

The impact of ‘Do not disturb while driving’ and ‘Android Auto’ on mobile phone use while driving: A mixed-methods approach

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Abstract

Mobile phone distracted driving is a huge concern as this behaviour is constantly evolving and is a major contributor to road trauma rates. Banning hand-held phone use while driving does not always work and can result in the more dangerous behaviour of concealed phone use while driving. Therefore, utilising technology reduce risk is an important area to explore. This study used a mixed methods design to explore drivers’ perceptions, as well as the effectiveness and usability, of applications designed to prevent mobile phone distracted driving.

Background

As mobile phone distracted driving is a largely prevalent behaviour that can result in road trauma, it is necessary to develop countermeasures that are effective in deterring drivers from this behaviour. Currently, in many jurisdictions, bans exist on all hand-held phone functions while driving. However, despite these bans, phone use while driving is on the rise (Huemer et al., 2018). Recently, mobile phone applications designed to reduce distracted driving have been developed in an attempt to further decrease this dangerous behaviour. These applications disable specific phone functions such as text messages, calls and social media while allowing other phone functions such as music and global positioning systems (GPS) (Oviedo-Trespalacios et al., 2019). While these applications have the potential of reducing mobile phone distracted driving, there has been limited research examining the effectiveness of such applications. As such, this study aimed to investigate *i*) the effectiveness and usability of the most popular applications designed to prevent mobile phone distracted driving and *ii*) drivers’ perceptions of these applications.

Method

Participants were recruited for an in-vehicle study that included two questionnaires and three dairies. Depending on their mobile phone, participants were asked to use the ‘Do not disturb while driving’ app for iOS phones or ‘Android Auto’ app for android phones. The questionnaires asked about phone use while driving behaviour, problematic phone use, attention-related driver errors, susceptibility to driver distraction, and workload. Additionally, the diary entries included information about their experiences using the application while driving.

Results

In total, 40 participants completed the study. Participants were aged between 18 and 56 years and consisted of 24 females. On average, participants drove 13.56 hours during the study. The results of the questionnaire are presented in Figure 1.

For the qualitative results, an inductive thematic analysis was used to analyse the data. Positive experiences with the application were related to automatic activation, the application working as it was supposed to and the application allowing the desired music and GPS functions while driving. Meanwhile, negative experiences were associated with manual activation, malfunctions, difficulty in learning how to use the application, and privacy concerns. Participants who experienced difficulties

with the application at the beginning of the study reported more positive experiences with the application after using it for a number of days.

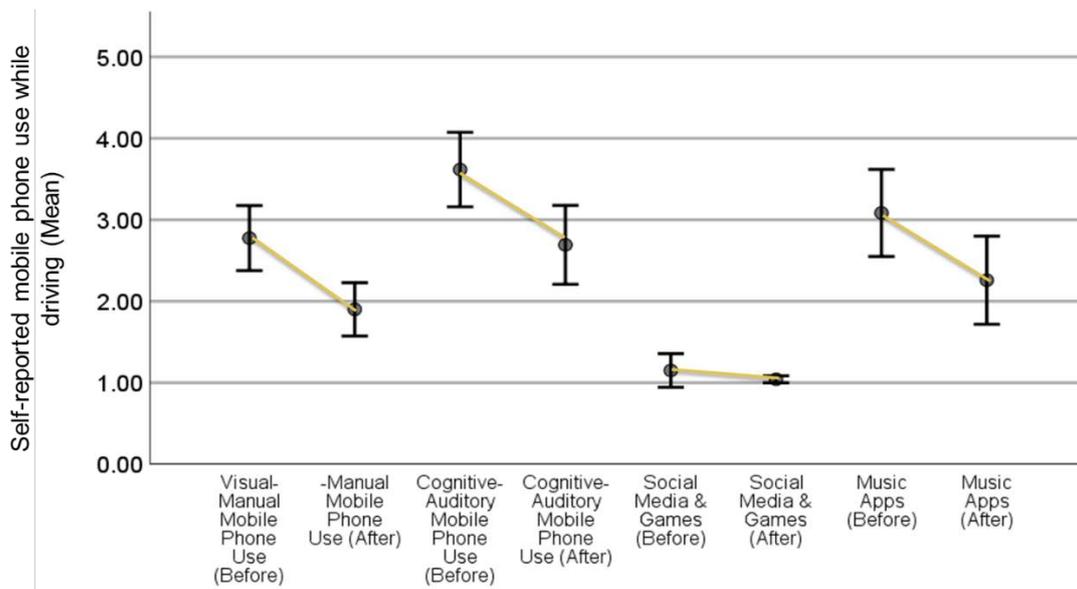


Figure 1. Self-reported mobile phone use before and after using ‘Do not disturb while driving’ or ‘Android Auto’

Conclusion

Overall, the results suggest that applications designed to prevent mobile phone distracted driving can be effective in reducing this behaviour. Particularly, ‘Do not disturb while driving’ or ‘Android Auto’ reduce exposure to visual-manual interactions (e.g., texting and browsing) which have been found to increase the risk of crash among motorists (Oviedo-Trespalcacios et al., 2016, 2018). However, it was identified via the diary entries that they need further development for participants to use them regularly. As these types of applications are voluntary, improving them is important to encourage their use, with the ultimate aim of reducing the road trauma rate relating to mobile phone distracted driving.

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