



The dangers of rumination on the road: Predictors of risky driving



Kyle A. Suhr*, Chris S. Dula

Department of Psychology, East Tennessee State University, United States

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ABSTRACT

Past studies found many different types of factors can influence dangerous driving behaviors. Driver inattention, such as driving under the influence or using a cell phone while driving, was found to contribute to risky driving behaviors. Rumination is a cognitive process that may also contribute to risky driving behaviors due to its influence on attention and limited executive processes. The present study explores the potential role of rumination in dangerous driving behavior endorsement. It was hypothesized that trait rumination would be significantly related to dangerous driving behaviors and that this relationship would be conditional to the sex of the participant. Six-hundred and fifty-three Southeastern university students were recruited to participate and asked to complete multiple questionnaires measuring anger rumination, thought content, driving anger, and dangerous driving behaviors. It was demonstrated that self-reported risky driving behaviors significantly predicted dangerous driving behavior endorsement on the Dula Dangerous Driving Index. Trait rumination scores were found to predict self-reported dangerous driving, aggressive driving, and risky driving behaviors as well as trait driving anger scores. However, no conditional effects based on the sex of the participant were found. It appeared males and females were equally likely to report dangerous driving behaviors, driving anger thoughts, and trait anger rumination. Findings from the current study may assist in understanding how cognitive processes influence different driving behaviors and help develop methods to re-direct attention to safe driving behaviors, and conversely away from ruminative thoughts that increase the likelihood of dangerous driving.

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1. Introduction

Driving is a complex, cognitive-behavioral task that many individuals engage in virtually every day. In the United States alone, motor vehicle crashes (MVCs) are one of the leading causes of death for ages 1–44 (Centers for Disease Control and Prevention, 2014). According to the most recent estimates published by the National Highway Traffic Safety Administration, approximately 30,000 deaths and 2 million serious injuries resulted from MVCs in 2012 and in 2010 annual crash-related costs were approximately \$242 billion in damages with an estimated \$836 billion in total societal harm (Blincoe et al., 2010; Centers for Disease Control and Prevention, 2014; National Highway Traffic Safety Administration, 2013). Arguably, many negative driving-related outcomes are preventable, as unsafe behavior is the primary cause, and is theoretically modifiable.

“Dangerous driving” was a term developed by Dula and Ballard (2003), who created a self-report measure of one’s likelihood to drive dangerously (Dula Dangerous Driving Index; 3DI). The term was meant to clarify the literature, which to that point had been disjointed with many researchers using the same labels (e.g., aggressive driving), with very different operational definitions. Three types of categories were identified and supported by subsequent research: aggressive driving, negative cognitive-emotional driving, and risky driving (e.g., Dula and Ballard, 2003; Dula and Geller, 2003).

Aggressive driving is characterized by intentional behaviors toward other drivers, passengers, or pedestrians with the intent to cause bodily or psychological harm. Negative cognitive-emotional driving is characterized by negative thoughts and emotions experienced while driving, such as frustration, anger and rage, sadness, dejection, or jealousy. Risky driving is characterized by dangerous behaviors engaged in without an intent to harm self or others, but which heightened crash-risk (e.g., speeding, general tailgating, running red lights, weaving through traffic, maneuvering without a signal). In addition, risky driving may also include lapses in attention while driving related to off-task behaviors, such as cell phone usage, attending to one’s appearance, or eating or drinking.

* Corresponding author at: Department of Psychology, P.O. Box 70300, Johnson City, TN 37614, United States.

E-mail address: suhrka@goldmail.etsu.edu (K.A. Suhr).

While the then-popular term ‘road rage’ might well include factors from all three categories, risky driving behaviors are often engaged in without the presence of negative emotions or intent to harm (Dula and Ballard, 2003; Dula and Geller, 2003). Likewise, many people experience negative emotions while driving, which may distract them from safe driving, without engaging in behaviors intended to harm others or which are overtly risky. Distinguishing these types of dangerous driving from intentionally aggressive driving behaviors is important to better understand various types of propensity for causing MVCs.

One of the major contributors to risky or negative emotional driving may be related to distraction or driver inattention. Distracted driving occurs when a driver’s attention is diverted away from relevant tasks (e.g., watching the road). As with dangerous driving, driver distraction and driver inattention are equally diverse in their definitions in the literature (Regan et al., 2011). In their review, Regan et al. (2011) found that driver distraction is generally characterized by four key elements: “diversion of attention away from driving, or safe driving”; “attention is diverted toward a competing activity, inside or outside the vehicle, which may or may not be driving-related”; the competing activity may compel or induce the driver to divert attention toward it”; and “there is an implicit, or explicit, assumption that safe driving is adversely effected” (p. 1772).

In contrast, driver inattention is defined as “insufficient, or no attention, to activities critical for safe driving” (Regan et al., 2011, p. 1775). Five different subcategories encompass driver inattention, based on how inattention develops including driver restricted attention, driver misprioritized attention, driver neglect attention, driver cursory attention, and driver diverted attention. In addition, driver diverted attention occurs when an individual’s attention is diverted away from safe driving activities and toward a competing activity and further differentiated into driving and non-driving related categories. Non-driving-related driving inattention is described as diverted attention to internalized mental activities (i.e., internalized thoughts and daydreams).

In 2012, 16% of reported MVCs, 10% of fatal crashes, and 18% of injury crashes were reportedly distraction-affected (U.S. Department of Transportation, 2014). One common form of distraction known to be dangerous and resulted in 12% of motor-vehicle fatalities and 7% of motor-vehicle injuries in 2012, was using a cell phone while driving including texting, using applications or the internet, or holding conversations with or without hand-free devices (U.S. Department of Transportation, 2014). Inattention from cell phone usage was found to be potentially even more dangerous than driving while intoxicated at a blood-alcohol-content of 0.08% indicating a need for more research on factors contributing to driver inattention and dangerous driving behaviors (Strayer et al., 2006). Strayer et al. (2006) found differences in the types of errors drivers made in the two conditions (distracted versus alcohol). More specifically, they found that drivers using a cell phone tended to exhibit a delayed response to events in the driving scenarios and had a higher likelihood of being involved in a traffic accident, whereas drivers under the influence of alcohol tended to exhibit a more aggressive driving style and more likely to follow closer to vehicles in front of them, necessitating using more forceful braking patterns. A more recent simulation study found that participants who received an emotionally-provoking phone call while driving engaged in significantly more dangerous driving behaviors than participants in mundane (non-emotional) phone call or no-call groups (Dula et al., 2011).

Attention, along with self-control, is believed to be a limited, but renewable, resource that may be depleted (e.g., Baumeister et al., 2007; Wickens, 1980). Another source of inattention that is lacking in driving research is related to cognitive processes, such as rumination, though no study was found that directly looks at rumination

and risky driving per se. Rumination is a cognitive process in which an individual repetitively and passively focuses on symptoms of distress or possible causes/consequences of these symptoms following a distressing situation (Nolen-Hoeksema et al., 2008).

Rumination was proposed to exacerbate emotional responses, such as anger or depression (e.g., Nolen-Hoeksema et al., 2008). Considered to be pervasive and stable across situations, different types of rumination were identified, such as anger rumination or depressive rumination (e.g., Peled and Moretti, 2010; Sukhodolsky et al., 2001). Anger rumination was found to be related to trait physical and verbal aggression and hostility (Anestis et al., 2009). Rumination related to anger is believed to recruit three self-regulatory processes: management of anger intensity after anger experiences, suppression of angry thoughts, or inhibition of urges toward aggressive impulses (Slotter and Finkel, 2011). These self-regulatory processes were found to consume self-control resources, increasing the chance of behaving in aggressive ways (Baumeister et al., 2007; Hagger et al., 2010). In driving situations, anger rumination was found to partially mediate driving anger and aggressive driving behaviors (Suhr and Nesbit, 2013).

Suhr and Nesbit (2013) found that participants in a rumination condition were more likely to report driving anger and intent to engage in aggressive driving behaviors compared to those asked to focus their attention on non-emotional stimuli in a distraction condition. Participants in the Suhr and Nesbit study were instructed in both conditions to focus on internalized mental activities with specific content (all of which was non-driving related). More specifically, participants in the rumination condition were instructed to focus on their current emotional reactions (with no explicit mention of anger responding or driving-related emotions/thoughts, such as ‘focus on the way you feel inside’), while participants in the distraction condition were instructed to focus on external, non-emotional content (e.g., ‘think about the shape of a large umbrella’). These specific tasks were useful in providing some evidence that rumination may play a role in driving situations; however, it was specific to only aggressive driving behaviors. Rumination appears to share many qualities with driver inattention, such that rumination is an internalized mental process that may impact other types of driving behaviors by diverting attention away from safe driving behaviors.

Multiple studies reported sex differences related to rumination (e.g., Nolen-Hoeksema et al., 1994). Nolen-Hoeksema et al. (1994) found that after the loss of a family member, women tended to report more depressive symptoms and more likely to ruminate than men. Related to this issue, Rosenblatt (2004) suggested ‘grieving while driving’ was a particularly risky experience. Other studies supported similar preferences for rumination, where women tend to adopt more ruminative response styles (e.g., Watkins, 2008); however, this sex difference is not found across all emotional responding. For example, Rusting and Nolen-Hoeksema (1998) suggested men tended to equally choose rumination and distraction tasks after anger provocation, as compared to women.

Support for sex differences in driving situations was mixed. Lonczak et al. (2007) reported significant sex differences in dangerous driving behaviors. For example, they found males tended to report more traffic citations with injuries, while females tended to have stronger positive correlations between drinking frequency and driving anger and stronger negative correlations between number of drinks consumed and driving anger. Dula and colleagues stated males tend to report more aggressive, risky, and angry driving, while no sex differences were found for dangerous and negative emotional driving (Dula, 2003; Dula and Ballard, 2003). Another study found similar mixed results, where males scored higher on Risky Driving subscale of the Dula Dangerous Driving Index and no significant differences were found for Negative Cognitive/Emotional Driving subscale (Willemssen et al., 2008). A

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