



TURN RIGHT AT THE NEXT GORILLA

What is inattention blindness, and what role does it play in common traffic accidents?

One of the more puzzling types of automobile accidents is called the looked-but-failed-to-see accident. A typical accident of this type occurs when a driver runs over a pedestrian or cyclist for no obvious or explicable reason. By all accounts, the victim could be seen in plain daylight, and the driver was not impaired in any way. In fact, the person or object is usually directly in the driver's line of sight. And yet, the driver failed to see it. Why?

What could be happening in these types of accidents is what researchers have termed inattention blindness, which, quite literally, means that simply thinking about something causes someone to be “blind” to certain aspects of the visual world. The cause of the blindness is a reduced capacity to perceive things around us when attention is directed to something specific in our environment. Researchers have conducted powerful demonstrations of inattention blindness, and their findings are quite astonishing.

I replicate one experiment in particular with my undergraduate class every year, and it never fails to amaze them. I have the students watch a recorded video clip. The clip is only about 30 seconds long and shows two teams of three people each passing a basketball back and forth. The teams are grouped closely together and are constantly moving, stopping only long enough to catch and pass the ball to the next member of the team. They weave in and out among each other, causing a lot of visual clutter in the scene, but you can always see the basketballs being passed back and forth. One team is dressed in jeans and white T-shirts, the other team, in jeans and black T-shirts. The task of the person watching the video is simply to count the number of passes made between the players dressed in white shirts.

After the video clip is over, I ask my students to report how many passes were made. Then I drop a bombshell with the following question: “Did you see the gorilla?” This is a fascinating video to show in my class because, as in the original experiment, typically about half of the students fail to see an actor dressed in a gorilla costume enter from the right and walk through the middle of the two teams passing the ball, stop, face the camera, pound her chest with her fists, and then walk off screen to the left (see figure 2.6). In fact, not only do my students typically not see the gorilla, but they don't believe that it actually happened until I show the video again (and even then, some believe that I have switched videos).

Research by Neisser and Becklen and later by Simons and Chabris discovered these results in their experiments using a variety of unusual events. One of the key findings to note, however, was that the gorilla was seen almost every time if the participant just watched the video and was not specifically asked to count the number of passes. Directing their attention to something specific in the video, in this case counting the passes among the players in white shirts, made people blind to the gorilla.

The research on inattention blindness provides important insight into the potential causes of looked-but-failed-to-see accidents. Driving in busy traffic and searching the visual environment for a specific object, such as a road sign, a building, an empty parking space, or a specific person walking along the sidewalk, compromise our capability to perceive information that either conflicts with or is neutral to the object of our search. We are not inattentive in general, but rather, our directed attention makes us unaware of objects in our visual field of which we would otherwise take note.

Attention-related blindness is also one of the staples that magicians depend on when performing card and coin tricks. The basic idea is to engage the audience in focusing on some action that is about to happen.

For example, the magician may say, “Pay very close attention to the card that Casandra has selected, and watch closely to where she has returned it to the deck.” Meanwhile, as the audience is attending to the directed action, the magician has changed the deck of cards or slipped another card into his sleeve. Of course, all of this is done within full view of the audience, but the instruction to pay attention to Casandra has now made the audience blind to what the magician is doing.

Researchers have also demonstrated many other types of blindness that occur when we specifically direct our attention. Another fascinating study came from Simons’ lab group that performed the gorilla experiment. In this study, one member of the research team plays a visitor to a university campus who stops a passing student to ask for directions. During the conversation, two other members of the research team, posing as workers carrying a large door, walk between the visitor and the student. While out of sight, the visitor asking for directions changes places with one of the workers carrying the door, who then continues the conversation with the unsuspecting mark. After the conversation was completed, fewer than half of the subjects who gave directions showed any awareness that the person to whom they were giving these directions had changed!

An important role of directed attention is to selectively perceive the world around us. That we actually misperceive things that would otherwise be quite obvious provides us with important insights about such things as looked-but-failed-to-see accidents and magic tricks. It is not that we do not see the cyclist or the sleight of hand, but rather that what we are aware of is largely determined by what we are intending to see.

SELF-DIRECTED LEARNING ACTIVITIES

1. Define the term *inattention blindness* in your own words.
2. Explain what the gorilla experiment demonstrates about looked-but-failed-to-see accidents and magic tricks.
3. What other experiments similar in concept to the gorilla experiment have been conducted in the literature? What methods did researchers use that were similar to those used in the gorilla study, and what methods were different?
4. How would you replicate the gorilla experiment using a different set of methods and stimuli than have been used in previous research?

NOTES

- A short demonstration of the gorilla clip from the Simons and Chabris (1999) experiment can be seen here:
www.tinyurl.com/gorillaclip

- Simons and Chabris found that only 46 percent of their participants reported seeing the gorilla while counting the passes among the players dressed in white shirts. This number was higher when the participants were asked to count the passes among the players in black shirts (70 percent).
- Here is an interesting demonstration of change blindness in the context of a magic card trick:

www.tinyurl.com/blindnesscolortrick

- A group of magicians has done scientific studies on magic and attention. Five of them were invited to present at a symposium on the magic of consciousness. Here is a reference to their scientific paper about attention and magic and a link to a number of their videos published online as supplements to the paper:

Stephen L., Macknik, S.L., King, M., Randi, J., Robbins, A., Teller, J.T., & Martinez-Conde, S. (2008). Attention and awareness in stage magic: Turning tricks into research. *Nature Reviews: Neuroscience*, 9, 871-879.

www.tinyurl.com/attentionresearch

- An interesting point is that, as in magic tricks, the gorilla in the inattention blindness experiment and the changed visitor in the door experiment are much more likely to be detected if a similar video is watched again. However, have a look at this video, posted on YouTube by Daniel Simons, for an interesting twist on this theme:

www.tinyurl.com/gorillavariation

SUGGESTED READINGS

- Chabris, C.F., & Simons, D.J. (2010). *The invisible gorilla: And other ways our intuitions deceive us*. New York: Crown.
- Neisser, U., & Becklen, R. (1975). Selective looking: Attending to visually specified events. *Cognitive Psychology*, 7, 480-494.
- Simons, D.J., & Chabris, C.F. (1999). Gorillas in our midst: Sustained inattention blindness for dynamic events. *Perception*, 28, 1059-1074.
- Simons, D.J., & Levin, D.T. (1998). Failure to detect changes to people in a real-world interaction. *Psychonomic Bulletin & Review*, 5, 644-649.