Are distracted pedestrians a potential crosswalk hazard?

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A computer-based wrap-around driving simulation creates the virtual driving environment used at Ben-Gurion University. Credit: Courtesy: Ben-Gurion University of the Negev

Next time you're about to cross a street, you might want to think twice about texting -- and definitely take those buds out of your ears. Music may be even more dangerous than texting, according to one researcher.

David Schwebel, a professor of psychology at the University of Alabama at Birmingham, runs one of a small but growing number of laboratories where scientists analyze pedestrian behavior. The labs create virtual reality scenarios similar to those used to study driver behavior. Drivers and walkers, it turns out, are often distracted by the same things -- but not always.

Schwebel's lab features three very large screens arranged in a half circle that show a street scene with traffic. Speakers pipe in road noise. Once volunteers signal their decision to step off a simulated curb, their avatar starts crossing the street at their ordinary walking speed.

Schwebel asked college volunteers to cross a virtual intersection 10 times each. Those with no distractions failed to make it across the street only 6 percent of the time. That rose to 12 percent for students talking on cellphones, and 25 percent for those texting.

But volunteers listening to music were flattened by virtual cars on one out of every three crossings. That was a surprise, since some types of music improve driver performance. Schwebel speculates that pedestrians , more than drivers, use the sound of oncoming vehicles to judge safety.

The simulated traffic was not especially challenging. Rather than a chaotic scene of darting high-speed vehicles, Schwebel created a two-lane road with vehicles moving at 30 mph in both directions.

"I'd like to see our findings replicated, but we had more than 125 people in the study. These were college students on urban campus who cross the street every day to get to class. Imagine if we tried the same experiment with 10 to 12-year-olds," Schwebel said.

Schwebel is the first to admit the shortcomings of his experiments. After all, if one out of three pedestrians listening to music really got hit crossing the street, there would be body bags at every school crossing in America.

Even so, distractions do cause accidents.

Jack Nasar, a professor of city and regional planning at Ohio State University in Columbus, analyzed 2008 Consumer Product Safety

Commission data. He found that more than 1,000 pedestrians had cellphone-related falls, collisions, and other accidents that sent them to the emergency room.

"The numbers are low, but the trajectory of pedestrian injuries has been doubling every year," Nasar noted. That trend is likely to continue.

Since 2008, the number of smartphones that let users talk, text, email, and surf the Web has nearly tripled, to 72.5 million, in the United States, according to market researcher comScore Inc.

Schwebel can explain why his lab has an unrealistically high kill rate. Volunteers might take more risks in a simulation. They cross alone at mid-block rather than at corners, so are not guided by other pedestrians or lights and stop signs. Perhaps most important of all, his simulated vehicles and avatars do not speed up or slow down, something real people and cars do all the time.

Still, the new labs let researchers investigate the fundamentals.

"We're trying to understand what questions an adult would ask when deciding to cross a road or not," said Tal Oron-Gilad, a professor of human factors engineering who runs a similar pedestrian lab at Ben-Gurion University of the Negev in Israel.

To understand how texting or talking affect behavior, it's essential to know how people act when they are not distracted, she added. Oron-Gilad outfitted children and adults with headsets that track eye movement. She found that adults and older children first look where they are going, then look left and right. Younger children look straight ahead and rarely to the side.

Both Schwebel and Oron-Gilad plan to use their findings to develop

lessons to teach young children to cross more safely.

Not all labs rely on simulated reality. One is the Pedestrian Accessibility and Movement Environment laboratory at University College London.

The lab's centerpiece is a 600-square-foot modular platform divided into 36 adjustable segments. Researchers can transform it into an uneven sidewalk with potholes, a slope, or even a staircase, said Nick Tyler, who heads the school's civil engineering department.

The lab lets researchers evaluate how different surfaces, lighting, and sounds affect pedestrians, including those who are blind, deaf, or use walkers or wheelchairs.

Last year, Tyler ran several distraction experiments. He created three routes, each 180 feet long, and peppered them with colored spots and signs at eye, waist, and ground level. After sending 12 volunteers on their way, he distracted them with phone calls and text messages. The distracted walkers could not recall 60 percent of the information on the route.

"But the interesting thing is that they remembered more of what was on the ground, less at waist level, and almost no information at eye level," Tyler said.

More intriguingly, he added, they recalled the most relevant information.

"At one point, we had two waist-high signs next to each other. No one remembered the keep off the grass sign because there was no grass, but all of them remembered the turn right sign," Tyler said.

Tyler speculates that the subconscious notices relevant information even when distracted. He plans further tests to measure this, as well as sign

placement.

Maybe in a world of surfing and texting pedestrians, the best directions would be on the sidewalk.

Of course, they should still look both ways when they cross a street.

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