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The antecedents, experience, and coping strategies of driver boredom in young adult males

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ABSTRACT

Introduction: Road crash statistics are evidence of the severe consequences resulting from human error, especially among young adult males. Drivers perform best and safest when they are adequately engaged in the driving task. Boredom and a lack of engagement in the driving task may cause risk taking and phone use. However, the antecedents to driver boredom, the subjective experience itself, as well as the coping strategies to combat boredom are not well understood. The aim of this study was to investigate these aspects. *Method:* We carried out a qualitative study in a simulated, safe, yet highly immersive driving environment. The 24 participants included male drivers aged 18 to 25 susceptible to risky driving and phone use. A phenomenological framework was used to analyze their accounts of the experience of boredom while driving. *Results:* Results indicate that situations giving rise to driver boredom include low traffic, slow or constant speed, and routine drives. Feelings comprising the experience were frustration, vigilance, relaxing, autopilot, mind wandering, and discomfort. Coping mechanisms manifest themselves in approach strategies related to the driving task such as speeding, which are often dangerous, and avoidance strategies, which include phone use. *Conclusions:* We conclude that driver boredom bears similarities to the experience of boredom at work (unlike boredom at home) due to the situational constraints, where people feel stuck, trapped, or obliged to remain vigilant. *Practical applications:* The findings present an opportunity for the road safety and automotive technology community to address the issue of under-stimulation through safety interventions aimed at task engagement. Our work can also aid in investigating driver experiences in partially automated driving, which is likely to induce boredom as well.

1. Introduction

According to the World Health Organisation (2013), more than one million people die annually in road accidents worldwide, and another twenty to fifty million are injured. Young drivers aged 17 to 24 account for the most fatalities (Qld Gov, 2015). Among those, males are three times as likely to be killed in a car crash as females. One of the underlying factors is that young people and especially young males typically score high in sensation seeking behaviors (Zuckerman, Eysenck, & Eysenck, 1978). Perhaps lesser known is the following: (a) Young males are also more prone to feeling bored (Drory, 1982); (b) boredom proneness is a stable rather than transient personality trait (Harvey, Heslop, & Thorpe, 2011), and; (c) sensation seeking and boredom proneness are directly correlated (Zuckerman, 1994). A lack of stimulation while driving can lead particularly young drivers to feeling bored. This uncomfortable state may then trigger the seeking of sensations (e.g., speeding) or distractions (e.g., phone use), which in turn can lead to accidents (Fuller, 2005). However, driver boredom is not well understood, especially among this group of drivers most at risk.

The *aim* of this study is to investigate the phenomenon of driver boredom in young male adults. To address the research aim, we sought to answer the following research questions. They built upon the work by Martin, Sadlo, and Stew (2006) on boredom in general (all demographics and contexts).

RQ1: What are antecedents to driver boredom? (see Section 5.1).
RQ2: What is the subjective experience of driver boredom? (see Section 5.2).
RQ3: What are coping strategies to combat driver boredom? (see Section 5.3).

Our contribution is twofold. First, we propose an approach for investigating state boredom in the driving context without interrupting the

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experience. Second, we present empirical data from a study with 24 young male drivers and discussing them.

2. Related work

2.1. Defining boredom

One definition of boredom categorizes it as "the aversive experience of having an unfulfilled desire to be engaged in satisfying activity" (Fahlman et al., 2013). The feeling associated with this experience is perceived as negative and uncomfortable, resulting in the individual's desire to alleviate the adverse feeling. Boredom has been further broken down into components of arousal, stimulation, engagement, and attention. It is important to define and describe these terms in order to understand how they relate to boredom.

Arousal is a state of physiological reactivity ranging from low to high and can be operationalized as an individual's degree of alertness or excitement. For example, extreme drowsiness would occur in a state of low arousal, and extreme wakefulness would occur in a state of high arousal (Duffy, 1962; Freeman et al., 2004; Humphreys & Revelle, 1984). Arousal is characterized by a physiological response, such as changes in heart rate and heart rate variability, skin conductance, body temperature, respiration, cortisol levels, pupil dilation, or cortical activity. Measurements of these physiological responses can provide us with information about an individual's state of arousal (Merrifield & Danckert, 2014). Boredom is typically thought to occur in a state of low arousal. However, research has shown that boredom can occur in states of both low and high arousal (Goetz et al., 2013).

Boredom has also been described in terms of stimulation, or rather a "lack of stimulation" (Fenichel, 1951) and being "actively looking for stimulation" (Eastwood et al., 2012). Individuals seek out stimulation in order to increase arousal and avoid boredom (Apter, 1982; Csikszentmihalyi, 2002). Stimulation can be both external and internal. External stimulation comes from changes in the environment, and internal stimulation comes from thoughts or affect (Bench & Lench, 2013). For example, the use of technology may have decreased our tolerance to boredom by increasing our exposure to stimuli, even to the point of constant stimulation, such that, when stimulation levels drop below what has become "normal," we become bored (Eastwood et al., 2012; Oulasvirta et al., 2011).

Engagement has been defined as the quantity and quality of mental resources directed at an object or task. It requires effortful commitment to task goals (Fairclough et al., n.d.; Miller, 2015). Research has shown that a lack of engagement is related to boredom. For example, Farmer and Sundberg (1986) contend that boredom is maintained by "disconnectedness," or lack of engagement, with one's environment.

Attention has also been found to be important in the experience of boredom. Attention is allocated to certain tasks or objects in the environment and is limited so that only a few things can capture and hold attention at once. Attention can be allocated voluntarily, when we decide to pay attention to something, or it can be captured automatically by something in the environment. Further, when attention is misallocated, such that it disrupts adequate engagement in the current task, it can lead to boredom (Eastwood et al., 2012).

2.2. Distinguishing between trait and state boredom

Boredom can be further broken down into trait boredom and state boredom. Trait boredom is thought to be a chronic propensity to boredom due to certain characteristics of the individual (Ng et al., 2015), and state boredom is the experience of boredom itself (Todman, 2013).

Trait boredom varies between individuals depending on how vulnerable they are to boredom (Ng et al., 2015). This vulnerability may be related to the ability to self-regulate attention (Fisherl, 1993). Consequently, boredom-vulnerable individuals tend to become bored across a variety of situations. This suggests that it may not be a situation that is boring, per se, but that an individual can be especially susceptible to becoming bored independent of the environment (Mercer-Lynn, Bar, & Eastwood, 2014). Alternatively, a boredom prone individual rating high in trait boredom may have particularly strong, negative reactions to boring situations (Mercer-Lynn et al., 2014). As mentioned in the introduction, young males tend to score highly on trait boredom measures (Drory, 1982), which is indicative of their natural propensity to experiencing boredom (Harvey et al., 2011).

State boredom is the actual experience of boredom in a particular moment (Todman, 2013). It has been suggested that the interaction between situation and person is an antecedent to boredom (Mercer-Lynn et al., 2014). Arousal theories propose that when an individual's optimal level of arousal is not met by environmental stimulation, the individual becomes bored (e.g., Csikszentmihalyi & LeFevre, 1989). In this case, it is characteristics of both the individual and the environment combined that produce the experience of boredom (Mercer-Lynn et al., 2014). The experience itself can differ across individuals and contexts (cf. Section 2.3).

People typically cope with boredom using two strategies, as characterized by Nett, Goetz, and Daniels (2010): approach or avoidance. Approach strategies are related to the task at hand, with individuals seeking additional stimulation within the primary task. Activities related to a secondary task typify avoidance strategies.

2.3. Boredom phenomenon in different contexts

2.3.1. Work

Boredom at work is usually thought of in the context of repetitive, undemanding jobs. While this type of work environment is a common antecedent to boredom (Martin et al., 2006), Caplan et al. (1975) surveyed individuals from 23 different occupations and found that boredom arose in a variety of work environments. A stronger underlying factor of work boredom seems to be disinterest in or lack of motivation for the task at hand. For example, Martin et al. (2006) found that people were bored when they were engaged in an activity out of a sense of duty, when the main focus was the obligation to earn a living, when the environment was uninspiring, or the work was repetitive and unchallenging. Additionally, boredom could be due to attentional difficulties and the need for sustained attention, which could be exasperated by interruptions, both external and internal (Fisher, 1998).

The experience of boredom at work was characterized by feelings of being trapped, frustration, stress, tiredness, also an inability to concentrate, the perception that time passes slowly, feeling sorry for oneself, and even depression in extreme cases (Martin et al., 2006). Boredom is correlated with increased job dissatisfaction. Other consequences include on-the-job accidents, performance decrements, and high employee turnover (Fisherl, 1993). Jobs that seem to avoid the pitfalls of boredom tend to require attention, but also provide optimal stimulation through variety, challenge, and feedback (Hackman & Oldham, 1980). Additionally, jobs in which both the requirements and the individual's capabilities are optimally high and equally matched can create an ideal environment for work productivity and employee satisfaction (Csikszentmihalyi & LeFevre, 1989).

Employees tend to cope with work boredom by taking frequent breaks, getting something to eat, or talking with colleagues (Fisherl, 1993) or surfing the internet (Vitak, Crouse, & LaRose, 2011).

2.3.2. Home

While not as researched as boredom at work, boredom at home or during leisure time also appears to be a prevalent phenomenon (Martin et al., 2006). Frequent antecedents to becoming bored at home are being alone, being tired, having too much unstructured time, being unable to find an activity to engage in, or when an activity is unable to keep their attention for any period of time (Iso-Ahola & Weissinger, 1990; Martin et al., 2006).

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