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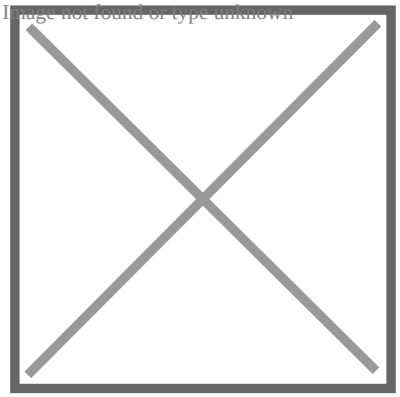

Inattentional blindness

Description

Inattentional blindness, also known as perceptual blindness, is a psychological lack of attention that is not associated with any vision defects or deficits. It may be further defined as the event in which an individual fails to perceive an unexpected stimulus that is in plain sight.More at Wikipedia Inattentional blindness, also known as perceptual blindness, is a psychological lack of attention that is not associated with any vision defects or deficits. It may be further defined as the event in which an individual fails to perceive an unexpected stimulus that is in plain sight.More at Wikipedia

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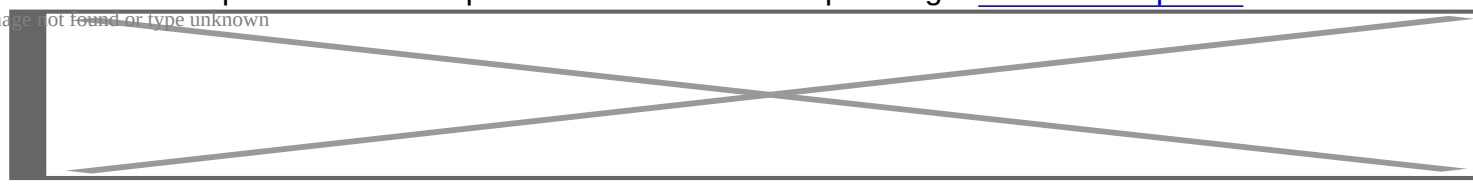

Related References

Simons, D.. (2007). Inattentional blindness. Scholarpedia

Plain numerical DOI: 10.4249/scholarpedia.3244
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“Many people believe that merely by opening their eyes, they see everything in their field of view. in inattentional blindness, arien mack and irvin rock make the radical claim that there is no conscious perception of the visual world without attention to it. the phenomenon of inattentional blindness has theoretical importance for cognitive psychologists studying perception, attention, and consciousness, as well as for philosophers and neuroscientists interested in the problem of consciousness.”
Simons, D. J.. (2000). Attentional capture and inattentional blindness. Trends in Cognitive Sciences

Plain numerical DOI: 10.1016/S1364-6613(00)01455-8

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“Although we intuitively believe that salient or distinctive objects will capture our attention, surprisingly often they do not. for example, drivers may fail to notice another car when trying to turn or a person may fail to see a friend in a cinema when looking for an empty seat, even if the friend is waving. the study of attentional capture has focused primarily on measuring the effect of an irrelevant stimulus on task performance. in essence, these studies explore how well observers can ignore something they expect but know to be irrelevant. by contrast, the real-world examples above raise a different question: how likely are subjects to notice something salient and potentially relevant that they do not expect? recently, several new paradigms exploring this question have found that, quite often, unexpected objects fail to capture attention, a phenomenon known as ‘inattentional blindness’. this review considers evidence for the effects of irrelevant features both on performance (‘implicit attentional capture’) and on awareness (‘explicit attentional capture’). taken together, traditional studies of implicit attentional capture and recent studies of inattentional blindness provide a more complete understanding of the varieties of attentional capture, both in the laboratory and in the real world. copyright (c) 2000 elsevier science ltd.”
Most, S. B., Scholl, B. J., Clifford, E. R., & Simons, D. J.. (2005). What you see is what you set: Sustained inattentional blindness and the capture of awareness. Psychological Review

Plain numerical DOI: 10.1037/0033-295X.112.1.217
DOI URL
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“This article reports a theoretical and experimental attempt to relate and contrast 2 traditionally separate research programs: inattentional blindness and attention capture. inattentional blindness refers to failures to notice unexpected objects and events when attention is otherwise engaged. attention capture research has traditionally used implicit indices (e.g., response times) to investigate automatic shifts of attention. because attention capture usually measures performance whereas inattentional blindness measures awareness, the 2 fields have existed side by side with no shared theoretical framework. here, the authors propose a theoretical unification, adapting several important effects from the attention capture literature to the context of sustained inattentional blindness. although some stimulus properties can influence noticing of unexpected objects, the most influential factor affecting noticing is a person’s own attentional goals. the authors conclude that many–but not all–aspects of attention capture apply to inattentional blindness but that these 2 classes of phenomena remain importantly distinct.”
Simons, D. J., & Chabris, C. F.. (1999). Gorillas in our midst: Sustained inattentional blindness for dynamic events. Perception

Plain numerical DOI: 10.1068/p281059
DOI URL

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“With each eye fixation, we experience a richly detailed visual world. yet recent work on visual integration and change direction reveals that we are surprisingly unaware of the details of our environment from one view to the next: we often do not detect large changes to objects and scenes (‘change blindness’). furthermore, without attention, we may not even perceive objects (‘inattentional blindness’). taken together, these findings suggest that we perceive and remember only those objects and details that receive focused attention. in this paper, we briefly review and discuss evidence for these cognitive forms of ‘blindness’. we then present a new study that builds on classic studies of divided visual attention to examine inattentional blindness for complex objects and events in dynamic scenes. our results suggest that the likelihood of noticing an unexpected object depends on the similarity of that object to other objects in the display and on how difficult the priming monitoring task is. interestingly, spatial proximity of the critical unattended object to attended locations does not appear to affect detection, suggesting that observers attend to objects and events, not spatial positions. we discuss the implications of these results for visual representations and awareness of our visual environment.”
Rees, G., Russell, C., Frith, C. D., & Driver, J.. (1999). Inattentional blindness versus inattentional amnesia for fixated but ignored words. Science

Plain numerical DOI: 10.1126/science.286.5449.2504
DOI URL
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“People often are unable to report the content of ignored information, but it is unknown whether this reflects a complete failure to perceive it (inattentional blindness) or merely that it is rapidly forgotten (inattentional amnesia). here functional imaging is used to address this issue by measuring brain activity for unattended words. when attention is fully engaged with other material, the brain no longer differentiates between meaningful words and random letters, even when they are looked at directly. these results demonstrate true inattentional blindness for words and show that visual recognition wholly depends on attention even for highly familiar and meaningful stimuli at the center of gaze.”
Jensen, M. S., Yao, R., Street, W. N., & Simons, D. J.. (2011). Change blindness and inattentional blindness. Wiley Interdisciplinary Reviews: Cognitive Science

Plain numerical DOI: 10.1002/wcs.130
DOI URL
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“Change blindness and inattentional blindness are both failures of visual awareness. change blindness is the failure to notice an obvious change. inattentional blindness is the failure to notice the existence of an unexpected item. in each case, we fail to notice something that is clearly visible once we know to

look for it. despite similarities, each type of blindness has a unique background and distinct theoretical implications. here, we discuss the central paradigms used to explore each phenomenon in a historical context. we also outline the central findings from each field and discuss their implications for visual perception and attention. in addition, we examine the impact of task and observer effects on both types of blindness as well as common pitfalls and confusions people make while studying these topics."
Most, S. B., Simons, D. J., Scholl, B. J., & Chabris, C. F.. (2000). Sustained Inattentional Blindness. Psyche

Plain numerical DOI: 10.1068/p2952
DOI URL
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"Attempts to understand visual attention producing models based on location, in which attention selects particular regions of space, and models based on other visual attributes (e.g., in which attention selects discrete objects or specific features). previous studies of inattentional blindness have contributed to our understanding of attention by suggesting that the detection of an unexpected object depends on the distance of that object from the spatial focus of attention. when the distance of a briefly flashed object from both fixation and the focus of attention is systematically varied, detection appears to have a location-based component. however, the likelihood that people will detect an unexpected event in sustained and dynamic displays may depend on more than just spatial location. the authors investigated the influence of spatial location on inattentional blindness under precisely controlled, sustained and dynamic conditions, using a sample of 143 observers (mean age 20.4 yrs). they found that although location-based models cannot fully account for the detection of unexpected objects, spatial location does play a role even when displays are visible for an extended period. (psycinfo database record (c) 2010 apa, all rights reserved)"
Most, S. B.. (2010). What's "inattentional" about inattentional blindness?. Consciousness and Cognition

Plain numerical DOI: 10.1016/j.concog.2010.01.011
DOI URL
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"In a recent commentary, memmert critiqued claims that attentional misdirection is directly analogous to inattentional blindness (ib) and cautioned against assuming too close a similarity between the two phenomena. one important difference highlighted in his analysis is that most lab-based inductions of ib rely on the taxing of attention through a demanding primary task, whereas attentional misdirection typically involves simply the orchestration of spatial attention. the present commentary argues that, rather than reflecting a complete dissociation between ib and attentional misdirection, this difference highlights potential grounds for delineating mechanistically distinct forms of ib: spatial inattentional blindness, which stems from the covert misallocation of spatial attention, and central inattentional blindness, which stems from disruption or preoccupation of perceptual mechanisms that interface with higher-level processes such as working memory. recognition of such distinctions can help situate theoretical understanding of ib more firmly within the context of the broader attention literature. © 2010

elsevier inc."
Mack, A.. (2003). Inattentional Blindness: Looking Without Seeing. Current Directions in Psychological Science

Plain numerical DOI: 10.1111/1467-8721.01256
DOI URL
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"Surprising as it may seem, research shows that we rarely see what we are looking at unless our attention is directed to it. this phenomenon can have serious life-and-death consequences. although the inextricable link between perceiving and attending was noted long ago by aristotle, this phenomenon, now called inattentional blindness (ib), only recently has been named and carefully studied. among the many questions that have been raised about ib are questions about the fate of the clearly visible, yet unseen stimuli, whether any stimuli reliably capture attention, and, if so, what they have in common. finally, is ib an instance of rapid forgetting, or is it a failure to perceive?"
Drew, T., Võ, M. L. H., & Wolfe, J. M.. (2013). The Invisible Gorilla Strikes Again: Sustained Inattentional Blindness in Expert Observers. Psychological Science

Plain numerical DOI: 10.1177/0956797613479386
DOI URL
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"Researchers have shown that people often miss the occurrence of an unexpected yet salient event if they are engaged in a different task, a phenomenon known as inattentional blindness. however, demonstrations of inattentional blindness have typically involved naive observers engaged in an unfamiliar task. what about expert searchers who have spent years honing their ability to detect small abnormalities in specific types of images? we asked 24 radiologists to perform a familiar lung-nodule detection task. a gorilla, 48 times the size of the average nodule, was inserted in the last case that was presented. eighty-three percent of the radiologists did not see the gorilla. eye tracking revealed that the majority of those who missed the gorilla looked directly at its location. thus, even expert searchers, operating in their domain of expertise, are vulnerable to inattentional blindness."
Mack, A., & Rock, I.. (1998). Inattentional blindness. MIT Press/Bradford Books Series in Cognitive Psychology

Plain numerical DOI: 10.1016/j.aorn.2010.03.011
DOI URL
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"(From the preface) this book is a narrative description of research designed to explore perception without attention that began in 1988. with the exception of the 1st and last chapters, the book is a

chronological history of this research project. the 1st chapter provides a summary of the main research findings and the last summarizes the conclusions drawn from the findings. the rest offer detailed accounts of the many experiments, their outcomes, and the reasoning that led from 1 experiment to the next. the single most important lesson is that there seems to be no conscious perception without attention. although the book deals with material and questions that have been the subject of much research and discussion in the field, there was no effort to summarize or refer to all the relevant literature. (psycinfo database record (c) 2008 apa, all rights reserved)."
Cartwright-Finch, U., & Lavie, N.. (2007). The role of perceptual load in inattentional blindness. Cognition

Plain numerical DOI: 10.1016/j.cognition.2006.01.002
DOI URL
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"Perceptual load theory offers a resolution to the long-standing early vs. late selection debate over whether task-irrelevant stimuli are perceived, suggesting that irrelevant perception depends upon the perceptual load of task-relevant processing. however, previous evidence for this theory has relied on rts and neuroimaging. here we tested the effects of load on conscious perception using the 'inattentional blindness' paradigm. as predicted by load theory, awareness of a task-irrelevant stimulus was significantly reduced by higher perceptual load (with increased numbers of search items, or a harder discrimination vs. detection task). these results demonstrate that conscious perception of task-irrelevant stimuli critically depends upon the level of task-relevant perceptual load rather than intentions or expectations, thus enhancing the resolution to the early vs. late selection debate offered by the perceptual load theory. © 2006 elsevier b.v. all rights reserved."
Seegmiller, J. K., Watson, J. M., & Strayer, D. L.. (2011). Individual Differences in Susceptibility to Inattentional Blindness. Journal of Experimental Psychology: Learning Memory and Cognition

Plain numerical DOI: 10.1037/a0022474
DOI URL
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"Inattentional blindness refers to the finding that people do not always see what appears in their gaze. though inattentional blindness affects large percentages of people, it is unclear if there are individual differences in susceptibility. the present study addressed whether individual differences in attentional control, as reflected by variability in working memory capacity, modulate susceptibility to inattentional blindness. participants watched a classic inattentional blindness video (simons & chabris, 1999) and were instructed to count passes among basketball players, wherein 58% noticed the unexpected: a person wearing a gorilla suit. when participants were accurate with their pass counts, individuals with higher working memory capacity were more likely to report seeing the gorilla (67%) than those with lesser working memory capacity (36%). these results suggest that variability in attentional control is a potential mechanism underlying the apparent modulation of inattentional blindness across individuals."
Memmert, D., & Furley, P.. (2007). "I Spy with My Little Eye!": Breadth of Attention, Inattentional Blindness, and Tactical Decision Making in Team Sports

. Journal of Sport and Exercise Psychology

Plain numerical DOI: 10.1123/jsep.29.3.365
DOI URL
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“Failures of awareness are common when attention is otherwise engaged. such failures are prevalent in attention-demanding team sports, but surprisingly no studies have explored the inattentional blindness paradigm in complex sport game-related situations. the purpose of this paper is to explore the link between breadth of attention, inattentional blindness, and tactical decision-making in team ball sports. a series of studies revealed that inattentional blindness exists in the area of team ball sports (experiment 1). more tactical instructions can lead to a narrower breadth of attention, which increases inattentional blindness, whereas fewer tactical instructions widen the breadth of attention in the area of team ball sports (experiment 2). further meaningful exogenous stimuli reduce inattentional blindness (experiment 3). the results of all experiments are discussed in connection with consciousness and attention theories as well as creativity and training in team sports.”
Memmert, D.. (2006). The effects of eye movements, age, and expertise on inattentional blindness. Consciousness and Cognition

Plain numerical DOI: 10.1016/j.concog.2006.01.001
DOI URL
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“Based on various stimuli, the findings for the inattentional blindness paradigm suggest that many observers do not perceive an unexpected object in a dynamic setting. in a first experiment, inattentional blindness was combined with eye tracking data from children. observers who did not notice the unexpected object in the basketball game test by simons and chabris (1999) spent on average as much time (about one second) looking at the unexpected object as those subjects who did perceive it. as such, individual differences that are responsible for the recognition of unexpected objects have to be found as further indicators. in a second experiment, the expert-novice paradigm was used to show that the probability of seeing an unexpected object can be increased with specific previous experience. the results in the same task indicate significant differences between basketball experts and basketball novices. the ages of the subjects in both experiments are discussed in connection with the inattentional blindness paradigm. © 2006 elsevier inc. all rights reserved.”
Hodgins, H. S., & Adair, K. C.. (2010). Attentional processes and meditation. Consciousness and Cognition

Plain numerical DOI: 10.1016/j.concog.2010.04.002
DOI URL
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“Visual attentional processing was examined in adult meditators and non-meditators on behavioral measures of change blindness, concentration, perspective-shifting, selective attention, and sustained inattentional blindness. results showed that meditators (1) noticed more changes in flickering scenes and noticed them more quickly, (2) counted more accurately in a challenging concentration task, (3) identified a greater number of alternative perspectives in multiple perspectives images, and (4) showed less interference from invalid cues in a visual selective attention task, but (5) did not differ on a measure of sustained inattentional blindness. together, results show that regular meditation is associated with more accurate, efficient, and flexible visual attentional processing across diverse tasks that have high face validity outside of the laboratory. furthermore, effects were assessed in a context separate from actual meditation practice, suggesting that meditators’ better visual attention is not just immediate, but extends to contexts separate from meditation practice. © 2010 elsevier inc.”
Bredemeier, K., & Simons, D. J.. (2012). Working memory and inattentional blindness. Psychonomic Bulletin and Review

Plain numerical DOI: 10.3758/s13423-011-0204-8
DOI URL
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“Individual differences in working memory predict many aspects of cognitive performance, especially for tasks that demand focused attention. one negative consequence of focused attention is inattentional blindness, the failure to notice unexpected objects when attention is engaged elsewhere. yet, the relationship between individual differences in working memory and inattentional blindness is unclear; some studies have found that higher working memory capacity is associated with greater noticing, but others have found no direct association. given the theoretical and practical significance of such individual differences, more definitive tests are needed. in two studies with large samples, we tested the relationship between multiple working memory measures and inattentional blindness. individual differences in working memory predicted the ability to perform an attention-demanding tracking task, but did not predict the likelihood of noticing an unexpected object present during the task. we discuss the reasons why we might not expect such individual differences in noticing and why other studies may have found them.”
Fougnie, D., & Marois, R.. (2007). Executive working memory load induces inattentional blindness. Psychonomic Bulletin and Review

Plain numerical DOI: 10.3758/BF03194041
DOI URL
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“When attention is engaged in a task, unexpected events in the visual scene may go undetected, a phenomenon known as inattentional blindness (ib). at what stage of information processing must attention be engaged for ib to occur? although manipulations that tax visuospatial attention can induce

ib, the evidence is more equivocal for tasks that engage attention at late, central stages of information processing. here, we tested whether ib can be specifically induced by central executive processes. an unexpected visual stimulus was presented during the retention interval of a working memory task that involved either simply maintaining verbal material or rearranging the material into alphabetical order. the unexpected stimulus was more likely to be missed during manipulation than during simple maintenance of the verbal information. thus, the engagement of executive processes impairs the ability to detect unexpected, task-irrelevant stimuli, suggesting that ib can result from central, amodal stages of processing."
Most, S. B., Simons, D. J., Scholl, B. J., Jimenez, R., Clifford, E., & Chabris, C. F.. (2001). How not to be seen: The contribution of similarity and selective ignoring to sustained inattentional blindness. Psychological Science

Plain numerical DOI: 10.1111/1467-9280.00303
DOI URL
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"When people attend to objects or events in a visual display, they often fail to notice an additional, unexpected, but fully visible object or event in the same display. this phenomenon is now known as inattentional blindness. we present a new approach to the study of sustained inattentional blindness for dynamic events in order to explore the roles of similarity, distinctiveness, and attentional set in the detection of unexpected objects. in experiment 1, we found that the similarity of an unexpected object to other objects in the display influences attentional capture: the more similar an unexpected object is to the attended items, and the greater its differencefrom the ignored items, the more likely it is that people will notice it. experiment 2 explored whether this effect of similarity is driven by selective ignoring of irrelevant items or by selective focusing on attended items. the results of experiment 3 suggest that the distinctiveness of the unexpected object alone cannot entirely account for the similarity effects found in the first two experiments; when attending to black items or white items in a dynamic display, nearly 30% of observers failed to notice a bright red cross move across the display, even though it had a unique color, luminance, shape, and motion trajectory and was visible for 5s. together, the results suggest that inattentional blindness for ongoing dynamic events depends both on the similarity of the unexpected object to the other objects in the display and on the observer's attentional set."
Kim, C. Y., & Blake, R.. (2005). Psychophysical magic: Rendering the visible "invisible". Trends in Cognitive Sciences

Plain numerical DOI: 10.1016/j.tics.2005.06.012
DOI URL
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"What are the neural correlates of conscious visual awareness? tackling this question requires contrasting neural correlates of stimulus processing culminating in visual awareness with neural correlates of stimulus processing unaccompanied by awareness. to produce these two neural states, one must be able to erase an otherwise visible stimulus from awareness. this article describes and

assesses visual phenomena involving dissociation of physical stimulation and conscious awareness: degraded stimulation, visual masking, visual crowding, bistable figures, binocular rivalry, motion-induced blindness, inattentional blindness, change blindness and attentional blink. no single approach stands above the others, but those producing changing visual awareness despite invariant physical stimulation are clearly preferable. such phenomena can help lead us ultimately to a comprehensive account of the neural correlates of conscious awareness. © 2005 elsevier ltd. all rights reserved."
Matsuyoshi, D., Ikeda, T., Sawamoto, N., Kakigi, R., Fukuyama, H., & Osaka, N.. (2010). Task-irrelevant memory load induces inattentional blindness without temporo-parietal suppression. Neuropsychologia

Plain numerical DOI: 10.1016/j.neuropsychologia.2010.06.021
DOI URL
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"We often fail to consciously detect an unexpected object when we are engaged in an attention-demanding task (inattentional blindness). the inattentional blindness which is induced by visual short-term memory (vstm) load has been proposed to result from a suppression of temporo-parietal junction (tpj) activity that involves stimulus-driven attention. however, the fact that, inversely proportional to tpj activity, intraparietal sulcus (ips) activity correlates with vstm load renders questionable the account of inattentional blindness based only on tpj activity. here, we investigated whether the tpj is solely responsible for inattentional blindness by decoupling ips and tpj responses to vstm load and then using the same manipulation to test the behavioral inattentional blindness performance. experiment 1 showed that tpj activity was not suppressed by task-irrelevant load while the ips responded to both task-relevant and task-irrelevant load. although the tpj account of inattentional blindness predicts that the degree of inattentional blindness should track tpj activity, we found in experiment 2 that inattentional blindness was induced not only by task-relevant load but also by task-irrelevant load, showing inconsistency between the extent of inattentional blindness and tpj response. these findings suggest that inattentional blindness can be induced without suppression of tpj activity and seem to offer the possibility that the ips contributes to conscious perception. © 2010 elsevier ltd."
Wolfe, J. M.. (1999). Inattentional amnesia. In Fleeting memories: {Cognition} of brief visual stimuli

Plain numerical DOI: 10.1162/0898929053747685
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"The common thread in a number of experiments is that unattended stimuli cannot be accurately reported after they are gone. there are at least two plausible explanations for this failure. first, as suggested by the inattentional blindness hypothesis, the stimuli may not be seen if they are not attended. second, the stimuli may have been seen but not remembered. i wish to argue that the explanation of these apparent failures of perception is not inattentional blindness but inattentional amnesia. the inattentional amnesia hypothesis has 4 parts: 1. under normal circumstances we consciously perceive visual stuff at all locations in the visual field. 2. at the current locus of attention, visual information can make enhanced contact with other mental processes. this permits, for instance,

object recognition and transfer into memory. attention may change the visual representation so that things look different while attended. overt responses, from eye movements to key presses, demand attention. 3. the present conscious visual representation is composed of the visual stuff of 1 and the effects of attention as sketched in 2. 4. the visual representation has no memory. it exists solely in the present tense. (psycinfo database record (c) 2009 apa, all rights reserved)"
Bressan, P., & Pizzighello, S.. (2008). The attentional cost of inattentional blindness. Cognition

Plain numerical DOI: 10.1016/j.cognition.2007.03.001
DOI URL
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"When our attention is engaged in a visual task, we can be blind to events which would otherwise not be missed. in three experiments, 97 out of the 165 observers performing a visual attention task failed to notice an unexpected, irrelevant object moving across the display. surprisingly, this object significantly lowered accuracy in the primary task when, and only when, it failed to reach awareness. we suggest that an unexpected stimulus causes a state of alert that would normally generate an attentional shift; if this response is prevented by an attention-consuming task, a portion of the attentional resources remains allocated to the object. such a portion is large enough to disturb performance, but not so large that the object can be recognized as task-irrelevant and accordingly ignored. our findings have one counterintuitive implication: irrelevant stimuli might hamper some types of performance only when perceived subliminally. © 2007 elsevier b.v. all rights reserved."
Macdonald, J. S. P., & Lavie, N.. (2011). Visual perceptual load induces inattentional deafness. Attention, Perception, and Psychophysics

Plain numerical DOI: 10.3758/s13414-011-0144-4
DOI URL
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"In this article, we establish a new phenomenon of 'inattentional deafness' and highlight the level of load on visual attention as a critical determinant of this phenomenon. in three experiments, we modified an inattentional blindness paradigm to assess inattentional deafness. participants made either a low- or high-load visual discrimination concerning a cross shape (respectively, a discrimination of line color or of line length with a subtle length difference). a brief pure tone was presented simultaneously with the visual task display on a final trial. failures to notice the presence of this tone (i.e., inattentional deafness) reached a rate of 79% in the high-visual-load condition, significantly more than in the low-load condition. these findings establish the phenomenon of inattentional deafness under visual load, thereby extending the load theory of attention (e.g., lavie, journal of experimental psychology. human perception and performance, 25, 596-616, 1995) to address the cross-modal effects of visual perceptual load."
Koivisto, M., Hyönä, J., & Revonsuo, A.. (2004). The effects of eye movements, spatial attention, and stimulus features on inattentional blindness. Vision Research

Plain numerical DOI: 10.1016/j.visres.2004.07.026

DOI URL
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“Observers often fail to detect the appearance of an unexpected visual object (‘inattentional blindness’). experiment 1 studied the effects of fixation position and spatial attention on inattentional blindness. eye movements were measured. we found strong inattentional blindness to the unexpected stimulus even when it was fixated and appeared in one of the expected positions. the results suggest that spatial attention is not sufficient for attentional capture and awareness. experiment 2 showed that the stimulus was easier to consciously detect when it was colored but the relation of the color to the color of the attended objects had no effect on detection. the unexpected stimulus was easiest to detect, when it represented the same category as the attended objects. © 2004 elsevier ltd. all rights reserved.”

Category

1. Cognitive science

Tags

1. Deception
2. Decision-science
3. Perception

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