Voice Control Interfaces: When, how and why they are used by drivers in Australia

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1. Introduction

Operating visual-manual controls, for example, using a mobile phone while driving, has been found to be distracting and may contribute to increase crash risk (Beanland, Fitzharris, Young, & Lenné, 2013; Blanco, Biever, Gallagher, & Dingus, 2006; Horrey, 2011; Liang & Lee, 2010; Stutts, Reinfurt, Staplin, & Rodgman, 2001). Voice control interfaces that can be used in a vehicle such as in-vehicle voice control (e.g. Ford SYNC) and smartphone voice control capabilities (e.g. Siri in iPhone), would appear to reduce distraction and improve driving performance. However, which drivers use these systems and how drivers interact with them is relatively unknown. The present study is part of a wider project to understand driver interaction with voice control devices and their possible impact on driver performance. It builds on our preliminary work conducted using focus groups and interviews. The primary aim is to investigate the usage pattern of voice control interfaces among drivers in Australia. The findings will be used to inform the design of our future studies on the usability of smartphone voice control interfaces and their use during simulated driving.

2. Method

An online survey will be conducted regarding the following five issues: (1) the purposes for which people use voice control interfaces while driving and not while driving, (2) activities that are performed with the voice control interfaces and their frequency of use while driving and not while driving, (3) factors influencing the usage pattern of voice control interfaces, (4) situational context of use while driving and not while driving (for example using voice control interfaces while alone or with passengers in the car), and (5) how drivers adapt to the voice control interfaces. Respondents will be users and non-users of smartphone and/or in-vehicle voice control interfaces aged 18 years and above, who hold a drivers’ licence and currently drive in Australia. The survey will be in the field for 30 days and distributed via social media and university mailing lists.

3. Results

The results will be discussed in terms of reasons for using voice control interfaces, their context of use and strategies that users employ to correct errors both while driving and not while driving. Finally, the main users of voice control interfaces, activities most frequently performed using the system while driving and not while driving, preferred context of use while driving and not while driving and main barriers to use voice control interfaces will be discussed.

4. Discussion

The findings of the present study will help inform the design of our future experimental work in simulated driving, by (a) identifying important demographic groups that already use voice control devices, or may benefit from their use; (b) highlighting any types of training that may be needed for various groups; and (c) indicating the tasks that are most often performed using voice control interfaces. In our planned driving simulation experiments, drivers will be asked to perform secondary tasks using both visual-manual and speech interfaces while driving in a simulator. Comparison of their driving performances using both interfaces will be used to determine which interface has greater impact on drivers’ performance and safety.
References