

# ***Two dissociable decision criteria in visual search revealed by varying target prevalence***

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## **Abstract**

The frequency of targets in visual search (target prevalence) shapes search behavior. When targets are rare (1%–2% prevalence), observers use conservative response criteria, producing high miss rates. This might be just a version of a speed–accuracy trade-off, since low prevalence yields fast absent responses. We disprove this hypothesis by showing that very high target prevalence (98%) shifts response criteria in the opposite direction, leading to elevated false alarms, without leading to fast target-present responses. Rather, the rare target-absent responses are greatly slowed. In a second experiment, prevalence was varied sinusoidally over 1,000 trials. Observers' criterion and target-absent RTs tracked prevalence, whereas sensitivity ( $d'$ ) and target-present RTs did not. The results support a model with two criteria, both influenced by prevalence. One criterion governs perceptual decisions about each attended item. The other influences a quitting threshold that modulates RTs for target-absent responses.