Talks III

Julia Eck, University of Würzburg, Disembodiment in the context of virtual action effects

Evidence from multisensory body illusions suggests that body representations can be expanded by embodying external objects. However, adjusting body representations to current task demands implies also that parts become disembodied from the body representation if they are no longer required. In the current study, we induced embodiment of a 2D virtual hand that could be controlled trough active movements of a computer mouse or on a touchpad. After the virtual hand was embodied we probed for disembodiment by comparing two conditions: Participants either continued moving the virtual hand or stopped moving it. Based on accounts that conceptualize body representations as a set of multisensory bindings we expected gradual disembodiment of the virtual hand if it's current body representation would no longer be updated through correlated visuo-motor signals. In contrast to our prediction, the virtual hand was instantly disembodied as soon as participants stopped moving it. This result was replicated in two follow-up experiments. The observed rapid disembodiment suggest that humans might have already become experts in adjusting body representations to changing virtual tools and task demands by daily interacting in virtual environments.

Elisa Straub, University of Freiburg | Stand vs Sit - Influence of posture on cognitive control

Recent studies show that performance in cognitive conflict tasks (e.g., Color Stroop tasks) is improved when subjects perform the task while standing compared to sitting. These studies suggest that requirements to control postural muscles while standing consumes central resources, which improves selectivity of attention in cognitive control tasks. However, an extensive study fails to replicate these findings. Thus, we systematically investigate body posture (standing vs sitting) on cognitive control and conduct a meta-analysis on our and previous studies' results.

Ruyi Qiu, University of Passau | The Integration of Contextual Information in an Event File

It is a common finding that stimulus and response features are bound together and stored in an episodic representation, called *event file* (Hommel, 2004). Moreover, a unitary binding between stimulus and response has been coined *binary* binding. Using a four-alternative auditory negative priming paradigm, a previous study found that a completely response-irrelevant context stimulus modulated the binding between the distractor and response, instead of being bound directly with the response in a binary fashion. This finding raises the questions whether contextual information can also enter a binary binding and, if so, what determines its integration. Given that the variability and saliency properties of the context were found to influence memory-based processes, we systematically manipulated these properties in a four-alternative auditory negative priming task. In Experiment 1, context variability was varied between participants with either 9 (high variability) or 2 (low variability) individual sounds. In the group with low variability, context modulated the binding between the distractor and response, but context was bound directly with the response in the high variability group. Context saliency was manipulated by varying its loudness or emotional valence in Experiment 2 and 3, respectively. Results showed that context sounds of low saliency were not integrated at all. Context sounds of moderate saliency modulated the binding between the distractor and response, whereas context sounds of high saliency were bound directly with the response. Further causes for the current findings and their theoretical implications will be discussed.

Katrin Köllnberger, University of Regensburg | Binding Music: Integration of two-tone chords into event files | Katrin Köllnberger, Johanna Bogon & Gesine Dreisbach

The ability to perceive an object as one coherent representation is due to binding processes between its features. Empirically, such binding processes can be measured via partial repetition costs, a performance pattern of faster reaction times when either all features of a given object repeat or switch as compared to the repetition (or switch) of only one feature. Feature binding has been shown for a large number of features in the visual and auditory domain. The purpose of the present two experiments was to investigate whether such binding effects can also be found in the domain of music. More precisely, we aimed to examine whether the tones of a two-tone chord are temporarily integrated into a music event-file. In the first experiment, we applied a pitch classification task. The auditory stimulus consisted of two simultaneous tones (one out of two upper tones of different pitch, and one out of two lower tones of different pitch). Participants responded with a left or right keypress to the pitch of the upper tone. The two-tone chord was always consonant. The lower tone was irrelevant but could also be low or high. Analyses of reaction times and error rates revealed partial repetition costs indicating binding: performance was better when both tones repeated or alternated relative to partial repetitions (only the upper or the lower tone repeated). The results thus show that two consonant tones are integrated into one event-file. In a second experiment, we are currently investigating whether the same holds true for dissonant harmonies.