or green), which traversed the height of the display for five full seconds. After this critical trial, subjects were asked the standard IB question: "Did you notice anything unusual on the last trial that wasn't there on previous trials?" (yes/no) followed by additional questions probing the extra object's color, location and shape. By including absent trials in which no additional stimulus appeared, we found that subjects were biased to report not noticing (c=0.45, 95% CI=[0.41,0.49]), suggesting greater awareness than revealed by yes/no questioning. Consistent with this interpretation and our previous studies, inattentionally blind subjects could report the color of the unexpected object at above-chance levels (d'=0.12, 95% CI=[0.02,0.23]). Strikingly, these 'non-noticing' subjects were also above-chance in discriminating the objects' shape (d'=0.23, 95% CI=[0.13,0.33]), raising the possibility that even mid- or high-level features survive inattention.

National Science Foundation BCS #2021053; JHU Catalyst Award

23.439 ASYMMETRY FOR SHADING DIRECTION IN VISUAL SEARCH PERSISTS IN INATTENTIONAL BLINDNESS

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When human observers search among shaded visual stimuli, they find the targets in vertical shading much faster than the ones in horizontal shading. Here, we demonstrate that this asymmetry persists in an inattentional blindness (IAB) paradigm. In our study, subjects viewed naturalistic simulations of moving balls that were vertically or horizontally shaded. A portion of the trials contained an unexpected target, which had a reversed shading gradient, and was introduced to the simulation at random times. During each trial, subjects tracked a ball and counted the number of midline crossings made. They were also instructed to indicate when they noticed an unexpected target. Results showed that almost twice as many vertically shaded targets were detected compared to horizontally shaded targets, and this difference could not be attributed to differences in target visibility, false target detection rate, and average ball counting accuracy. To gain insight into the underlying mechanisms of these results, we propose a biologically inspired, computational IAB model based on predictive coding. The model undergoes unsupervised training to anticipate subsequent video frames by minimizing expected errors inherited from preceding predictions made during the structure analysis of naturalistic video sequences. Subsequently, the model is tested on the same videos used in human psychophysics experiments. Remarkably, this model exhibits a more pronounced variance in predictive errors, when the unexpected target is in horizontal shading. Together, our findings point to the emergence of IAB asymmetry through top-down expectation biases derived from the visual stimuli presented to both humans and the model.

23.440 ELUCIDATING FLUCTUATIONS OF VISUAL ATTENTION: REACTION TIME VARIABILITY AND MIND-WANDERING PROVIDE COMPLEMENTARY INSIGHTS

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Sustained attention refers to the ability to maintain focus on a task over an extended period of time. However, sustaining attention is challenging, as there are inherent fluctuations between periods of good attention (stable and less error-prone) and poor attention (unstable and error-prone). Two main methodologies have been used to isolate these attentional fluctuations in visual attention tasks: objective and subjective approaches. The objective methodology analyzes intraindividual reaction time (RT) variability. For example, Esterman et al. (2013) revealed higher errors during periods of high RT variability (out-of-the-zone state) compared to periods of low variability (in-the-zone state). The subjective methodology uses thought probes to identify mind-wandering episodes (task-unrelated thoughts), that can be either intentional (i.e., deliberate) or unintentional (Seli, 2016). Although previous studies revealed higher error rates during out-of-the-zone and mind-wandering states, it is unclear whether those two methodologies isolate the same or different type of attentional fluctuations. This study compared the two approaches in a single Go/NoGo sustained attention task (N=38), objectively measuring attention via RT variability, and subjectively via intermittent thought probes administered every 30 trials. The entire task lasted approximately 40 minutes. If both methods isolate similar fluctuations, we hypothesize that the time spent out-of-the-zone should be higher during mind-wandering than during on-task periods. Our results revealed significantly higher time out-of-the-zone during mind-wandering (52.1%) compared to on-task periods (47.8%), suggesting the methods isolate, to some extent, similar aspects of fluctuations. However, time out-of-the-zone was significantly higher during intentional (57.7%) versus unintentional mind-wandering (49.7%), indicating higher overlap between the objective and subjective methods for deliberate mind-wandering rather that spontaneous. These findings suggest the two methods capture complementary information about attentional fluctuations and highlights the utility of combining objective and subjective methods to gain a comprehensive understanding of sustained attention and its lapses.

23.441 INATTENTIONAL BLINDNESS FOR A SALIENT TARGET IN VISUAL SEARCH: FINDING A SURPRISINGLY EASY TARGET CAN BE SURPRISINGLY HARD

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In natural search settings, observers often do not know how difficult it will be to find the next target. The next security threat or the next potential cancer in a lung CT might be quite salient or very subtle. In the lab, visual search experiments typically involve multiple successive trials of constant difficulty. This allows participants to anticipate the salience of the next target. How will observers respond if the current target salience suddenly deviates from the target salience of all preceding trials? It would be unremarkable to find that it is harder to detect a low salience target when the observer expects a high salience one. More interestingly, here we report that observers are impaired when they are surprised with a high salience target after a series of difficult searches. In Experiment 1, observers searched for a hard-to-detect O target (always present, compound search) among C distractors with small gaps for 32 trials. On the 33rd trial, the gaps of the C distractors were large, making the O target much more salient. Yet, search efficiency was considerably more inefficient on this