Strong interactions with voice-guided vehicles do not result in safer driving

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With the Tesla 3 on the horizon and its auto-pilot becoming standard, and semi-autonomous features already an option in some cars, it's easy to see a future where computer-guided vehicles become the industry norm. These cars, in essence, are social robots, interacting with drivers for a safer journey. But does a car's perceived personality and voice lead to safer driving? A recent study by researchers at Michigan State University, Eindhoven University of Technology, and Stanford University found that giving a car a more personal voice led to more car accidents.

Rabindra Ratan, Young June Sah, Will Renius (Michigan State University), Dave Miller, Rob Semmens (Stanford University) and Frank Verberne (Eindhoven University of Technology) will present their findings in June at the 66th Annual Conference of the International Communication Association in Fukuoka, Japan. The researchers conducted an experiment by designing a car simulator with an Oculus Rift, steering wheel, and pedals. The participants were asked to select a car from a catalog that best presented their identity and to rate five pre-selected voices based on friendliness, human likeness, similarity and intelligence. The participants were told that they would get a randomly assigned voice, but were actually given the most similar or dissimilar voice from their rating.

The findings showed that participants who felt a strong social connection with the virtual driving instructor (i.e., "social presence") crashed more during the simulation, especially when they perceived the instructor's

voice to be similar to their own or they felt that the car's appearance reflected their identity. This suggests that having too strong a social/personal connection with the virtual driving instructor is distracting to the driver and thus hinders safe driving.

A handful of studies have examined the effects of virtual voices on driving performance, and many studies have examined how the interactions between people and embodied technologies (e.g., computer agents, avatars) influence people. There is also a huge body of research on social presence in mediated and unmediated contexts. This study merges these lines of research in a new way.

"Autonomous and quasi-autonomous cars offer new modes of communication between humans and technology. Research on these modes of communication may yield new theoretical insights about human-computer interaction in general," said Ratan. "This research suggests that the development of autonomous and quasi-autonomous cars should consider the ways in which the voices integrated into these technologies influence the driver and thus safety on the road."

  More information: "KITT, Please Stop Distracting Me: Examining the Effects of Communication in Cars and Social Presence on Safe Driving," by Rabindra Ratan, Frank Verberne, Young June Sah, Dave Miller, Rob Semmens, and Will Renius; to be presented at the 66th Annual International Communication Association Conference, Fukuoka, Japan, 9-13 June 2016.

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