

Hybrid search in the temporal domain: Monitoring an RSVP stream for multiple targets held in memory.

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Humans are remarkably good at identifying a target object from a Rapid Serial Visual Presentation (RSVP) of objects or scenes (potter refs). Suppose there is more than one possible target? (Monitor the stream for a cow, a spoon, a pen, or a key). In spatial visual search, Wolfe (Psych Science, in press) has shown that RTs increase linearly with the visual set size but logarithmically with the memory set size. In Experiment 1, we used a staircase procedure to adjust RSVP presentation rate for streams of objects as the observers searched for any of 1-16 target objects. The presentation rate that yielded 80% performance changed logarithmically with memory set size as in spatial search. Now suppose that the memory search item becomes the first target (T1) in an attentional blink (AB) experiment. Would the need to search a larger memory set produce a deeper/longer blink? In Experiment 2, observers saw a stream of numbers with one object (T1) and one red number (T2). They determined whether the object was a member of the target set and they identified the red number. T1 produced an AB for T2. Interestingly, however, we found no evidence of memory set size on T2 performance. Note that in experiment 1, it took ~80 ms longer to classify T1 in a memory set of 16 than in a set of 2. Nevertheless, the engagement with T1 can be compartmentalized in a manner that does not interact with acquisition of T2. Hybrid temporal search provides a new tool for investigating how visual processes and memory processes can operate in parallel.