The Preview Effect in Object Naming: Evidence for Parallel Processing of Multiple Objects

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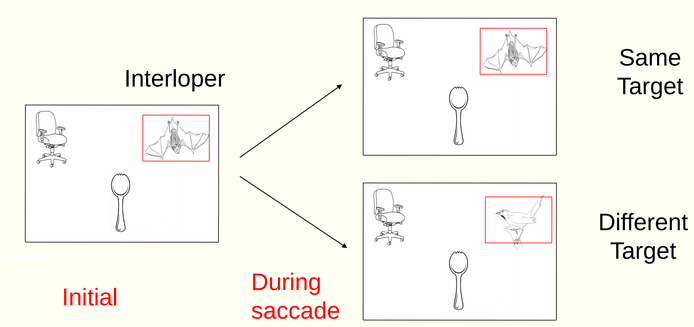
Preview Effect

- Quicker processing for objects previewed extrafoveally
  - Shorter gaze duration in naming task for objects with preview (Meyer, Ouellet, & Hacker, 2008; Morgan & Meyer, 2005)
- Taken as evidence for parallel processing
  - Process preview object in parallel with object in focus

Our Experiments

- Further testing parallel processing account
- Exp 1: Effect of Attention-Capture
  - Tests whether preview effect was due to attention captured by stimulus onset, consistent with sequential processing
- Exp 2: Perceptual vs Cognitive Load
  - Investigates whether the preview effect is affected by perceptual or cognitive load
- Similar method to Meyer et al 2008
  - Tobii T60 Eye Tracker
  - Name 3 numbers
  - 2nd number changes or flickers during saccade towards it

An example of a preview effect



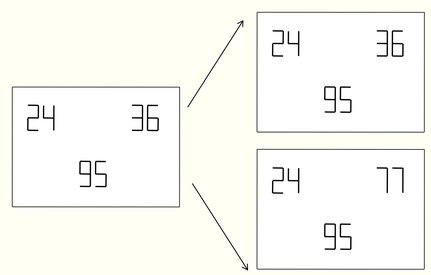
Longer gaze duration in naming right object when it changed during the saccade.

(Adapted from Meyer et al., 2008)

Experiment 1 (n = 18)

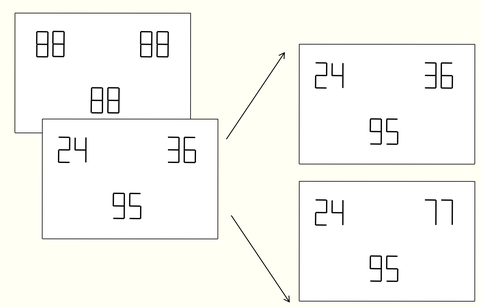
Does sudden onset of the interloper lead to the preview effect?

Numbers initially visible (Onset)



	RT (ms)
Same	619
Diff	691

Numbers appear from figure 8 (Offset)



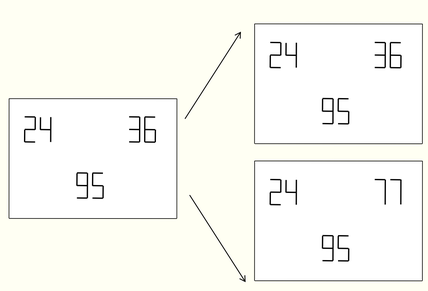
	RT (ms)
Same	627
Diff	696

Task: Name all three numbers in the order of left, right, & bottom.
Independent variables: (1) onset vs. offset (blocked); (2) right number same/different

Experiment 2 (n = 24)

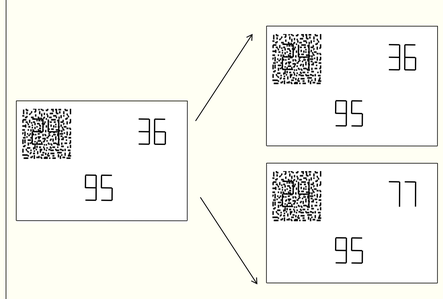
Is the preview effect modulated by cognitive load?

Onset (O) & Working Memory Load* (WM)



	RT (ms)
Same	O: 561 WM: 654
Diff	O: 609 WM: 662

Perceptual Load (PL)

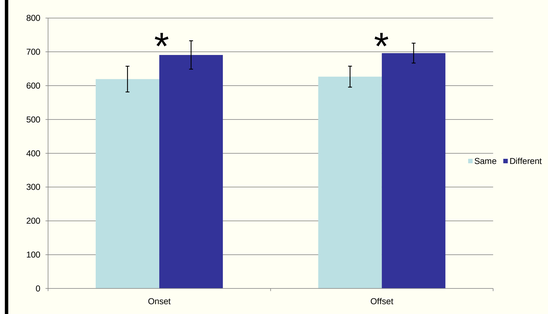


	RT (ms)
Same	548
Diff	619

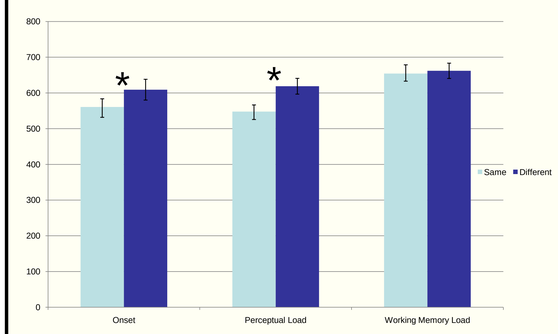
Task: Same as that in Experiment 1, except for the working memory condition.

**** In the WM condition, subjects had to subtract 14 when naming the left number.***

Results



Exp 1: preview effects ($p<0.01$) in both conditions provide converging evidence for parallel processing.



Exp 2: A cognitive load eliminated the preview effect, perhaps through the cost of task switching, while a perceptual load did not.

Overall, the results support a parallel processing account. The preview effect appears to be modulated by some types of load but not others.

Acknowledgement and References

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Meyer, A. S., Ouellet, M., & Hacker, C. (2008). Parallel processing of objects in a naming task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 34, 982-987.

Morgan, J. L., & Meyer, A. S. (2005). Processing of extrafoveal objects during multiple-object naming. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 31, 428-442.