preliminary results showed prolonged response times for targets in heterogeneous and homogenous context in the ADHD group compared to the control group. However, contrary to our assumption, no reward induced interference was observed for the ADHD group in comparison to the healthy controls. From these results we conclude that patients with ADHD take longer than healthy controls to acquire reward contingencies.