DO DIFFERENCES IN PERSONALITY TRAITS AFFECT HOW DRIVERS EXPERIENCE MUSIC AT DIFFERENT INTENSITIES?

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ABSTRACT

Various researchers have investigated contributing factors towards the number of acute traffic incidences in and around Southern Africa. Some of these contributing factors include: the skills component of the driver predominately attributed to driving experience as well as the behavioural component influenced by the driver's natural predisposition, individual differences and personality traits. In order to manage these factors drivers have developed varying coping mechanisms. One of these coping mechanisms is listening to music while driving, which is readily available in most cars and extensively used predominately during long duration driving. Listening to music neither increases one's driving duration (as opposed to taking several breaks), nor does it interfere with the physical movements of driving (in the manner that eating and drinking may), but it might impact the concentration and attention of some drivers. This is based on the notion that music is assumed to impact arousal and cognitive ability. While there are several studies on the effect of music on driving performance and personality traits very few studies have looked at whether music has a positive or negative effect on driving performance based on differences in personality traits; and whether the extent of this effect might differ for different intensities of music? Consequently, this study aims to understand and determine the extent to which different personality traits predict the effect that listening to different music intensities has on driving performance. The impact of differing music conditions on the different personality traits used a repeated measures design and a between group design with respect to the personality traits with a sample size of (n=25)-16 females and 9 males- and their ages ranged between 19-35 years of age. The average age and standard deviation for this sample size was 22 years±2. A low-fidelity driving simulator task was utilised in order to provide a controllable, repeatable and a safe environment as compared to a real road situation. Personality was assessed using an online Big-Five Inventory scale (extraversion, agreeableness, conscientiousness, neuroticism, openness). All the different personality groups completed three conditions (45 minutes each) in a randomised order (without music, moderately loud music and loud music). Psychophysiological parameters i.e. heart rate frequency (HRF), heart rate variability ii (HRV) and eye movements (pupil diameter, eye speeds, fixation duration, blink frequency and blink duration) and driving performance were measured continuously. Subjective performance Multidimensional Driving Style Inventory was measured once-off prior to completion of the testing sessions, whilst the NASA-Task Load Index scale

and Perceived control of participants were assessed after each condition. The expected outcomes revealed that music had an effect on objective driving performance (tracking deviation and reaction time) and psychophysiological measures only for participants of certain personality types while other personality types were unaffected by music. The subjective performance measures did not follow the same trend as objective performance measures. The conditions did not reveal an effect on driving performance, for most of the psychophysiological parameters and subjective measures. There was mainly a significant time on task effect and interactional effects on the psychophysiological measures (physiological and oculomotor) parameters at ($p < 0.05$), but not on the subjective measures as anticipated.

The study illustrated that the there are differences between personality traits. There was difficulty in the interpretation of the results based on the complexity of the findings for which each hypothesis was partially accepted. The research may establish practical implications for traffic safety campaigns in South Africa, as well as influence driving education for citizens. Assessing the personality trait would help to form an understanding as to which of the personality traits might be affected negatively from listening to music while driving and those that might benefit. Moreover, this study may assist motorists in understanding the implications of listening to music while driving as this may sometimes elicit risky driving behaviour and possibly cause an accident that may result in death.