after identification of the target (i.e., based on its identified location); in turn, no binding effects emerge. When the response demands post-selectively processing the target after its identification - for example, the color, shape, or even its location feature - binding effects can be observed. Thus, a translation from a target-feature into the accompanying response is the crucial step for observing binding effects when responding to visual stimuli. This translational component allows to explain data patterns emerging in multiple experimental designs with a sequential structure.

Developing and Evaluating a Human-Machine Interface for the Remote Operation of Automated Vehicles (SAE 4 and 5)

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The automation of driving tasks is proceeding rapidly. However, for quite some time, highly and especially fully automated driving (SAE 4 and 5) may not be completely feasible from a technical perspective. In order to compensate for the shortcomings of technological progress, teleoperation may serve as a way to effectively use the benefits of automated driving while assuring safety and reliability contributed by a human operator. In the overwhelming majority of situations, this remote-operator will chiefly monitor the vehicles that drives automatedly. In case of extraordinary events that exceed the capabilities of the automation, the remote-operator will take over control of the vehicle. In order to integrate the vehicle's automation and human remote-operation, the development of a user-centered human-machine interface (HMI) for teleoperation is crucial. Our development of an HMI is tailored to the remote-operation of a highly automated shuttle without an operator on board. The HMI is based on a systematic analysis of use cases, of which detailed requirements were derived. Subsequently, a paper-pencil prototype was generated and refined until a click-dummy emerged. This click-dummy was evaluated by control center professionals. The professionals were first presented the HMI in regular mode. Afterwards, they were asked to solve scenarios with disturbances in the system. Using thinking-aloud, structured interview and questionnaire methodology, the prototype was evaluated regarding its usability, situational awareness, acceptance, and perceived workload. Results support our HMI design for teleoperation of an automated shuttle and they provide insights for a refined HMI design as well as for further research.

Binding of Event Elements in Episodic Representations

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Experienced events consist of multiple elements such as persons, objects, and locations, which need to be bound together to represent the event in a coherent manner. Given such bindings, the likelihood of retrieving one event element should be related to the retrieval of another element from the same event. In a first experiment, we tested whether event elements are bound into an integrated structure, in which events are represented by a single engram, or into a hierarchical structure, in which elements are preferentially bound to one type of element. Participants learned word triplets consisting of an animal, an object, and a location, which were presented sequentially pairwise, and were later tested with a cued recognition task. We systematically excluded one of the possible pairwise associations in the learning phase within each experimental condition. An integrated binding structure predicts no differences in retrieval dependency between conditions, whereas a hierarchical structure does, since associations may vary in strength. Results favored a hierarchical binding structure with elements being preferentially bound to the item denoting an animal as the superordinate category. In a second