



Associations between self-reported mindfulness, driving anger and aggressive driving



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ARTICLE INFO

Article history:

Received 13 December 2017

Accepted 12 April 2018

Keywords:

Mindfulness

Driving

Driving anger

Aggressive driving

Road safety

ABSTRACT

Anger and aggression on the roads is associated with how drivers evaluate the driving situation and the behaviour of other drivers. Consequently, both can be exacerbated when these evaluations are made superficially and/or when drivers have pre-existing negative schemas regarding certain types of road situations or users. Mindfulness is likely to have negative associations with anger and aggression because it promotes opposing appraisals. That is, it encourages emotion-regulation and involves acceptance of, but not reaction to, the current situation. To examine these associations, a total of 309 drivers responded to an online questionnaire assessing mindfulness, driving anger and aggressive driving. The results showed that mindfulness shared negative relationships with driving anger and self-reported aggressive driving. However, when these relationships were examined simultaneously using Structural Equation Modelling, mindfulness was found to relate only to anger and this, in turn, predicted aggressive driving. Further analysis showed that driving anger mediates the relationship between mindfulness and aggressive driving. These results suggest that mindfulness training may provide a promising intervention for drivers prone to driving anger and subsequent aggression.

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1. Introduction

Anger is likely in situations where one's goal is blocked and there is another individual who is perceived to have illegitimately caused this (Berkowitz, 1993). Coupled with this, angry individuals tend to have a more heuristic processing style, meaning the assessment of the circumstance may be more superficial and based on pre-existing stereotypes or mood, rather than the current circumstances themselves (Lerner & Keltner, 2001).

Research into driving anger has also shown that when angry, drivers make superficial assessments of the driving situation and may have pre-existing cognitions regarding some, if not all, other road users. For example, driving simulator studies have shown that anger provoked during one drive can influence the level of anger and how a driver responds to hazards in a subsequent drive (Stephens & Groeger, 2011). Further, drivers have also been found to respond differently to impediments according to who is impeding them, rather than why they are being impeded (Stephens & Groeger, 2014). Indeed, drivers tend to hold an inflated positive view of their own driving in comparison to other drivers (Groeger & Grande,

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1996) and this is likely to influence the judgements they make of other road users and predispose drivers to allocate blame to drivers for situations that may be out of their control.

Situations that are found to be the most anger provoking for drivers are consequently those that allow drivers to blame other road users directly. For example, Deffenbacher, Oetting, and Lynch (1994) created the trait Driving Anger Scale (DAS) that assesses a driver's tendency to become angry across six types of driving situations. These include assessments of other drivers' slow driving, hostility, illegal driving, discourtesy as well as police presence and general impediment. The majority of research using this scale has shown that a perceived discourtesy from others frequently elicits the highest level of driver anger. This can be another driver driving too closely, a driver cutting in front or a driver stealing a car park. Further, anger prone drivers (as determined by DAS scores) tend to incorporate more judgemental and hostile assessments of the driving situation and other road users (Deffenbacher, Petrilli, Lynch, Oetting, & Swaim, 2003) and are more likely to assess relatively benign situations as being anger provoking (Stephens & Groeger, 2009).

Anger prone drivers are also more likely to express their anger aggressively (Deffenbacher, Lynch, Oetting, & Swaim, 2002). This can occur on a continuum from sounding the horn when angry to chasing another driver with the intention of retribution. While research into driving anger has advanced considerably in the past couple of decades (Deffenbacher, Stephens, & Sullman, 2016), less focus has been paid toward understanding how to alleviate anger and aggression on the roads. Given the large role cognitive appraisals play in the anger-aggression relationship, interventions that promote less hostile thought processes pose a promising approach. Mindfulness, as a form of attention-regulation and metacognitive awareness, may help drivers to adopt a more adaptive, and less angry or aggressive, focus while driving.

Mindfulness is the practice of increased awareness and attention to the current moment (Bishop et al., 2004). It is defined as a form of cognitive awareness where individuals are encouraged to attend to cognitive, emotional and physical reactions to the present circumstance and be open and non-judgemental toward the current experience. For example, a person feeling anxious may recognise physical signs and shift their focus onto their breathing, acknowledging associated thoughts about the situation but mentally training himself or herself to not react to these thoughts. In this form of metacognition, an individual can work to reduce their level of anxiety. Mindfulness can be thought of as an emotion regulation strategy that promotes acceptance of the situation but not reacting to associated negative emotions or arousals (Chambers, Gullone, & Allen, 2009). For this reason, mindfulness has been used across a number of therapeutic interventions, such as but not limited to, the treatment of depression, anxiety and chronic pain (see Baer, 2003; Keng, Smoski, & Robins, 2011, for a review), which are increasingly being conceptualised as disorders of emotion regulation (Chambers et al., 2009).

Outside of the driving context mindfulness interventions have been shown to be effective in reducing anger by changing the evaluation processes individuals make, either through the anger-trigger or the appraisals related to the experience of and reaction to anger (Heppner et al., 2008; Wright, Day, & Howells, 2009). Indeed, mindfulness requires individuals to focus solely on the present and not react to any pre-existing negative schemas or past experiences that might encourage hostility. Research has shown that mindfulness has a negative relationship with anger, as well as anger rumination (Borders, Earleywine, & Jajodia, 2010) and ego involvement (Heppner et al., 2008); it is often these that exacerbate anger experience and expression, particularly in the driving environment. Mindful interventions have also been shown to down regulate sympathetic nervous system activation and amygdala activity (Murakami et al., 2015), both of which are prominent in anger and aggression.

In a recent review of the literature, Fix and Fix (2013) found strong support for mindfulness as an intervention for aggression. Further, when mindfulness is divided into various components, the non-judgemental element has shown the strongest relationships with reduced aggressive tendencies (Peters et al., 2015). Therefore, removing the blame aspect of the situation, as well as the hostile thought processes that are commonly linked with an anger provoking situation, is likely to alleviate the anger and subsequent aggressive responses within the driving context.

To date, research into associations with mindfulness and driving behaviour has focussed primarily around improving driver distraction. For example, Kass, VanWormer, Mikulas, Legan, and Bumgarner (2011) conducted a small driving simulator study and found that, when compared to drivers who had not, drivers who had undergone mindfulness training exhibited greater situational awareness of the driving environment and fewer simulated crashes. Trait mindfulness has also been associated with less frequent texting while driving in young drivers (Feldman, Greeson, Renna, & Robbins-Monteith, 2011). Interestingly, Feldman and colleagues found that this relationship was mediated by emotion-regulation abilities, whereby drivers used texting as a way to reduce negative emotions; demonstrating a clear link between driver affect and distraction.

There is some evidence from driving studies to show that changing the focus of the driver would reduce driving anger and subsequent driving aggression. In a series of simulator based studies, Stephens and Groeger (2009) found that asking drivers to focus on different elements of the driving task influenced how drivers behaved. In comparison to drivers focussing on frustrating and anger-provoking elements of the driving situation, drivers asked to rate the danger and difficulty of the situation drove in a more cautious manner. Deffenbacher et al. (2003) have also shown that drivers who have more adaptive thought processes report less anger across a variety of situations and are more likely to respond to anger in an adaptive manner. These adaptive responses are largely focussed around incorporating positive thought processes to reduce anger; e.g. "I tell myself not to worry about it". More broadly, rumination tendencies have also been associated with higher levels of driving anger and aggression (Suhr & Nesbit, 2013). Mindfulness helps to reduce rumination and default mental activity both of which are common in anger and poor emotional regulation.

Specific to mindfulness in driving, Kazemeini, Ghanbari-e-Hashem-Abadi, and Safarzadeh (2013) examined the influence of a mindfulness intervention in a sample of male taxi drivers in Iran. They found that participation in a mindfulness course

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