



A comparison of the Driving Anger Scale and the Propensity for Angry Driving Scale



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ABSTRACT

The present study investigated the factor structures of the 14-item version of the DAS (Driving Anger Scale) and the Propensity for Angry Driving Scale (PADS) using a sample of New Zealand drivers drawn from the general population. The two scales were also investigated with regards to their relationships with general trait anger, risky driving behaviour, along with crash involvement and a variety of crash-related conditions. Confirmatory Factor Analysis supported both scales as unidimensional, although the PADS was reduced from a 19-item to an 18-item scale. Both the PADS and DAS were significantly related to trait anger, risky driving behaviour and near-misses. However, once the influence of the demographic variables and trait anger had been partialled out, the addition of the PADS and DAS made a significant contribution to predicting violations, but it was only the PADS which was significant. In contrast, after the demographic variables and trait anger had been partialled out, the addition of the DAS and PADS again made a significant contribution to the prediction of near-misses, but this time it was only the DAS which made a significant contribution. The present study clearly shows that both scales are robust measures, measuring similar, but slightly different aspects of driving anger.

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1. Introduction

Driving evokes a wide range of emotions in people, including joy, frustration, anxiety, fear and anger. Anger is one of the emotions which has become increasingly researched over the last ten years, with one of the reasons for this being the fact that it is relatively common to experience anger while driving (Deffenbacher et al., 2002b). Furthermore, a number of studies have found that angry drivers engage more often in aggressive and dangerous driving behaviours (Dahlen et al., 2005; Deffenbacher et al., 1994; Stephens and Groeger, 2011; Sullman et al., 2013). In fact, Dahlen and Ragan (2004) went so far as to state that driving anger is one of the most influential predictors of aggressive and risky driving behaviour. Research has also found driving anger to be significantly related to near-misses (Underwood et al., 1999), slower reaction times to potential hazards (Stephens and Groeger, 2011; Stephens et al., 2013) and crash related conditions, such as loss of concentration, losing control of the vehicle and crash involvement (Deffenbacher et al., 2001, 2003; Sullman et al., 2007).

There are a number of ways in which driving anger can be measured, with two such scales being the Driving Anger Scale (DAS;

Deffenbacher et al., 1994) and the Propensity for Angry Driving Scale (PADS; DePasquale et al., 2001). In addition there are two versions of the DAS, a short fourteen item unidimensional measure and a longer thirty three item multidimensional measure. The short version of the DAS presents fourteen different situations and asks the responding driver to report the degree of anger that each situation makes them feel. In contrast, the PADS, which is a nineteen item scale, presents situations that are likely to evoke anger and then asks the respondent to indicate how they would respond by selecting one of four potential responses. These range from mild reactions, such as slowing down, to more extreme responses, such as ramming the other car.

The DAS and PADS have both been found to have good psychometric properties. Research has shown the DAS to have good internal reliability, with alpha coefficients ranging from 0.80 to 0.92 (Deffenbacher et al., 1994, 2002a). The alpha coefficients for the PADS have also been good, ranging from 0.85 to 0.89 (Dahlen and Ragan, 2004; DePasquale et al., 2001). Convergent validity and discriminant validity for the PADS has been displayed through relationships with trait anger and hostility (DePasquale et al., 2001), while the validity of the DAS has also been shown through correlations with the Trait Anger Scale (Deffenbacher et al., 1994; Villieux and Delhomme, 2007). Moreover, the test–retest reliability of both scales has also been shown to be high. The PADS has been found to have four-week test–retest reliability of 0.91

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(DePasquale et al., 2001), while the DAS has been shown to have ten-week test–retest reliability of 0.84 (Deffenbacher et al., 2002a).

As would be expected, both scales seem to have similar relationships with descriptive variables (e.g., age and gender), as well as driving behaviours and crash related conditions. For example in the two studies which have used the original nineteen item version of the PADS neither reported any age differences (Dahlen and Ragan, 2004; DePasquale et al., 2001) and only DePasquale et al. (2001) reported a gender difference. Although some research has found females score more highly on the shortened version of the DAS (Dahlen and Ragan, 2004) most research has found no gender differences (e.g. Dahlen et al., 2005; Deffenbacher et al., 1994).

Also in contrast to the research using the multidimensional version of the DAS (e.g. Lajunen et al., 1998; Sullman, 2006) no age differences were reported in the studies using the shortened version of the scale (Dahlen and Ragan, 2004; Dahlen et al., 2005; Deffenbacher et al., 1994). However, it should be noted that the studies using the short DAS have all used samples with very narrow age ranges, whereas the two studies (mentioned above) using the longer version of the scale used samples from the general population with much broader age ranges.

The DAS has also been found to be related to aggressive and risky driving behaviour (Dahlen et al., 2005; Deffenbacher et al., 2001, 2002b) and other crash related conditions, such as; loss of concentration, loss of control and near-misses (Dahlen et al., 2005; Deffenbacher et al., 2001). In addition, although one study found a relationship between the DAS and major crashes (Deffenbacher et al., 2002b), this has not been a common finding. Similarly confusing findings have arisen from the PADS. In an American study the PADS was found to be correlated with both major and minor crashes (Dahlen and Ragan, 2004) and other crash-related conditions, such as loss of control and receiving tickets for violating road rules (Dahlen and Ragan, 2004). In contrast, more recent research using an Australian version of the PADS found no significant relationship with crash involvement (Leal and Pachana, 2008). Furthermore, like the DAS, the PADS has also been found to be significantly related to aggressive and risky driving behaviour (Dahlen and Ragan, 2004).

Although the PADS has been validated five times (DePasquale et al., 2001; Dahlen and Ragan, 2004; Leal and Pachana, 2008, 2009; Maxwell et al., 2005), only two of these studies have used both the DAS and the PADS (Dahlen and Ragan, 2004; Maxwell et al., 2005). Furthermore, one of these two studies (Maxwell et al., 2005) modified the PADS by dropping four of the nineteen items and also used a twenty one item version of the DAS, rather than the fourteen item version. Thus, the findings generated by that study were not comparable. Moreover, as with the British study (Maxwell et al., 2005), the Australian studies also modified the PADS by dropping four items, based upon the results of a factor analysis (Leal and Pachana, 2008, 2009). The only remaining study to compare the two scales relied solely upon psychology undergraduates as participants. This means that the participants were from a very restricted age range (median 19) and were mainly female (75%), calling into question the generalisability of these findings. This concern is highlighted further by the fact that in samples from the general population driving anger has been found to be related to both gender and age (Lajunen et al., 1998; Sullman, 2006). Therefore, it seems important that the PADS be investigated in a broader sample of drivers. The present study was the first to not only investigate the PADS in a broader sample of drivers, but to use the PADS on drivers in New Zealand. The present study also compared the PADS and DAS to test whether the previously found relationships could be generalised to a broader sample of drivers. The scales were also subject to CFA in order to confirm their factor structure.

2. Methods

2.1. Participants

A total of 213 licenced drivers recruited from three cities in New Zealand participated in the study. Participants (males = 92; 43.7%) ranged in age from 17 to 80 years ($M = 43.96$; $SD = 15.95$), had been licenced between 1 and 65 years ($M = 25.73$; $SD = 14.68$) and reported driving between approximately 100 and 78,000 km ($M = 16,242$; $SD = 10,603$) per annum.

2.2. Materials

2.2.1. Propensity for Angry Driving Scale (PADS)

The PADS (DePasquale et al., 2001) contains nineteen short vignettes describing potentially anger-inducing situations drivers may encounter. Participants are asked to read each vignette and then respond by circling the most appropriate of four responses. These responses range on a continuum from mildly aggressive to extremely aggressive. For example:

“You are driving on a city street. Without warning, a pedestrian suddenly runs in front of your car nearly causing you to hit him/her. How do you respond?”

- Do nothing except feel grateful no-one was injured
- Actually stop your car and get out to yell at the pedestrian for being careless and stupid
- Yell at the pedestrian out your window telling them to watch where they are going
- Curse loudly at the pedestrian out your window telling them the next time you are not going to stop

Responses to the 19-items are rescored according to the procedure outlined by DePasquale et al. (2001) where item responses are replaced by weighted mean response values ranging from 1 (representing mild responses) to 7 (severe aggressive responses). Minor wording adaptations were made to make the terms suitable for a New Zealand sample. For example, the measurement system was changed to metric, reference to the left and right side of the roads were adjusted and a number of American terms changed (e.g. car park was substituted for parking lot).

2.2.2. Driving Anger Scale (short)

Driving Anger was also measured using the short Driving Anger Scale (DAS; Deffenbacher et al., 1994). The DAS (short) contains 14-items depicting anger-provoking situations. For example, “Someone beeps at you about your driving”. Participants are asked to imagine each of the situations happening to them and to rate the amount of anger evoked by each on a five-point scale (1 = not at all; 3 = some anger; 5 = very much anger). Responses are then tallied to form one overall driving anger score.

2.2.3. Trait Anger Scale

The Trait Anger Scale (TAS; Spielberger, 1988, 1999) is a 10-item scale designed to measure trait propensities for anger. Participants are presented with 10 statements and asked to indicate how applicable each one generally is to them. For example, “I am a hot-headed person”. Responses are on a 4-point scale (1 = almost never; 4 = almost always). Responses are scored to provide an overall measure of propensity to become angered. The TAS exhibits good internal consistency with α ranging from 0.81 to 0.91 (Spielberger, 1988, 1999).

2.2.4. Driving violations

Driving violations were obtained using the eight violation items from the Driving Behaviour Questionnaire (DBQ; Reason et al.,

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