Looking Versus Seeing: The Passive Advantage in Visual Search is Associated With a Calmer Eye

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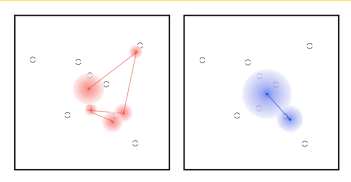
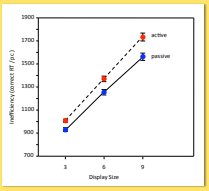
Looking vs. *Seeing* in Visual Search

Visual search involves a trade-off between *looking* (getting information from new locations) and *seeing* (processing information in a fixation) (Najemnik & Geisler, 2005).



Active vs. *Passive* Strategies in Visual Search

Instructions to "*...let the unique item pop into your mind...*" can improve search efficiency over instructions to "*...deliberately direct your attention...*" (Smilek et al, 2006a; 2006b).



How are search strategies related to eye movements?

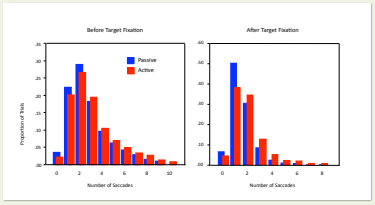
Do active searchers do more *looking* and passive searchers more *seeing*?

Search Strategies and Eye Movements

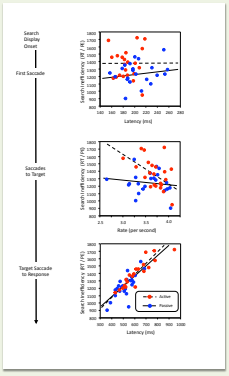
1. Group Differences

longer initial fixation durations for passive than active searchers

fewer saccades for passive than active searchers, before and after fixating the target



2. Individual Differences



Each strategy leads to a unique pattern of individual differences:

Efficient active searchers have high saccade rates.

Efficient passive searchers make larger amplitude saccades to the target.

General Conclusions

Searchers who concentrate on seeing are more efficient in this task, consistent with fewer eye movements, or none at all, leading to more efficient search (e.g. Boot, Becic & Kramer, 2009; Klein & Farrell, 1989; Schoonard, Bould & Miller, 1973; Shapiro & Raymond, 1989; Togami, 1984; Zelinsky & Sheinberg, 1997).

On some other tasks more eye movements lead to more efficient search (e.g. Boot, Becic & Kramer 2009; Brennan, Watson, Kingstone & Enns, 2009).

There is more than one way to search efficiently, depending on tasks and abilities.

Specific Conclusions

Cognitive strategies change the oculomotor behaviors associated with efficient search.

Active strategy emphasizes *looking*,
Passive strategy emphasizes *seeing*.

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