

# 'Hands free' isn't mind free: Performing even easy tasks impairs driving

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Do you think using a hands-free device makes it okay to talk on a cell phone while driving? Despite the well-intended laws requiring the use of hands-free devices, a driver's performance is impaired when distracted by even the simplest tasks, whether or not both hands are on the steering wheel.

Until now, the slowing of reaction time under multitasking conditions, referred to as the psychological-refractory-period (PRP) effect, has been studied mainly with simple tasks in laboratory settings. But a new research study presents a unique perspective of how the PRP effect pertains to driving, perhaps the most ubiquitous real-world task where non-optimal performance can have serious consequences.

The study was conducted by University of California, San Diego scientists Jonathan Levy and Harold Pashler, along with Erwin Boer of ERB Consulting. Their research appears in the article "Central Interference in Driving: Is There Any Stopping the Psychological Refractory Period?" in the March issue of Psychological Science.

Forty students participated in the study, which involved driving a car simulator, composed of a large plasma screen, a steering wheel, and gas and brake pedals located on the floor. In the simulation, students followed a lead car and were instructed to brake as soon as they saw the illumination of the lead car's brake lights (they were instructed to avoid gradual slowing even if it was possible). While subjects performed the braking task, they occasionally were required to respond to a concurrent

easy task, where a stimulus – either a light flash in the lead car's rear window or an auditory tone – was randomly presented once or twice. Participants indicated the stimulus' frequency, sometimes by pressing a key on the steering wheel once or twice and sometimes by saying aloud the words "one" or "two."

Subjects in the study braked more slowly when the easy task's stimulus was presented simultaneously or shortly before the brake lights, thereby demonstrating the PRP effect occurs with "real-world" tasks. Participants were 174 milliseconds slower at braking when the two tasks occurred at the same time than when they were presented 350 milliseconds apart. While 174 milliseconds may sound tiny, it translates to 16 feet in a car going 65 mph. Responses were just as slow with auditory stimuli (tones) and vocal responses compared to visual stimuli (light flashes) and manual responses, meaning that even tasks that do not have a visual or manual component (like hands-free talking) can still lower response times when driving.

"This study joins a growing body of research showing that 'freeing up the hands' does not result in faster brake response times," says Levy, the lead author on the project. He adds, "not everyone appreciates the processing cost while driving imposed by carrying out other tasks, even easy ones."

Source: Association for Psychological Science

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