



Einladung  
zum Forschungskolloquium Experimentelle Psychologie  
am Mittwoch den 26.06.2024  
um 14:15 Uhr, Waldweg-Altbau, Raum 0.705



Prof. Dr. Rico Fischer (Universität Greifswald)

### **Stability versus flexibility - The difficulty of letting go**

Adaptive control forms the basis of cognitive and behavioral flexibility. It is sensitive to normal aging and its malfunction is closely related to neurological and psychiatric conditions. In general, human beings have the astonishing ability to flexibly adapt action and thought in response to changing requirements from the environment. At the same time, they can be surprisingly stuck in set, for example when they fail to update their mental task model and continue using a formerly successful but no longer adaptive processing strategy.

In the present research we investigated how easily people can disengage from a higher-level multitasking representation to a less complex single-task representation, when one of the two tasks is called irrelevant and can be ignored. In such context transitions, so-called fade-out costs describe that performance does not immediately drop to the level of single-task performance.

Because fade-out costs have been attributed to an insufficient update of the internal task model, we specifically aimed to modulate the transition from a multitasking context to a single-task context by inducing different task representations.

In a set of task switching and dual-task studies, our results show that disengagement from a multitasking representation was neither modulated by different degrees of global interference control (i.e., response shielding), nor by dual-task specific predefined task order and prioritization of Task 1. In contrast, fade-out costs were substantially determined by manipulations targeting the representation of the internal task model. Manipulating the frequency of task switches to induce different activation levels of the task sets in working memory strongly affected the ability to disengage from multitasking and shift to single-task processing.

Therefore, disengaging from a multitasking representation can be facilitated by manipulations at the level of how the tasks are represented (internal task model), but not by manipulations at the level of how responses are selected (interference control).

The importance of cognitive and behavioral flexibility highlights the need to understand the underlying cognitive mechanisms (e.g., the flexible (dis)engagement of an internal task model), which may provide fertile ground for subsequent translational research.

Prof. Dr. Uwe Mattler