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Handsfree Cellphone Use Has Lingering Negative Effects on Driving Performance

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Issue

Distracted driving is a factor in approximately 3,000 crash-related fatalities in the United States each year. Studies have shown that the risk of a crash is four to six times greater while using a cell phone, with even higher rates for texting. Despite public warnings and laws, smartphone tasks that require devoted attention, such as texting, emailing, or web browsing, remain common while driving. Most states restrict hands-held cell phone use, including talking and texting, but none have addressed handsfree use, which can also be extremely distracting. Additionally, there is growing evidence that the effects associated with phone use linger beyond the initial loss of attention, known as a "hangover" effect, and are associated with hazardous driving behavior.

Researchers at the Schools of Medicine and Engineering at UC San Diego recently concluded an experimental study on driving safety in which 97 participants were asked to perform simulated driving tasks while receiving a handsfree call or short text message. Researchers measured each participant's driving reactions (i.e., change in speed, amount of swerving, and drifting outside one's lane), whether they responded to visual cues at the edges of the screen (simulating rear view mirrors), and how much of the road ahead drivers focused on after being distracted.

Research Findings

The driving performance of all participants was negatively impacted by receiving a handsfree call or text. All participants tended to speed up a little, stiffen their foot on the accelerator, swerve dramatically, and exhibit tunnel vision. A drivers' field of view shrank nearly 50 percent after being distracted. These were similar results for handsfree talking and texting; however, the recovery time for handsfree phone use was faster than for texting, still about 15 seconds which is enough time to drive a quarter mile at highway speeds.

Altered driving behaviors were detectable among participants as long as 20-25 seconds after the distraction occurred. The distraction hangover extended so long that in some cases the next smartphone call came before the participants were able to recover from the first. Worse, seven drivers actually ended up colliding (virtually) with the car in front of them. Of the remaining 90 drivers who managed to avoid a collision, their ability to match the lead car's speed, or "coherence," dropped almost to zero, a worse performance than reported in other studies with drivers under the influence of alcohol.

Age was a factor in the outcome of the tests. Older drivers tended to drive more slowly than younger ones, by about two miles per hour for each decade of life. But older individuals still missed 50 percent of the cues in their peripheral vision

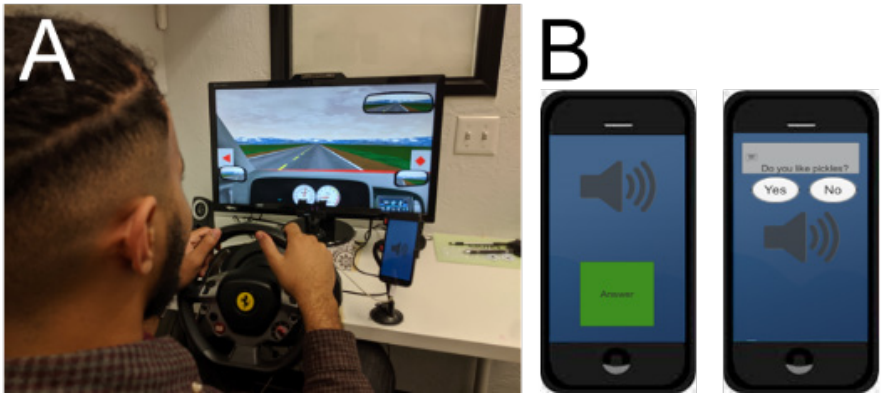

Figure 1. (A) A participant seated in front of the driving simulator, (B) display for hands free voice call (left) and text message (right)

within four seconds of receiving a text message. In real driving situations older drivers might have failed to detect salient information in their visual periphery while driving, such as a passing vehicle or a pedestrian. These results could have serious implications as the population over 65 increases and more older adults, a group with documented driving-related visual attention challenges, cross the so-called digital-divide.

Older drivers, however, performed as well as the youngest in matching their speed to the car ahead after a distraction. The youngest individuals actually took the longest time to stabilize their lane position after a handsfree distraction, and they were almost four seconds slower than the next oldest age group.

Policy Considerations

These results highlight the safety risks of driving while using smartphones, and from a public health standpoint, showcase the burden created by distractions on drivers' cognitive functions and the length of time it takes to recover. These ongoing effects on driving safety have serious implications for common driving habits, like checking emails and texts at traffic lights or in heavily congested and stopped traffic. As technology continues to become engrained through our daily tasks, including increasingly sophisticated automobiles and cell phones, policy makers should consider these research findings when formulating new distracted driving legislation in addition to the current bans on handheld phone use.

More Information

This policy brief is drawn from the final report entitled "Distraction 'Hangover': Characterization of the Delayed Return to Baseline Driving Risk After Distracting Behaviors," authored by Linda Hill, MD, MPH, Jeanne Townsend, PhD, Joseph Snider, PhD, Ryan Spence, Anne-Marie Engler, MPH, Ryan Moran, MD, MPH., Sarah Hacker, and Leanne Chukoskie, PhD., of the University of California, San Diego. Digital copies of the report and this brief are available at: www.ucits.org/research-project/2019-27. For more information about the contents of this brief, please contact Linda Hill at llhill@health.ucsd.edu.

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