

Students exposed to cell phone ringtones score 25 percent worse

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Students exposed to a briefly ringing cell phone scored 25 percent worse on a test of material presented before the distraction.

(PhysOrg.com) -- A flurry of recent research has documented that talking on a cell phone poses a dangerous distraction for drivers and others whose attention should be focused elsewhere. Now, a new study in the *Journal of Environmental Psychology* finds that just the ring of a cell phone may be equally distracting, especially when it comes in a classroom setting or includes a familiar song as a ringtone.

"In any setting where people are trying to acquire knowledge and trying to retain that information in some way, a distraction that may just seem like a common annoyance to people may have a really disruptive effect on their later retention of that information," said the study's lead author, Jill Shelton, a postdoctoral psychology fellow in Arts & Sciences at

Washington University in St. Louis.

The study includes an experiment in which Shelton poses as a student seated in the middle of a crowded undergraduate psychology lecture and allows a [cell phone](#) in her handbag to continue ringing loudly for about 30 seconds.

Students tested later scored about 25 percent worse for recall of course content presented during the distraction, even though the same information was covered by the professor just prior to the phone ring and projected as text in a slide show shown throughout the distraction. Students scored even worse when Shelton added to the disturbance by frantically searching her handbag as if attempting to find and silence her ringing phone.

"Many of us consider a cell phone ringing in a public place to be an annoying disruption, but this study confirms that these nuisance noises also have real-life impacts," Shelton said. "These seemingly innocuous events are not only a distraction, but they have a real influence on learning."

Titled "The distracting effects of a ringing cell phone: An investigation of the laboratory and the classroom setting," the study was conducted at Louisiana State University, where Shelton received her doctoral degree. Her co-authors in the LSU psychology department include Emily Elliott, Sharon Eaves and Amanda Exner.

The study explores cognitive differences in how we respond to auditory distractions, specifically whether we process these interruptions using a voluntary, top-down, executive-level shift in attention or as a more reflexive, automatic and involuntary reorientation of attention.

Perhaps most surprising, the study found that unexpected exposure to

snippets of a popular song, such as those often used as ringtones, can have an even-longer-lasting negative impact on attention.

In this phase of the experiment, students in a laboratory were tested on simple word-recognition tasks while exposed to a range of auditory distractions, including irrelevant tones, standard cell phone rings and parts of a song very familiar to most LSU students. The song, an instrumental version of the LSU fight song, was then being played incessantly around campus as LSU football made its fall 2007 run to the national college championship. The song also became a popular cell phone ringtone.

"When we played the fight song as part of our lab experiments, the distraction factor lasted longer," Shelton said. "It slowed down their decision-making performance for a longer time than even a standard ringtone."

Thus, people who use popular songs as a personal ringtone may be increasing the odds their cell phone rings will be more distracting. "Depending on how familiar people are with these songs, it could lead to an even worse impairment in their cognitive performance," she said.

The study raises concerns for people who attempt to concentrate while being bombarded by beeps and buzzes from incoming email or text messages. Findings suggest the potential for distraction is greater if the ring tone has some special meaning or personal relevance, such as a custom tone that identifies a call as coming from a parent, close friend or boss at work.

On the bright side, students in repeated trials of the experiment eventually were able to block the distracting effects of both standard and song-based cell phone rings, gradually reducing cognitive impairment caused by them.

"There's definitely some evidence to suggest that people can become habituated to a distracting noise," Shelton said. "If you're in an office where the phones are just ringing all the time everyday, it may initially be distracting to you, but you will probably get over it."

While these findings have plenty of real world implications, they also shed light on whether a voluntary or involuntary model best describes cognitive lapses caused by nuisance noises.

Recent research has shown that talking on a cell phone while driving results in serious consequences, such as slower braking responses and increased risks of running red lights and collisions — effects attributed to phone conversation absorbing important voluntary attentional resources needed to respond to information in the driving field.

The unexpected ringing of a phone, on the other hand, might be explained using the involuntary model, one that views our response as a more automatic, almost reflexive re-orienting of attentional resources, and a process over which we have little control.

Shelton suggests that our response to a ringing cell phone may involve a combination of these cognitive responses depending on the situation and whether the ring is unexpected. In one of her lab experiments, she found that participants who were warned about the potential for distraction were able to recover more quickly and moderate their levels of cognitive impairment.

"Our experiments suggest that there is a benefit to prior knowledge in how we respond to nuisance noises," Shelton said. "It doesn't mean you won't experience a disruption to what you were doing for that brief period, but your cognitive system can adjust and get back on task fairly quickly."

Provided by Washington University in St. Louis ([news](#) : [web](#))

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