

How does Inattentive Deafness and Auditory Exclusion impact on Urgent Duty Driving of Heavy Vehicles in Emergency Services?

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Abstract

Driving Emergency Response Vehicles under operational conditions can be stressful and particularly so when responding to a time critical emergency situation. Auditory Exclusion (AEX) and Inattentive Deafness (ID) are both characterised by a temporary loss of hearing that occurs when highly stressed or during high levels of cognitive load. Driving an emergency response vehicle under operational conditions could increase the likelihood that AEX and ID could occur which has implications for road safety. The intent of this research is to investigate the phenomena of AEX and ID in emergency services when driving under operational conditions.

Introduction

Driving of an Emergency Response Vehicle (ERV) is a necessary part of emergency services for operational response, however, this becomes significantly more demanding when there is a need to travel at speed as well as receive directions from within the cabin from crews and operate communication equipment. There is also an expectation from the public that driving behaviour should be of a standard above the expected norm for ordinary drivers.

Current research into ERV driving is limited in its range. The majority of research into ERVs has focused on identifying characteristics of ERV crashes such as: crash types, timing and location of crash and fatality numbers (Fahy, 2008; Symmons, Haworth, & Mulvihill, 2005); the risks associated with driving of ERVs (Gormley, Walsh, & Fuller, 2007); and the impacts on injuries and fatalities of ERV occupant seating position, restraint use and vehicle response status (Becker, Zaloshnja, Levick, Li, & Miller, 2003). Thus, there is a notable paucity in evaluation of actions of the driver in an operational response immediately prior to any road incident, and the role of training in shaping driver actions.

Auditory Exclusion and Inattentive Deafness

Auditory Exclusion (AEX) has been defined as a form of temporary loss of hearing occurring under high stress. As such, it is related to the phenomena of tunnel vision and "the slowing of time in the mind" (Lindsey, 1999). Inattentive Deafness (ID) is defined as a transient deafness to normal environmental sounds, such as speech, when the individual's attention is highly focused on a visual task (Giraudet, St-Louis, Scannella, & Causse, 2015; Raveh & Lavie, 2015). A critical factor for experiencing ID is the level of cognitive load on visual attention and processing (Macdonald & Lavie, 2011).

Given the stressful demands ERV drivers encounter when driving under operational conditions, the occurrence of AEX or ID would potentially have serious consequences, given that there is already an inherent increased crash risk associated with driving in stressful situations (Gormley, et al., 2007). Moreover, the additional driving demands placed on ERV drivers travelling at speed, while simultaneously operating communication equipment and receiving directions from within the cabin from crews, can further increase both the stress of the ERV driver and the cognitive load.

To date the majority of research into AEX and ID has been conducted in work environments other than ERV driving. AEX has predominately been explored with law enforcement officers and soldiers. The majority of empirical literature on ID has been performed in the the air industry, particularly among Air Traffic Controllers (Causse, Imbert, Giraudet, Jouffrais, & Tremblay, 2016; Dehais et al., 2012; Dehais et al., 2014; Giraudet, Imbert, Tremblay, & Causse, 2015). Thus, there is a significant gap in the literature with regard to ERV drivers and their experiences with AEX and ID. This omission has acquired greater significance with the introduction of the *Work Health and Safety and Other Legislation Amendment Bill 2017* into Queensland Legislation in October 2017, which has placed increased responsibility on organisations to address work-related road safety and therefore has implications for emergency services.

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