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News from the field

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ATTENTION

Inattentional blindness

Ward, E. J., & Scholl, B. J. (2015). Inattentional blindness reflects limitations on perception, not memory: Evidence from repeated failures of awareness. *Psychonomic Bulletin & Review, 22*(3), 722-727. doi: 10.3758/s13423-014-0745-8

Inattentional blindness (IB) – the failure to notice a salient visual event that is within view but is unattended – has been one of the most-talked about visual phenomena. One question is whether IB reflects a failure of visual perception (salient event was not consciously processed) or a failure of short term memory (event was recognized but forgotten), because subjects are generally asked to report whether they noticed an event after it appeared. As Ward and Scholl explain, the question over what causes IB arises from a dilemma: In order to rule out a failure of memory, subjects must immediately report when a salient event is detected; however, doing so would generate expectations for salient events that could eliminate IB! To remedy this, Ward and Scholl developed a method to observe *repeated IB* from the same subjects and within same session. Subjects viewed displays containing black and white Ts and Ls and counted the number of times a subset crossed the midline. A salient and unexpected gray cross (Exp. 1) or colored cross (Exp. 2) appeared on the fourth trial (of 10 trials) to assess IB, after which subjects should be aware of salient events during the fifth through tenth trials. Critically, on the last trial a novel unexpected event – black E in Exp. 1 and colored E in Exp. 2 – appeared. Amazingly, 29 % of the subjects in Exp. 1 (13 % in Exp. 2) who failed to notice the unexpected event on the fourth trial also failed to notice the novel event on the tenth trial! This repeated IB occurred when subjects should have been aware of salient events after trial four, and in Exp. 2 in which they were told to immediately report whenever a salient event was detected. Because repeated IB was obtained when subjects had expectations for salient events and when immediate reporting of salient events was required, Ward and Scholl's results suggest IB reflects a failure to perceive and encode novel and salient visual events, not a failure of memory.—Dr. Bryan R. Burnham

MEMORY

Visual Working Memory Capacity

Bengson, J. J., & Luck, S. J. (2015). Effects of strategy on visual working memory capacity. *Psychonomic Bulletin & Review.* doi: 10.3758/s13423-015-0891-7

The past decade has seen a renewed interest in the study of working memory, particularly given mounting evidence that individual differences in working memory capacity (WMC) predict the effectiveness with which individuals can use, filter, and manipulate information online. Though many factors have been proposed to influence storage capacity, attentional filtering remains one of the most prominently studied given that filtering has been repeatedly shown to be related to WMC. For example, there is evidence that filtering can be important for reducing focus on irrelevant information (so as to maximize space for relevant information) and evidence that storage may be more effective if only a subset of to-be-encoded material is processed when the size of an array exceeds WMC, at which point an attempt to store everything would be inefficient. These types of findings have led to the suggestion that the manner in which filtering occurs can be strategically controlled though until recently, this issue has received little direct investigation. A new study by Bengson and Luck examines the influence of providing participants with explicit strategic instruction for encoding a visual working memory array within the context of a change detection task (in which the array contained four, six, or eight

colored squares). Participants were instructed to either a) remember the entire display no matter how large the set-size was, b) focus on a subset of items in the display once WMC is exceeded, or c) a control condition in which doing one's best was emphasized in the absence of explicit strategic instruction. Contrary to the expectation that trying to remember everything should lead to performance decrements at higher set sizes—and that focusing on a subset of items should lead to performance enhancements with higher set sizes—the researchers observed the exact opposite pattern of result. Performance was enhanced when attempting to remember the entire array and decreased when focusing on a subset of the display, a finding that is contrary to the notion that filtering out items beyond capacity is the most effective encoding strategy. Critically, however, this result adds to a growing literature demonstrating the flexibility of WMC, which is manipulable in a task-dependent and context-dependent manner. –Dr. Michael M. Dodd