Journal of Safety Research 49 (2014) 1

Contents lists available at ScienceDirect

Journal of Safety Research

journal homepage: www.elsevier.com/locate/jsr

Editorial

Letter from the Editors

The *Journal of Safety Research* is pleased to publish in this special issue the proceedings of several papers presented at the 4th International Conference on Road Safety and Simulation convened at Roma Tre University in Rome, Italy, October 2013. This conference serves as an interdisciplinary forum for the exchange of ideas, methodologies, research, and applications aimed at improving road safety globally.

Conference proceedings provide the opportunity for research in its formative stages to be shared, allowing our readers to gain early insights in the type of work currently being conducted and for the researchers to receive valuable feedback to help inform ongoing activities. This conference in particular offers an array of research topics not often covered by this journal from researchers practicing in over 11 countries. As is common with publishing conference proceedings, the papers published in this issue did not go through the normal *JSR* review process. Each paper included in this issue did meet the Road Safety and Simulation conference review requirements. They reflect varying degrees of scientific rigor, methodological design, and groundbreaking application.

The proceedings published in this special issue of *JSR* draw from the following road safety research sectors represented at the conference: driving simulation, crash causality, naturalistic driving, and new research methods.

It is our hope that the publication of these important proceedings will stimulate vigorous dialogue, rigorous research, and continuing innovative initiatives and applications, leading, ultimately, to fewer traffic fatalities, injuries, and crashes.

Thomas W. Planek
Editor-in-Chief

Sergey Sinelnikov
Associate Editor

Jonathan Thomas
Associate Editor

Kenneth Kolosh
Associate Editor

Kathleen Porretta
Managing Editor

18 February 2014

http://dx.doi.org/10.1016/j.jsr.2014.02.001

Journal of Safety Research 49 (2014) 69–75

Contents lists available at ScienceDirect

Journal of Safety Research

journal homepage: www.elsevier.com/locate/jsr

The effect of different navigation voices on trust and attention while using in-vehicle navigation systems

David R. Large [1], Gary E. Burnett

Human Factors Research Group, Faculty of Engineering, University of Nottingham, University Park, Nottingham NG7 2RD, UK

ARTICLE INFO

Article history:
Received 2 December 2013
Accepted 26 February 2014
Available online 22 March 2014

Keywords:
Driving
Navigation
Trust
Attention
Distraction
Voices
Personality

ABSTRACT

Introduction: Automobiles are suffused with computers and technology designed to support drivers at all levels of the driving hierarchy. Classic secondary devices, such as in-vehicle navigation systems (IVNS), present strategic and tactical information to drivers. In order to mitigate the potential distraction and workload when interacting with these devices while driving, IVNS often employ voices to deliver navigational instructions. In contrast, voices are used during interpersonal encounters to engage the listener, provide clues about the speaker's personality and make judgments about them, for example, whether to like them and to trust them. *Method:* A study conducted within a fixed-based medium-fidelity driving simulator investigated if drivers made similar 'personality' attributions to voices emanating from an IVNS and if this subsequently affected how they engaged with the device while driving. Twenty-nine experienced drivers and IVNS users drove to a specified destination with a simulated IVNS and authentically reproduced UK road signage to support their route-finding. Either of two navigation voices were used; one considered 'high-trust' and the other 'low-trust.' Presented with a conflict scenario, where the verbal route guidance differed to the road signs, 22 drivers followed the IVNS instruction rather than the road signs. Of these, the majority were using the 'high-trust' voice. *Results:* A post-drive questionnaire revealed that, despite the fact that message content and delivery remained equivalent, participants recognized different attributes ('personalities') associated with each of the navigation voices. This influenced their attitudes towards them, including how much they liked them, their preferences for use, and the level of trust that they associated with each voice. *Practical applications:* While these, so-called, social responses may be invited and indeed encouraged in other contexts, in the automotive domain they are likely to conflict with the intended benefits of using a voice to deliver route guidance and therefore have implications for road safety and design.

1. Introduction

Driving is one of the most complex 'everyday' tasks that people undertake. Driving tasks are frequently interrelated and require a variety of factors to be taken into account for successful execution. Drivers are also required to remain attentive and maintain a readiness to respond to occasional, unpredictable, and non-routine events within a safety-critical environment where sub-standard performance is likely to present an unacceptable risk to both the driver and others. Technology is therefore often employed in cars to support drivers by mitigating some of the risks associated with driving-related tasks, thereby allowing driver's to maintain their attention on driving. Technology may also be used to increase efficiency and comfort. Consequently, the automobile is one of the most technologically advanced mass market commodities available today (Young, Stanton, & Harris, 2007).

Technology is typically used to either subsume or augment low level vehicle control tasks (e.g., through active safety systems, such as antilock braking, traction control, or electronic stability that act autonomously and remain invisible to drivers), or support or advise drivers in the execution of higher level tactical and strategic aspects of driving. For instance, omnipresent intelligent transport systems assist with throttle control, brakes and steering, as and when required, and driver support systems, such as in-vehicle navigation systems (IVNS), provide advice to drivers (Ranney, 1994; Walker, Stanton, & Young, 2001). In the latter situation, the technology tends to remain permanently visible to drivers and the driver chooses when and how to act on the advice, but ultimately retains control of the vehicle. Therefore, success depends on the driver interpreting and acting on the advice correctly.

One aspect of driving where technology has been employed to support drivers and alleviate some of the negative aspects of driving is navigation and route-finding. Evidence suggests that many people experience fundamental problems in determining and following routes and may therefore be less confident when travelling in unfamiliar areas (Burnett, 2000). IVNS, also commonly referred to as 'SatNav' or simply

E-mail address: David.R.Large@Nottingham.ac.uk (D.R. Large).
[1] Tel.: +44 115 95 14040.

http://dx.doi.org/10.1016/j.jsr.2014.02.009
0022-4375/