

Krupenia, S., & Sanderson, P. (2007). Multimodal attention with head mounted and auditory displays (Abstract). *Proceedings of the 34th Australasian Experimental Psychology Conference (EPC2007)*. Australian National University. Canberra, 13-15 April 2007.

Multimodal Attention with Head Mounted and Auditory Displays

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We explore whether the visual environment provided by a semi-transparent monocular Head Mounted Display (HMD) exacerbates attentional capture, as suggested by Jarmasz, Herdman and Johannsdottir (2005) and whether multimodal support of HMDmediated tasks is beneficial. In Experiment 1 we extended a study by Wickens and Long (1995). Participants performed a continuous monitoring task using either a single computer screen, two computer screens, or an HMD plus a single computer screen. Participants' monitoring task accuracy and their ability to detect an unexpected event (UE) on the computer screen were monitored. There was no difference in monitoring accuracy between the three display conditions. UE detection however was best with Dual Screens, next best with Single Screen, and worst with the HMD plus screen. The HMD may be capturing attention at the cost of processing real-world information. In Experiment 2 we added auditory support for the HMD task and found improvements in both monitoring performance and UE detection. The auditory display appeared to free attentional resources that could then be directed to other tasks. We are currently examining the effects of more tightly controlled HMD focal distance and of binocular rivalry on monitoring performance and UE detection. These results will also be reported.