

Brain can't cope with making left-hand turn and talking on hands-free cell phone, study finds

February 28 2013

Most serious traffic accidents occur when drivers are making a left-hand turn at a busy intersection. When those drivers are also talking on a hands-free cell phone, "that could be the most dangerous thing they ever do on the road," said Dr. Tom Schweizer, a researcher at St. Michael's Hospital.

Researchers led by Dr. Schweizer tested healthy [young drivers](#) operating a novel driving simulator equipped with a [steering wheel](#), brake pedal and accelerator inside a high-powered functional MRI. All previous studies on distracted driving have used just a joy-stick or trackball or else patients passively watching scenarios on a screen.

Immersing a driving simulator with a fully functional steering wheel and pedals in an MRI at Sunnybrook Health Sciences Centre allowed researchers to map in real time which [parts of the brain](#) were activated or deactivated as the simulator took them through increasingly difficult driving maneuvers.

The researchers were able to show for the first time that making a left-hand turn requires a huge amount of [brain activation](#) and involves far more areas of the brain than driving on a straight road or other maneuvers.

When the drivers were also involved in a conversation, the part of the

brain that controls vision significantly reduced its activity as the part that controls monitoring a conversation and attention was activated.

The research was published today online in the open access journal *Frontiers in Human Neuroscience*.

"Visually, a left-hand turn is quite demanding," Dr. Schweizer said. "You have to look at [oncoming traffic](#), pedestrians and lights, and coordinate all that. Add talking on a [cell phone](#), and your visual area shuts down significantly, which obviously is key to performing the maneuver."

The simulation had the drivers making six left turns with oncoming traffic, which required them to decide when to turn safely. It then distracted them, by making them answer a series of true-false audio questions, such as "Does a triangle have four sides?" The MRIs showed that blood moved from the visual cortex, which controls sight, to the prefrontal cortex, which controls decision-making.

"Brain activity shifted dramatically from the posterior, visual and spatial areas [of the brain] to the prefrontal cortex," said Dr. Schweizer, a neuroscientist and director of the Neuroscience Research Program at the hospital's Li Ka Shing Knowledge Institute.

"This study provides real-time neuroimaging evidence supporting previous behavioural observations suggesting that multitasking while driving may compromise vision and alertness. 'Hands free' not does mean 'brains free.'"

Dr. Schweizer said his study needed to be replicated in larger groups and with various age groups and with people with known [brain](#) impairments such as Alzheimer's disease.

Provided by St. Michael's Hospital

Citation: Brain can't cope with making left-hand turn and talking on hands-free cell phone, study finds (2013, February 28) retrieved 25 April 2024 from

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