Unexpected false feelings of familiarity about faces are associated with increased pupil dilations

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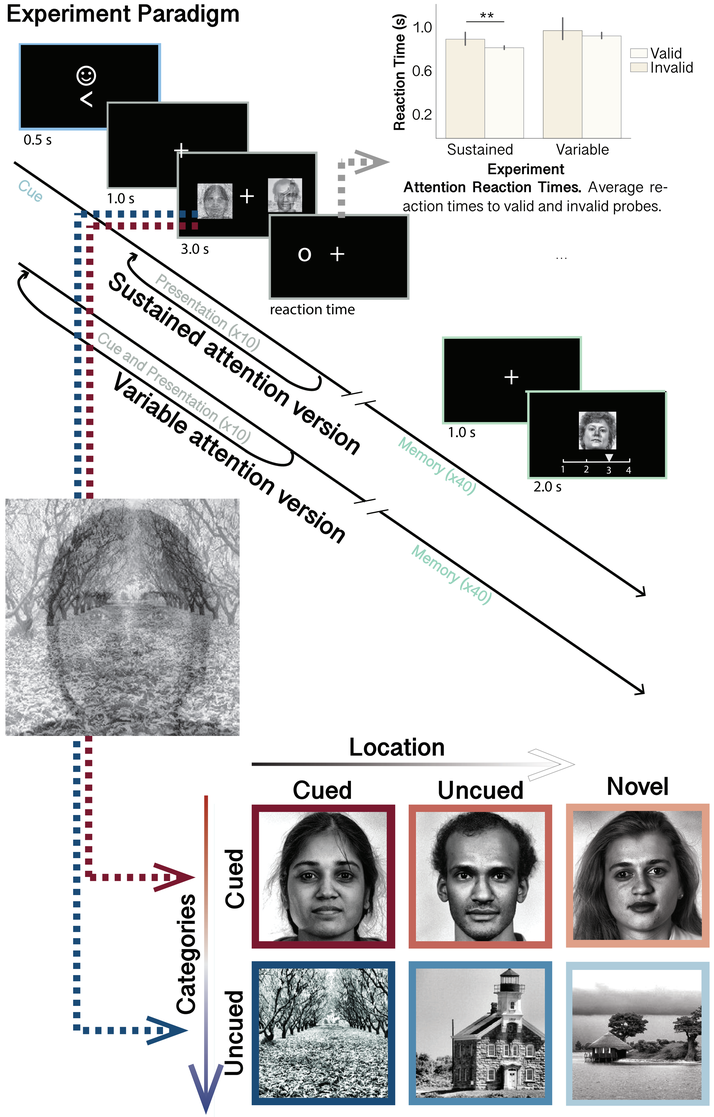
Introduction

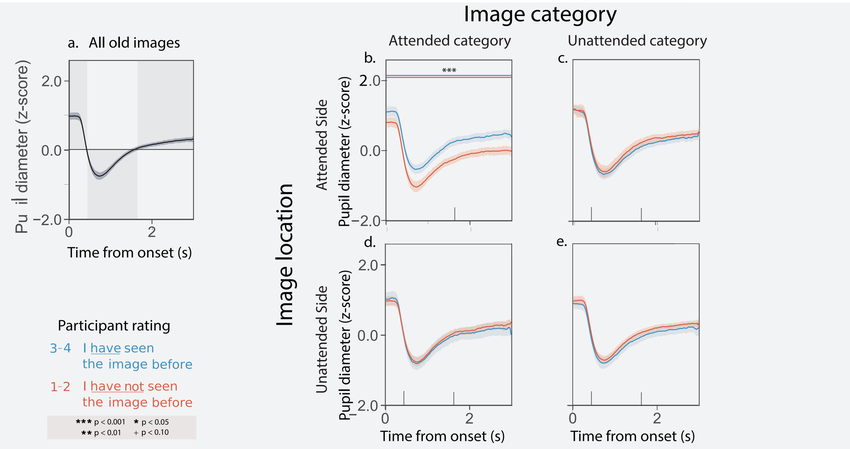
We recorded participants' pupil dilations as they completed a combined attention and recognition memory task. We used composite stimuli in to preserve participants' visual experience from trial to trial, while manipulating their focus of attention. The memory task, alternatively, displayed a singel image at a time.

Experiment Paradigm



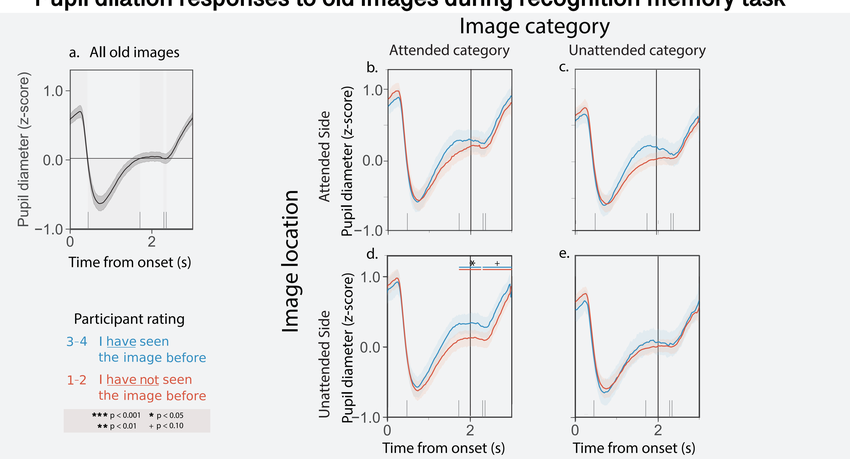
Attention Reaction Times. Average reaction times to valid and invalid probes.

Pupil dilation responses to composite images during attention task



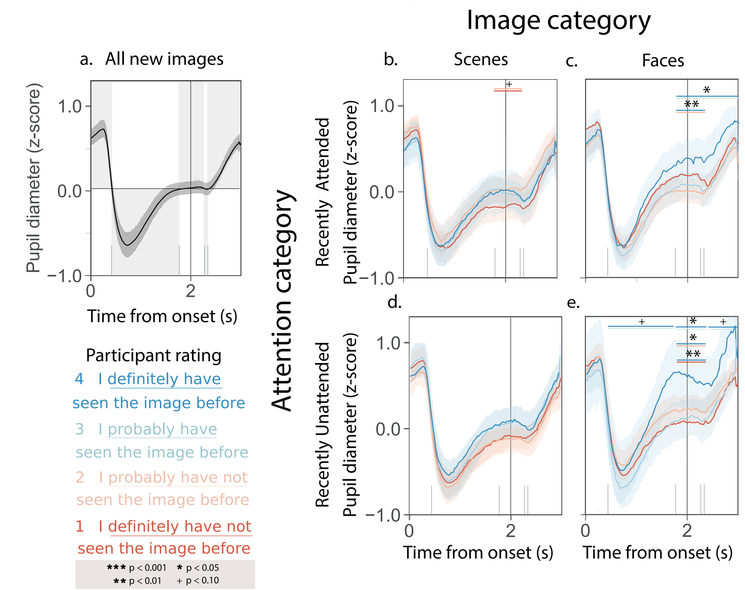
a. Average dilation timecourse across all trials and conditions. b. Dilation timecourses for trials corresponding to attended images later rated as familiar (blue) versus unfamiliar (red). c. Dilation timecourses for trials corresponding to images on the attended side (but unattended category) later rated as familiar (blue) or unfamiliar (red). d. Dilation timecourses for trials corresponding to images from the attended category (but unattended side) later rated as familiar (blue) or unfamiliar (red). e. Dilation timecourses for trials corresponding to images on the unattended side, from unattendedcategory, later rated as familiar (blue) or unfamiliar (red). All panels: error ribbons denote 95% confidence intervals across participants. The horizontal line pairs denote reliable separation (two-tailed paired t-tests) between curves, during the intervals covered by the lines.

Pupil dilation responses to old images during recognition memory task



a. Average dilation timecourse across all trials and experimental conditions. b. Dilation timecourses for trials corresponding to previously attended images participants rated as familiar (blue) versus unfamiliar (red). c. Dilation timecourses during trials where participants rated images on the attended side (but unattended category) as familiar (blue) or unfamiliar (red). d. Dilation timecourses during trials where participants rated images from the attended category (but the unattended side) as familiar (blue) or unfamiliar (red). e. Dilation timecourses during trials where participants rated unattended images as familiar (blue) or unfamiliar (red). All panels: error ribbons denote 95% confidence intervals across participants. Vertical lines indicate when the images were cleared from the screen.

Pupil dilation responses to novel images during recognition memory task



a. Average dilation timecourse across all trials and conditions. b. Dilation timecourses for trials corresponding to previously attended images participants rated as familiar (blue) versus unfamiliar (red). c. Dilation timecourses during trials where participants rated images on the attended side (but unattended category) as familiar (blue) or unfamiliar (red). d. Dilation timecourses during trials where participants rated images from the attended category (but the unattended side) as familiar (blue) or unfamiliar (red). e. Dilation timecourses during trials where participants rated unattended images as familiar (blue) or unfamiliar (red). All panels: error ribbons denote 95% confidence intervals across participants. Vertical lines indicate when the images were cleared from the screen.

Pupil dilation response to falsely remembered faces

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Conclusions

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