“Gießener Abendgespräche Kognition und Gehirn“

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“Adaptive action control: Conflict as signal for the regulation of cognitive control”

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Humans seem to display and control even extreme complex behavior rather effortlessly and mostly without being aware of the underlying computational complexity. A fundamental question in psychological research is therefore, how are actions controlled to allow for goal-directed behavior? Whereas traditional accounts of action control often pose a central control unit that serves the adaptive regulation of behavior (Norman & Shallice, 1986), the influential conflict monitoring theory (Botvinick, et al., 2001) is one of the first extensive theoretical accounts that tries to explain how and under which conditions cognitive control is recruited without the assumption of a central executive. In this framework conflicts have been claimed to serve as trigger-signal for subsequent control recruitment and processing adjustments. In the present talk I will provide a brief introduction to the conflict monitoring theory and will outline three major aspects in which my research addresses open questions of the theory. A first question targets the role and characterization of the conflict that serves as signal. Here we investigate the conflict strength and aversiveness of conflicts. The second question aks, how exactly is cognitive control implemented? Is control recruited due to conflict experience or retrieved from memory when encountering similar situations? Third, what is the role of the individual in the conflict-triggered control adjustment? Here we investigated the influences of acute psychosocial stress and tested for individual differences in the ability to utilize the conflict signal in order to initiate processing adjustments. Together the presented research complements previous work highlighting the role of explicit signals in the flexible adjustment of cognitive control and provides important knowledge whether and how control states can be primed, recruited, and biased by explicit contextual signals, such as conflicts.