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Visual selective attention: Priority is all you need

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Abstract

We present a novel theory and neural process model of visual selective attention to answer long-standing questions in the field of visual attention. We show that the model with fixed parameter values can explain the unexpected efficiency of triple conjunction search (Nordfang & Wolfe, 2014), the influence of a task-irrelevant size singleton on search (Proulx, 2007), and how a third correlated but task-irrelevant feature improves search efficiency (Found, 1998). It also accounts for critical findings in the attention capture literature without the need to introduce different modes (Bacon & Egeth, 1994), signal-suppression (Gaspelin, Leonard, & Luck, 2015; Gaspelin & Luck, 2018; Lien, Ruthruff, & Hauck, 2021) or an attentional window (Theeuwes, 1992, 2023), shedding new light on recent debates.