

Distraction in our Cars: It's not Just Cell Phones

Background

It has been reported that 90% of cell phone owners use cell phones in their cars. Further, it has been estimated that there have been 2600 deaths, 330,000 injuries, and 1.5 million instances of property damage in the U.S. due to cell phone use (and this is likely an underestimate). Estimates suggest that 8-12% of accidents involve “distraction” and 5-9% involve cases where the driver “looked but did not see.”

Although people have argued that hands-free devices reduce the problem, this is not true. The problem is created by mental workload, not the physical use of the phone. In fact, if using a hands-free device makes it more difficult to hear or understand the voice, using a hands-free device may actually increase mental demand. This ties into what is called the “usability paradox”, making it easier to use the phone (or any device) may make it more dangerous, as people will use it more frequently. For example, when roadways were improved (wider lanes, better lighting, shoulders added), people started driving faster, leading to more accidents.

Research Evidence

Distractions in the car now come not only from cell phones, but from information/entertainment systems, navigation systems and business systems (fax, email), so it doesn't make sense to focus solely on cell phones.

Conversation, or conversation-like tasks, have been found to disrupt people's ability to find things they are searching for in the world. In one study, both older and younger participants were asked to listen to a tape recorded paragraph and answer questions about it. While they were listening, they were shown a picture of a traffic scene and asked if a particular road sign (e.g., traffic light, yield sign) was shown in the picture. People who were doing both tasks together were less accurate in identifying the signs, took longer to find them, and reported it was harder to find them. In another study, researchers found that people engaged in a conversation-like task were less likely to respond to items shown in the periphery of the visual field (a narrowing of attention).

In studies specifically studying cell phone use (both for hand held and hands-free versions of the phones), researchers have found that:

- Drivers are more likely to miss critical traffic signals (stop signs, traffic lights, a vehicle braking in front of the other driver, etc.);
- In fact, they often fail to report seeing particular objects in the outside world even when eye tracking data show that they are directing their gaze to those objects;
- Drivers are slower to respond to signals they do detect (e.g., brake lights), less able to control their speed, and more likely to drive out of their lane; and
- Drivers are more likely to be involved in rear-end collisions when they are talking on a cell phone.

In research on navigation systems, people were asked to enter information into a navigation system using two versions of speech recognition (one that recognized only individual characters and one that recognized words) and a touch-screen keyboard both when parked and when driving (in a simulator). In every situation, individuals lost awareness of the speed at which they were driving when entering the information. When people were not trying to enter an address, they drove outside their lane boundaries 1.5% of the time. Using the two speech recognition systems, they went out their lane an average of 6% of the time; using the touch-screen keyboard, they went out of their lane an average of 21% of the time.

Finally, research asking people to respond to simulated e-mail systems showed that the requirement to process e-mails resulted in distraction effects.