



Unaware Observers: The Impact of Inattentive Blindness on Walkers, Drivers, and Eyewitnesses[☆]



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Inattentive blindness is a failure to become aware of an object or event that should be completely obvious due to focused attention. Inattentive blindness has important ramifications for the legal system. First, inattentive blindness may contribute to accidents. People often engage in divided attention tasks and perform tasks that require tracking multiple sets of information. In these situations, people may cause accidents because they become selectively focused and fail to notice objects, signals, and events. Second, inattentive blindness may result in eyewitnesses failing to notice a crime. One crucial feature of inattentive blindness is that people are surprised that they or someone else can fail to notice things that seem obvious. People expect to notice unusual events, warning signals, and crimes. For this reason, expert testimony may aid jurors and courts attempting to understand the role of attention in many legal cases.

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Justin Valdez was shot and killed on a San Francisco light rail train in September, 2013. Prior to the shooting, his murderer stood by the door of the train and repeatedly pulled out a handgun (Ho, 2013). The murderer toyed with the gun, scratched his nose with his gun, and even pointed it at various people. Several bystanders could have prevented the shooting of Justin Valdez, if they had noticed the man with the gun. Unfortunately, according to surveillance video, the witnesses were all engrossed in their cell phones, did not notice the gun, and failed to prevent the killing.

People have a limited awareness of the world around them. This limited awareness can result in failures to notice important things and events: an obstacle when walking, other vehicles or pedestrians when driving, warning signals in complex work situations, crimes when focused on other events, or a man with a handgun while riding on a train. These failures of awareness often represent instances of inattentive blindness.

Inattentive blindness is a failure to become aware of an object or event that should be completely obvious (Mack & Rock, 1998; Simons, 2000; Simons & Chabris, 1999). It occurs in a complex environment when people can attend to multiple stimuli or events. If people become selectively focused on one

thing, they may fail to notice relatively obvious things—even unusual events that happen directly in the center of their visual field. In contrast, people who are not selectively focused generally do notice the obvious events. Inattentive blindness is demonstrated by this distinction between failure to notice when selectively focused and awareness when simply watching without being selectively focused. A hallmark feature of inattentive blindness is surprise at the failure of awareness. Observers who are not selectively focused will be surprised that someone could miss something that seems obvious to them. Similarly, people who experience inattentive blindness will be surprised when the failure is pointed out to them. The surprise occurs because people have an illusion of awareness: people believe they are substantially more aware of the world than they actually are (Chabris & Simons, 2009). The surprise is an important aspect of inattentive blindness for many legal contexts. People may not understand or believe witnesses who claim to have not seen something obvious.

Inattentive blindness is a robust effect with a solid set of basic research, a clear theoretical understanding, and a growing body of applied research. Ulric Neisser and his colleagues conducted the original research on inattentive blindness for

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dynamic events (Becklen & Cervone, 1983; Neisser, 1976, 1979; Neisser & Becklen, 1975). In one of their classic selective looking demonstrations, participants watched a video with two teams of basketball players: one team in white shirts, the other in black shirts. Each team was passing a basketball and some participants were asked to count the number of passes made by one team. People who were selectively focused on counting passes failed to notice an unusual event—a woman with an umbrella walking through the game. In contrast, most people who simply watched the video noticed the unusual event (Neisser, 1979). Simons and Chabris (1999) replicated and extended this classic experiment with clearer videos and different unusual events, including a gorilla stopping to pound its chest in the middle of the basketball game. Simons and Chabris also reported that when participants were shown the video a second time and simply watched, they saw the unusual event and were surprised they had missed it. A variety of factors influence inattention blindness including the similarity of the unusual event to the tracked event, the clarity of the presentation, and the expectation of the observers (Mack & Rock, 1998; Most et al., 2001; Newby & Rock, 1998; Ward & Scholl, 2015). Furthermore, even knowing about inattention blindness and experiencing these failures of awareness does not protect one from experiencing inattention blindness in new situations (Simons, 2010; Ward & Scholl, 2015).

Inattention blindness failures are not limited to the visual domain. When people are focused on a visual or auditory task, they may fail to notice both a brief auditory stimulus (Macdonald & Lavie, 2011) and a longer dynamic auditory event (Dalton & Fraenkel, 2012). People will also fail to notice someone walk behind people passing basketballs and scratch their fingernails on a chalkboard, a very annoying sound (Wayand, Levin, & Varakin, 2005). These are interesting demonstrations of inattention deafness, in which a person fails to become aware of a relatively obvious sound because of focused attention (Mack & Rock, 1998). Murphy and Dalton (2016) have recently demonstrated that people can also fail to become aware of vibrations because of focused attention, a phenomenon they called inattention numbness.

Inattention blindness is grounded in capacity theories of attention (Fougnie & Marois, 2007; Hyman, Boss, Wise, McKenzie, & Caggiano, 2010; Mack, 2003; Mack & Rock, 1998; Neisser, 1976; Simons, 2000; Simons & Chabris, 1999). Attention has a limited capacity and people can control how that capacity is distributed to various tasks. People can engage in multitasking, but usually with a performance cost. People can also focus their attention resulting in better performance on the primary task. Unfortunately, focused attention leaves less attentional capacity for becoming aware of other events. We expect unusual stimuli and events to capture attention, although this shift in awareness does not always occur. But particularly when selectively focused, attention capture may not happen and people will experience inattention blindness instead. Therefore, inattention blindness can be considered a failure of attention capture (Simons, 2000).

Applied work has become a central feature of inattention blindness research. Based on the applied research, it is clear that inattention blindness likely contributes to accidents

and impacts eyewitness memory. When people talk on a cell phone while driving in a simulator, they drive more poorly than if they are only focused on driving (Cooper & Strayer, 2008; Crudell, Bains, Chapman, & Underwood, 2005; Drews, Pasupathi, & Strayer, 2008; Rakauskas, Gugerty, & Ward, 2004; Strayer, Drews, & Crouch, 2006). Crucially for demonstrating the contribution of inattention blindness, people driving while conversing on a cell phone are less likely to become aware of important and changing stimuli than people simply driving (Beebe & Kass, 2006; Drews et al., 2008; Kass, Cole, & Stanny, 2007; Strayer & Drews, 2007; Strayer, Drews, & Johnston, 2003). Nonetheless, people believe they are effective, safe, and aware drivers while conversing on cell phone, and feel confident in spite of making errors that diminish safety (Sanbonmatsu, Strayer, Biondi, Behrends, & Moore, 2016). Inattention blindness while driving can also occur with distractions other than cell phone conversations (Horrey & Simons, 2007) or when people experience mind wandering and become lost in their own thoughts (Yanko & Spalek, 2014).

Inattention blindness also decreases control and awareness when people are walking. People walk more poorly and less safely when using their cell phones (Hyman et al., 2010; Hyman, Sarb, & Wise-Swanson, 2014; Lopresti-Goodman, Rivera, & Dressel, 2012; Nasar, Hecht, & Wener, 2008; Neider, McCarley, Crowell, Kaczmarek, & Kramer, 2010; Schwebel et al., 2012). When people walk while using their cell phones they clearly display inattention blindness: failing to become aware of unicycling clowns (Hyman et al., 2010), objects they avoided such as signboards and money hanging on a tree (Hyman et al., 2014), and someone wearing a leg brace needing help (Puryear & Reysen, 2013). Consistent with the general patterns of inattention blindness, people were surprised that they failed to notice the unicycling clown when it was pointed out to them (Hyman et al., 2010).

Inattention blindness likely contributes to accidents as people display poor control and fail to notice important things around them. If a person is using a cell phone, inattention blindness could result in a driving or other accident (Strayer et al., 2006). Inattention blindness may also contribute to accidents and errors in medical events when people are focused on one event in a complex set of activities (Greig, Higham, & Nobre, 2014). Similarly, inattention blindness may also cause people to fail to notice warning signs and signals. When pilots were managing a challenging landing in a simulator, they were less likely to notice an alarm than in a more standard landing (Dehais et al., 2014). This finding that inattention blindness may cause accidents under conditions of distraction is ready for use in a variety of contexts. States should severely limit the use of cell phones by drivers. Even without changes in laws, individuals have an ethical obligation to avoid cell phone distractions while driving. People are unnecessarily placing themselves and others at risk. The role of inattention blindness may be important in court cases assessing responsibility for accidents.

Inattention blindness may also impact the awareness and memory of eyewitnesses (Laney & Loftus, 2010). For example, Rivardo et al. (2011) showed participants a video of people in a food court at a mall. At one point in the video, a man steals

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