

## **Biasing attention by a novel (surprising) feature**

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According to the surprise capture hypothesis, surprising or novel stimuli involuntarily attract attention. This has been empirically shown with the unannounced first presentation of a novel color during a search task, which eliminated set size effects, improved performance at short display durations, and induced validity effects. Most of this research presented the novel color as a singleton. While there are good reasons to discount the role of singleton capture in these experiments, it seems still desirable to test the surprise capture hypothesis for non-singleton novel stimuli. The present study employs eye-tracking to assess the biasing of attention towards a novel non-singleton color during a visual search task. Results reveal that early fixations are more frequently directed to the novel than to the familiar color, indicating that attention is biased towards the novel color. This result is consistent with the surprise capture hypothesis, and shows that a singleton status of the novel color is not a necessary condition for the biasing of attention.

## **Detection of Mental Workload Through Thermal Imaging – A Pilot Study in Real Road Traffic**

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The continuous monitoring of mental workload can support the detection of comfort and safety-critical overload situations. For example, accurate monitoring could indicate that a driver is in need of support in instances of road traffic. One possible technique for the development of mental workload monitoring systems is the thermographic analysis of facial temperatures, especially changes in surface temperature in the regiofrontalis, regiobuccalis/infraorbitalis, as well as the glabella region, which are all promising indicators of mental workload status. The peripheral-vasodilation of human skin is caused by the release of adrenaline and noradrenaline from the adrenal medulla. Based on this knowledge, a 20 minute car ride through urban traffic (N=10) was executed, during which, the mental workload of the driver was stimulated every 5 minutes and was varied in two steps by a task of mental arithmetic. The results demonstrated a clear correlation between the increase of mental workload reported by the driver, and an increase of surface temperature in the associated regions of the face.