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Capture of exogenous attention modulates the attentional blink

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When two targets (T1 & T2) are presented in rapid succession, observers often fail to report T2 if they attend to T1. Bottleneck theories propose that this attentional blink (AB) is due to T1 occupying a slow processing stage when T2 is presented. Accordingly, if increasing T1 difficulty increases T1 processing time, this should cause a greater AB. Attention capture hypotheses suggest that T1 captures attention, which cannot be reallocated to T2 in time. Accordingly, if increasing T1 difficulty, decreases saliency, this should cause a smaller AB. Studies examining how T1 difficulty affects the AB have reported inconsistent results. For example, some found a negative correlation between T1 contrast and T2 performance (Chua, 2005) where others find a positive correlation (Christmann & Leuthold, 2004). Here, we use additive Gaussian noise to tease apart the exogenous capture effect from the effect of T1 contrast. The capture effect is varied by the overall contrast energy for signal and noise. In two T1 conditions we adjust T1 performance to 60% by signal to noise ratio (SNR) but vary T1 contrast energy between conditions. From 17 observers we find that T2 performance correlates negatively with T1 contrast energy. Our results indicate that T1 capture modulates the AB. We suggest that this effect has confounded previous studies on the effect of T1 difficulty. In an electrophysiological version of the study we will further examine the implied relation between attention capture and the AB.