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Crime Blindness: How Selective Attention and Inattentional Blindness Can Disrupt Eyewitness Awareness and Memory

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Abstract

Most people are not constantly watching for crimes and accidents. They are instead focused on other tasks. When people are focused on other tasks, they may fail to see crimes that should be obvious, a phenomenon called crime blindness. This article describes research on crime blindness, other attention failures, and eyewitness memory. When their attention focuses on something other than the crime, potential witnesses will experience both awareness and memory problems. Crime blindness and other attention disruptions interfere with the ability of potential witnesses to notice a crime, remember details, and identify the culprit in a lineup. The application of this research leads to a more nuanced method of assessing the reliability of eyewitnesses based on attention focus. Expectations that people should notice unusual events, such as accidents and crimes, may be problematic when witnesses are focused on other activities.

Keywords

eyewitness memory, inattentional blindness, crime blindness, eyewitness identification

Tweet

Can we trust inattentive eyewitnesses? How divided attention during a crime impairs eyewitness awareness, memory, and identification.

Key Points

- People often experience crime blindness—the failure to see an accident or crime that occurs directly in front of them—if they are focused on some other activity.
- With attention focused on something elsewhere, potential witnesses will experience both awareness and memory problems.
- Assessments of eyewitness reliability should address witness attention focus during the crime, when witnesses become aware of the crime, and whether witnesses were multitasking during the crime.
- Interviewers and jurors may be surprised that witnesses could fail to notice an accident or crime that occurs directly in front of them.
- Education concerning attention failures and crime blindness may be important in some cases.
- Based on empirical research, new standards should be developed to assess the attention focus and reliability of eyewitnesses.

Introduction

In May 2015, a tourist was walking the streets of downtown Philadelphia with her husband. She was also looking at her iPad as she walked (Giordano, 2015). She was walking slowly and had fallen behind her husband. As she approached an intersection with her attention focused on her iPad, the light was changing. Her husband entered the street as the light changed to yellow, but successfully crossed the street after the light turned red. Unfortunately, she started into the intersection too late. The light had turned red as she stepped into oncoming traffic. Moments later, she was hit and killed by a tour bus that had started moving before she entered the intersection.

Divided attention and inattentional blindness may have contributed to this unfortunate death. When attention is divided, people may become selectively focused on one aspect of a complex environment. They may then experience inattentional blindness—the failure to see something that should be obvious. In the Philadelphia death, the woman

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may have become selectively focused on her iPad. Becoming focused on electronics while walking often leads to inattentional blindness. For this tourist, she may not have noticed that the traffic signal had changed. She may have failed to see the tour vehicle.

Although the woman may have experienced inattentional blindness, we want to focus on another important aspect of inattentional blindness in this case. Most of the potential witnesses did not become aware of the accident until the event was over. They were focused on their own tasks—navigating through the environment, looking at their mobile devices, having conversations with other people. Because their attention was focused on other events, many witnesses were unaware that the woman was using her iPad. They did not know who had the right of way. Nonetheless, several witnesses made statements attributing the cause of the accident to the driver of the tour vehicle (Lattanzio, 2015). The witnesses may have experienced inattentional blindness. In this way, inattentional blindness may disrupt eyewitness awareness of and memory for events.

In this article, we begin by defining inattentional blindness and describing several applied areas in which this attention failure contributes to accidents. We then consider the impact of inattentional blindness on eyewitnesses. Many eyewitnesses, like those near the accident in Philadelphia, may fail to see critical aspects of an event. This attention limitation also affects eyewitness memory. Future research should expand the limited research on how divided attention, selective attention, and inattentional blindness affect eyewitnesses. Finally, we provide a cautious set of policy recommendations regarding what eyewitnesses can be expected to see and remember from events. Recommendations focus on evaluating attention to assess the reliability of eyewitnesses (Manson v. Brathwaite, 1977; Neil v Biggers, 1972).

Inattentional Blindness

Inattentional blindness is the failure to see something that should be obvious (Hyman, 2016; Mack & Rock, 1998; Simons, 2000; Simons & Chabris, 1999). If someone becomes selectively focused on one aspect of a complex visual environment, that person may fail to see objects that pass directly through the center of the visual field. Conversely, people who are not selectively focused typically see the unexpected events. Dramatic instances of inattentional blindness surprise people. People who see the unusual event are surprised that someone else could fail to notice it while those who experience inattentional blindness are surprised that they missed it.

The classic demonstrations of inattentional blindness for events involve having people watch two sets of basketball players, one set wearing white shirts and the other wearing black shirts. Participants are instructed to count the number of passes made by one set of basketball players—thereby selectively focusing attention. Eventually something unusual happens in the video. In the original studies, a woman with an umbrella walked through the basketball game (Neisser, 1976, 1979; Neisser & Becklen, 1975). In another demonstration, a person in a gorilla suit stopped in the middle of the game and pounded its chest (Simons & Chabris, 1999). When people focus on counting passes, they frequently fail to see the unusual event. But when people watch the video without counting, the umbrella woman and the gorilla are obvious. Without selective attention, no one experienced inattentional blindness.

Inattentional blindness is a powerful cognitive failure. When people are selectively focused, they will miss seeing unusual events. They will also miss events that include both visual and auditory components (Wayand, Levin, & Varakin, 2005). They will fail to hear unusual sounds (Dalton & Fraenkel, 2012). They will fail to feel something buzzing on their hands (Murphy & Dalton, 2016). People will also experience inattentional blindness for objects that may be threatening (Stothart, Wright, Simons, & Boot, 2017; Wiemer, Gerdes, & Pauli, 2013). Inattentional blindness has also been observed in real-world settings: People walking while using a cell phone are less likely to see a unicycling clown, money on a tree, or someone wearing a leg brace who needs help than people without a cell phone distraction (Hyman, Boss, Wise, McKenzie, & Caggiano, 2010; Hyman, Sarb, & Wise-Swanson, 2014; Puryear & Reysen, 2013).

Experience with inattentional blindness does not protect someone from failing on a subsequent task. Researchers generally use only a single inattentional blindness trial. Given a selective attention task—counting something or making a perceptual judgment—people eventually experience a critical trial with the unexpected event and are asked if they saw anything unusual (Mack & Rock, 1998; Most et al., 2001). One might expect that after the initial trial containing an unexpected event, participants would be aware that unusual events could occur and watch for those experiences (Most et al., 2001). But people do not become more adept at finding unusual events when selectively focused (Simons, 2010; Ward & Scholl, 2015). Even when people are searching for repeated unusual stimuli, they still frequently fail to notice some instances (Shimamura, Cohn-Sheehy, Pogue, & Shimamura, 2015; Wolfe et al., 2007).

Inattentional blindness reflects fundamental limitations of attention capacity. People have capacity limits on attention and are unable to track everything that occurs around them (Kahneman, 1973). People can, however, exert some control over the focus of their attention. People can selectively focus attention, by counting the number of basketball passes, for example. But when attention is selectively focused, little capacity may remain to notice unexpected events. Attention is needed to bind the features into objects that can be recalled later (Treisman & Gelade, 1980; Treisman & Schmidt, 1982).

People also engage in multitasking—dividing attention capacity and tracking several different events. But multitasking has a cost. Performance is generally worse when multitasking than when solely focused on an activity. Furthermore, when people multitask, one activity may become the primary task (Thomas, Dai, Taylor, & Hyman, 2018). In that situation, information from the secondary task may be less likely to enter awareness and memory, creating inattentional blindness. People can also experience inattentional blindness if they become internally focused. Their own thoughts can become the distraction.

The opposite of inattentional blindness is attention capture which occurs when a stimulus compels awareness (Simons, 2000). A loud noise or a bright light can lead to attention capture. The classic example of attention capture is the cocktail party effect (Cherry, 1953; Conway, Cowen, & Bunting, 2001). When people track a single conversation in a crowded room, they demonstrate selectively focused attention. But if someone on the other side of the room says their name, they may experience attention capture even though they had not been attending to that conversation. In classic lab demonstrations of the cocktail party effect, people typically notice their name only about 30% of the time. Even though people sometimes experience attention capture, the failure to become aware of their name is the more frequent response.

Nonetheless, people expect to experience attention capture (Jaeger, Levin, & Porter, 2017). In reality, people overestimate the likelihood that they will experience attention capture and notice unusual events (Levin, Momen, Drivdahl, & Simons, 2000). In part, this reflects lived experience with attention capture—people notice when their attention is captured. People believe they notice every time someone says their name and every car accident that occurs nearby. But people fail to notice the times when they experience inattentional blindness: We don't notice that we don't notice something. As people fail to notice inattentional blindness, they expect attention capture for both themselves and other people. They believe they should have seen the gorilla. And having seen the gorilla, they are surprised that anyone else can miss the gorilla. However, no research has clearly demonstrated events and features guaranteed to capture attention (Jaeger et al., 2017).

The applications of inattentional blindness research have primarily focused on safety. Inattentional blindness may contribute to accidents in a variety of domains. For example, using a cell phone when driving, a divided attention task, may lead to inattentional blindness. People become focused on their mobile device and less aware of the world around them. People using a cell phone drive more poorly than people focused completely on driving (Strayer, 2015). Consistent with research on inattentional blindness, when people use a cell phone while driving, they are less likely to remember various features of the environment (Kass, Cole, & Stanny, 2007; Strayer, Drews, & Johnston, 2003). Nonetheless, cell phone users believe they are driving effectively and are unaware of their mistakes and close calls (Sanbonmatsu, Strayer, Biondi, Behrends, & Moore, 2016). They fail to notice their failures.

Similarly, people using a cell phone while walking are less safe and display inattentional blindness. People using a cell phone while walking are more likely to cross a street in an unsafe fashion (Nasar & Troyer, 2013; Neider, McCarley, Crowell, Kaczmarski, & Kramer, 2010). This probably reflects inattentional blindness because people using a cell phone are less likely to see unusual events, including a unicycling clown (Hyman et al., 2010).

Inattentional blindness impacts safety in other domains as well. In the medical field, inattentional blindness may lead expert radiologists to miss an unusual feature in lung-nodule detection task (Drew, Võ, & Wolfe, 2013). When medical experts watched a video of a resuscitation, most missed seeing a critical event—the disconnection of the oxygen line (Greig, Higham, & Nobre, 2014). Pilots landing a plane in a simulator have also displayed inattentional blindness for warning signals (Dehais et al., 2014).

Crime Blindness and the Inattentive Witness

Most people are not constantly watching for crimes and accidents. Much like the potential witnesses to the Philadelphia accident, people walk down the street focused on something other than possible accidents. As noted, people selectively focused may experience inattentional blindness for an accident or a crime. Other witnesses may experience attention capture, but only become aware after the event is underway. Thus, inattentional blindness and delayed attention capture may disrupt the ability of potential witnesses to notice, understand, and remember events. In studies investigating inattentional blindness and eyewitness awareness, participants engage in a selective attention task. While focused on their primary task, a mock crime occurs. Crime blindness reliably emerges across different selective attention conditions and types of crimes.

In one study, for example, participants watched a video during which a theft occurs (Rivardo et al., 2011). Some participants were simply asked to watch the video whereas others were selectively focused on counting something. Of those who simply watched the video, 90% noticed the theft. In contrast, when people were counting something unrelated to the theft, only 19% noticed the crime. Although the theft occurred near the center of the visual field, people experienced crime blindness. In addition, people who experienced crime blindness were less accurate in recalling details of the event and showed more susceptibility to misleading post-event information.

In another video investigation of crime blindness, participants watched a scene at a bus stop for a particular bus to

appear (Cullen, Paterson, & van Golde, 2017). A young girl was sitting at the bus stop. In the control condition, an older woman sat down and talked with the young girl. In two other videos, the girl was kidnapped by the woman. In the less obvious version, the woman grabbed the girl's hand and they left together with the girl looking uncomfortable. In the obvious version, the girl fought back and screamed. Most people did not notice the kidnapping—only 35% noticed in the less obvious version. But even in the obvious version, only 46% of observers noticed the crime. When people were watching for a bus, they failed to see the kidnapping that occurred in front of them.

In a live investigation of crime blindness, participants chased an experimenter (Chabris, Weinberger, Fontaine, & Simons, 2011). While chasing the experimenter, the participants ran directly past a physical assault. Many participants failed to notice the fight. Noticing was linked to two factors. Participants were less likely to notice at night than during the day. In addition, when participants experienced greater attentional load, they were less likely to notice the assault.

In another live demonstration, inattentional blindness for a weapon emerged during a training exercise for police officers (Simons & Schlosser, 2017). The police officers, who were either trainees or experienced officers, conducted a simulated traffic stop. A handgun was placed in easy view on the passenger side dashboard. The driver was either completely cooperative or somewhat angry (although he nonetheless cooperated with every request and was a middle-aged White man). Overall, the response of the driver did not influence whether officers noticed the weapon. Expertise predicted rates of inattentional blindness, with trainees (56%) being more likely to experience inattentional blindness for the weapon than experienced police officers (33%).

Inattentional blindness affects not only awareness of a crime but also eyewitness identification and memory (Wulff & Hyman, 2018). In these experiments, participants watched a video with several dozen people passing through a hallway. A man enters the scene and eventually steals a pink, flowered backpack. An innocent bystander is visible for much of the video before he also leaves. People either simply watch the video, count the number of people wearing white shirts, or watch for the theft. In two experiments, almost everyone watching for the theft saw it. In contrast, only two thirds of those who watched the video with no instructions and fewer than 25% of those counting white shirts noticed the theft. Most people focused on counting shirt experienced inattentional blindness.

Two aspects of memory were also measured. Participants who were counting white shirts or simply watching the video were unlikely to make an identification of the culprit or the innocent bystander from a lineup. In contrast, people who were watching for the theft were more likely to correctly select the culprit. Unfortunately, people watching for the theft were also more likely to falsely identify the innocent bystander as the culprit. Watching for the crime led people to confidently identify a familiar person—even when that familiar person was innocent.

The second memory test concerned memory for the shirts. People in the video wore shirts with different graphics. For the memory test, participants were asked to identify black and white shirts they had seen in the video. Not surprisingly, people who counted white shirts correctly recognized more white t-shirts, but not black shirts, than did the other participants. Inattentional blindness disrupted awareness of the crime and the ability to identify the perpetrator. But the people who counted white shirts showed better memory for the focus of their attention.

Attention and Eyewitness Memory

While a primary goal of this research is to understand how inattentional blindness impacts eyewitnesses, the approach is grounded in other research concerning the role of attention in eyewitness memory. Clearly, attention matters for eyewitnesses. Furthermore, an assessment of how much attention a witness pays to the crime and the perpetrator is part of the standard used to assess the reliability of eyewitness memory and identifications (Manson v. Brathwaite, 1977; Neil v Biggers, 1972). Attention disruptions may influence eyewitness memory in many ways.

First, the overall complexity of a situation can tax attention resources and impact memory. People experienced more difficulties making correct identifications from a video with five people than a video with only one (Clifford & Hollin, 1981). In addition, people viewing a more cluttered environment made fewer correct identifications than people viewing a less visually busy one (Greene, Murphy, & Januszewski, 2017).

With divided attention, people also show eyewitness memory decrements. People with divided attention display substantially lower identification accuracy than those who are only watching the crime video (Palmer, Brewer, McKinnon, & Weber, 2010). Similarly, when people witness an event under divided attention, they show both poorer memory for event details and are more susceptible to misinformation (Lane, 2006; Zaragoza & Lane, 1998).

Change blindness is another attention failure that disrupts eyewitness memory. In change blindness, people fail to notice when some feature in the environment has changed, including a person with whom one interacts (Simons & Levin, 1998). Change blindness impacts culprit identification. In eyewitness change blindness studies, the person who commits the crime disappears behind an object for a moment. A different person appears afterward. In a line up, witnesses will often identify the wrong person (Davies & Hine, 2007; Fitzgerald, Oriet, & Price, 2016; Nelson et al., 2011). Change blindness and identification errors were more frequent when people were unaware that memory would be tested than when focused on remembering (Davies & Hine, 2007).

Recommendations for Research

Although attention matters for eyewitnesses, the various forms of attention disruption may not have the same impacts on eyewitness awareness and memory. In *divided attention*, people notice the crime but often experience some memory disruptions. They are less likely to make a correct identification, recall fewer details, and are susceptible to misinformation. When witnesses experience *change blindness*, they again notice the crime, but are likely to incorrectly identify an innocent person who switched with the culprit during a visual interruption. Selective attention can result in crime blindness—that is, *inattentional blindness* for a crime. People who are watching for a crime generally see the crime. In contrast, people who are simply watching a complex event or who are selectively tracking a single aspect of the event are less likely to notice. Inattentional blindness for a crime also means that people will experience difficulty identifying the culprit in a line up. People who watch for and notice the crime may be more likely to both identify the culprit and incorrectly identify an innocent bystander. How attention impacts eyewitnesses may depend on the particular forms of attention disruption.

Thus, additional research needs to investigate how attention affects eyewitness awareness and memory. First, the basic findings need to be replicated and extended. The standard approach of eyewitness memory research assumes that eyewitnesses are aware that the event is occurring and completely focused on it. This assumption is unwarranted. What happens when people divide their attention between a crime and some other task? Furthermore, the complexity of the context leads to a poorer ability to identify a culprit. Given that many crimes occur in crowded spaces, this effect needs to be explored.

Second, research should expand the study of crime blindness. In crime blindness, people fail to notice a crime. But in many cases, eyewitnesses may have their attention captured by a crime or accident well after the event has started later—such as the witnesses to the accident in Philadelphia. How does the *timing* of event awareness affect memory? The interaction of inattentional blindness and attention capture may affect eyewitness memory. Research should also address the impact of *stress* on eyewitness awareness and memory. Arousal narrows attention focus, which may be similar to selective attention that results in inattentional blindness. Acute stress resulting from a specific event and selective attention may thus have similar effects on awareness and memory. Furthermore, inattentional blindness may affect susceptibility to *misleading post-event information*. Divided attention increases eyewitness susceptibility to later misinformation. Perhaps selective attention and inattentional blindness interact with the adoption of post-event misleading information.

Recommendations for Policy

In considering policy recommendations, we start by advising caution. The science of inattentional blindness is well-established and the findings are easily replicated. The applications of inattentional blindness are clear in many domains, from the impact of mobile device use while driving to attention failures in medical situations. But research on *crime blindness* remains limited. For this reason, we recommend caution when applying inattentional blindness research to eyewitness awareness and memory.

We also recommend caution in making general claims about eyewitnesses based on standard eyewitness memory research in which people know they are watching a crime. Such situations may not apply to all eyewitnesses. Eyewitness memory may be different, and less reliable, when people are not focused on watching for a crime. Furthermore, when a greater number of people are involved in a viewed situation, identification accuracy may be affected (Clifford & Hollin, 1981). People may also choose an innocent bystander with high confidence even when they are completely focused on the crime under pristine laboratory conditions (Wulff & Hyman, 2018).

In considering appropriate policy recommendations, we suggest developing a more nuanced approach to the standards for assessing eyewitness reliability set forth in *Neil v Biggers* (1972) and reiterated in *Manson v. Brathwaite* (1977).

The factors to be considered in evaluating the likelihood of misidentification include the opportunity of the witness to view the criminal at the time of the crime, *the witness' degree of attention* (italics added), the accuracy of the witness' prior description of the criminal, the level of certainty demonstrated by the witness at the confrontation, and the length of time between the crime and the confrontation (*Neil v Biggers*, 1972).

According to these Supreme Court decisions, attention plays an important role in assessing the reliability of the person's memory and ability to identify the culprit. Assessing the witness' attention is critical. Furthermore, the assessment can address several aspects of attention. On what was the witness focused before the crime or accident? When did the witness become aware of the event? Was the witness engaged in multitasking during the event? More detailed questions about attention are required rather than simply asking witnesses if they attended to the crime, culprit, or accident. When people experience inattentional blindness, they tend to believe they are more aware of the world around them than they are (Jaeger et al., 2017; Sanbonmatsu et al., 2016). When asked, witnesses may claim they were attending. But when asked more detailed questions, the witness may acknowledge limited attention focus. The witnesses to the accident in Philadelphia generally did not notice the accident until it was over. They nonetheless reported about aspects of the event, such as responsibility, that they could not have observed. Interviewers should avoid asking for information to which a witness was not attending.

Another policy recommendation concerns educating both interviewers and juries about the memory limits caused by inattentional blindness. People are generally surprised by inattentional blindness (Hyman, 2016; Hyman et al., 2010). They expect to have their attention captured by the novel and

interesting events around them (Simons, 2010). Furthermore, we expect other people to notice unusual events (Jaeger et al., 2017; Levin et al., 2000). Thus, interviewers and juries may look askance at witnesses who claim they did not see or do not remember something about an accident or crime. However, given the research on inattentional blindness, particularly as applied to eyewitness awareness and memory, people may clearly fail to notice crimes that occur directly in front of them. Interviewers and juries should value witnesses who acknowledge failing to see aspects of an event. When witnesses can withhold responses to questions, their overall reliability increases (Bulevich & Thomas, 2012; Thomas, Smith, & Mazerolle, 2018). Instead of assuming those witnesses are unreliable, one needs to assess the reliability of the aspects of the event they claim to have seen and remembered.

To implement these cautious recommendations, policy makers will need to develop clear guidelines for assessing the attention focus of witnesses to crimes and accidents. Assessing attention needs to focus several features. First, attention depends on the prior engagement of witnesses. Second, the moment of attention capture determines when the witness became aware of the crime or accident. And third, divided attention limits the amount of focus the witness may have committed to the event. These attention assessments can easily become part of standard interviews with witnesses.

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