



Task-Evoked Pupillary Response Predicts Performance in a Visual Working Memory Task in 7-10-month-olds

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QUESTION: Can task-evoked pupil responses predict performance on a visual working memory task?

The task-evoked pupillary response (TEPR) has long been known to index cognitive processes associated with attention allocation and mental effort (Kahneman & Beatty, 1966). Our aim was to apply pupillometric methods to investigate whether TEPRs during memory encoding predict performance in an infant study of visual working memory (VWM).

Studies concerning VWM have shown low performance in very young infants (Oakes et al., 2013; Kaldy & Leslie, 2005; Kibbe & Leslie, 2013). The measures used could be underestimating the capabilities of infants. It is perhaps through understanding when infants are actively engaged in a task, using physiological measures, can we better establish the capabilities of young infants.

Participants:

72 infants were recruited to participate. Of these, 39 infants met inclusion criteria of completing half or more trials. Of the 39 infants (F = 15) the mean age was 9 months and 11 days (age range 7 months-11 months).

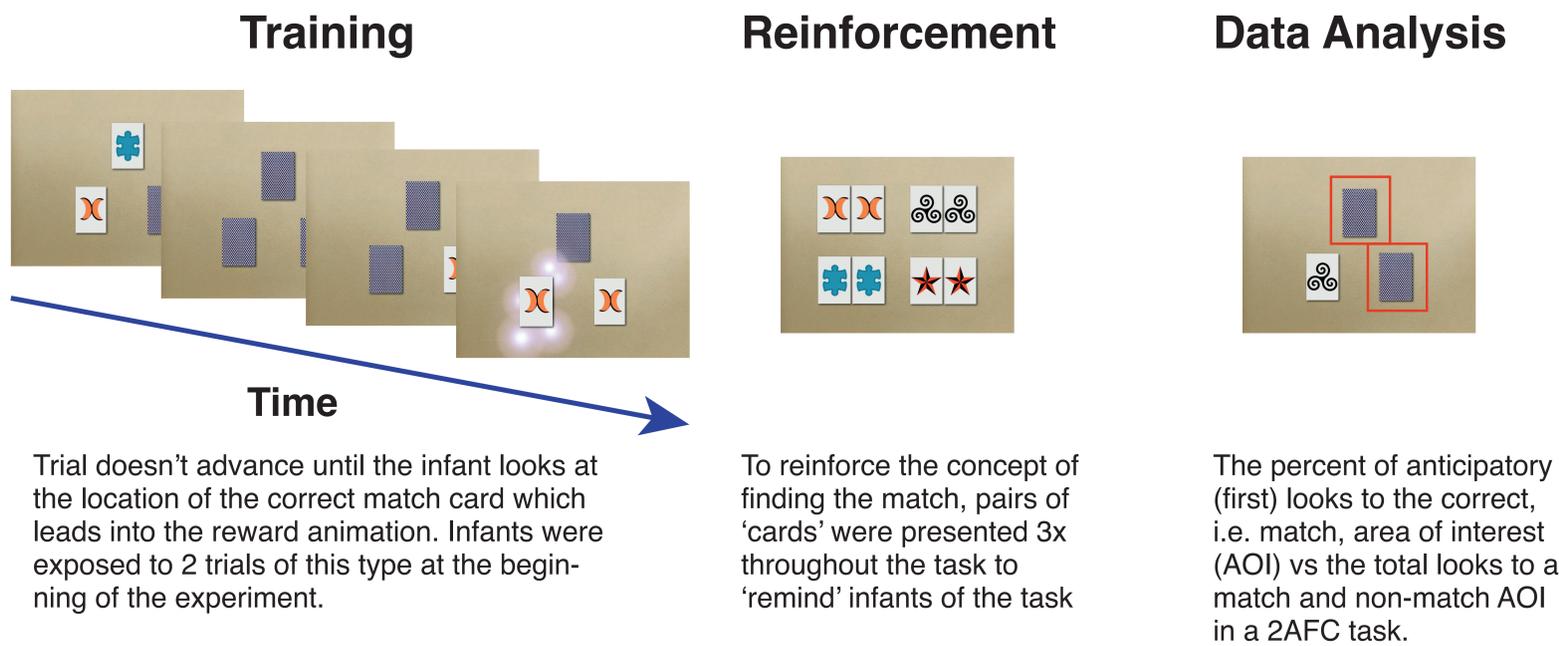
Method:

A Tobii T120 eye tracker was used to collect eye gaze and pupil diameter data.

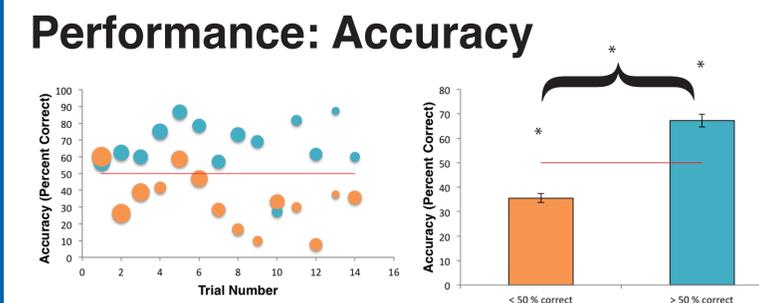
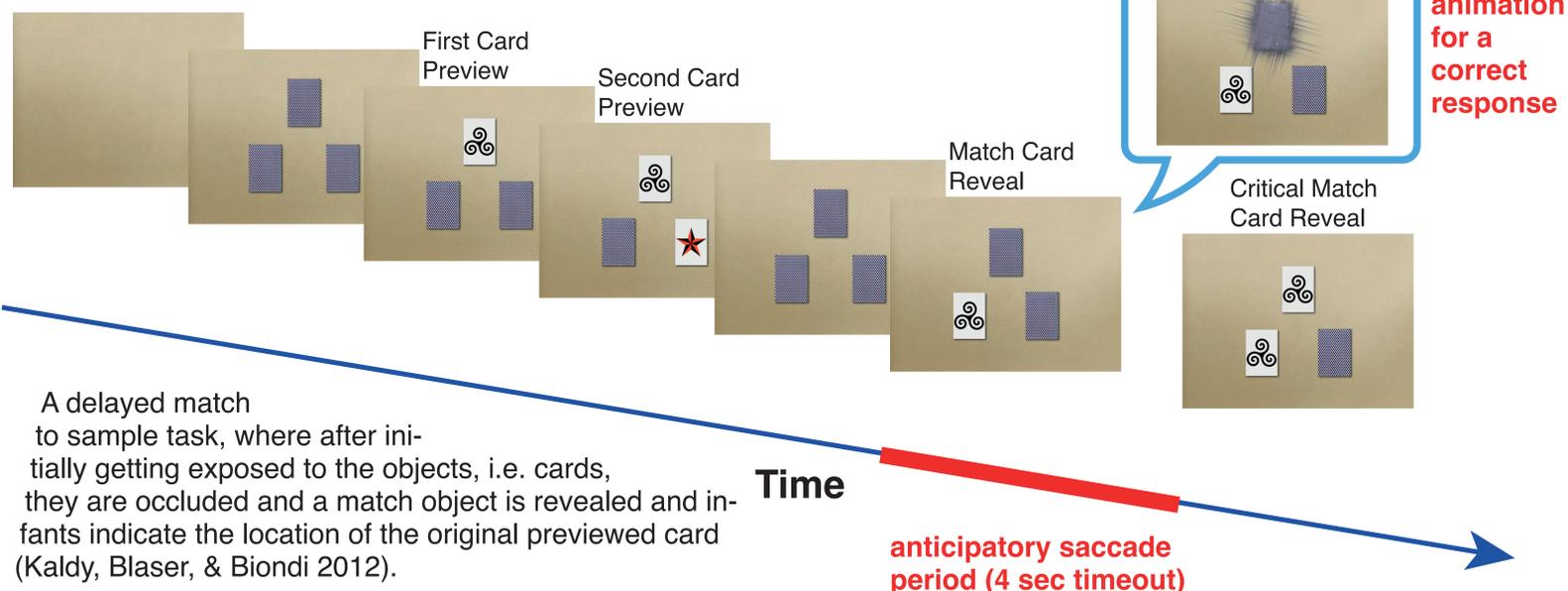


References:
Kahneman & Beatty. (1966). *Science*.
Oaks, Baumgartner, Barrett, Messinger, Luck. (2013). *Frontiers in Psychology*.
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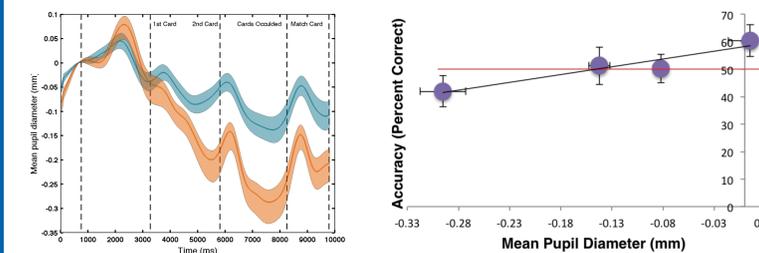
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Memory Game: A Gaze Contingent Paradigm



High vs Low Performing Infants



CONCLUSIONS: Pupil response predicts performance in a visual working memory task.

- greater pupil dilation in high performing infants.
- physiological measures can reveal patterns not evident in behavioral measures.