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Adapting the Propensity for Angry Driving Scale for use in Australian research

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ABSTRACT

Road rage is a topic that receives consistent attention in both the road safety literature and media. Before Australian research can address the underlying factors associated with road rage, there is a need for a valid instrument appropriate for use in this context. The present program of research consisted of two studies. Study 1 used a university sample to adjust the scoring technique and response options of a 19-item American measure of the propensity for angry driving with acceptable reliability and validity. In Study 2, Factor Analysis confirmed a one-factor solution and resulted in a 15-item scale, the Australian Propensity for Angry Driving Scale (Aus-PADS), with a coefficient alpha of .82 ($N = 433$). The Aus-PADS may be used in future research to broaden the Australian road rage literature and to improve our understanding of the underlying processes associated with road rage in order to prevent the problem. Future research should also confirm the factor structure and generate normative data with a more representative sample.

1. Introduction

Road rage is the popular term used to describe impulsive acts of aggression on the road (Harding et al., 1998). The behaviours that constituted driving aggression (road rage) for the purposes of this program of research included yelling at other drivers, making obscene gestures toward other drivers, engaging in intimidating behaviours such as tailgating or following too closely, honking the horn, flashing headlights, intentionally making contact with other vehicles, and intentionally blocking or impeding another vehicle's progress.

Research conducted by the Royal Automobile Club of Queensland indicates that aggressive driving, such as the examples described above, is an increasing problem among Queensland drivers, as more people reported being a victim of road rage, and engaging in road rage themselves, than in the previous driver survey conducted in 1995 (Royal Automobile Club of Queensland, 2002). The driver behaviour literature reveals that this trend is also occurring internationally (DePasquale et al., 2001; Parker et al., 2002).

A major difficulty in assimilating the findings of road rage research is the variety of measures of road rage employed across studies. While many studies consider self-reported road rage (e.g., Hennessy and Wiesenthal, 1997, 1999; Perry and Baldwin, 2000; Stokols et al., 1978; Wilson and Jonah, 1988), others have used measures specifically developed for the study (e.g., Jonah et al., 2001; Knee et al., 2001; Yagil, 2001), or even horn honking frequency (e.g., Kenrick and MacFarlane, 1986; Shinar, 1998). Novaco (1991) argues that frequency of horn honking is a particularly problematic measure, as it is often intended as a helpful behaviour, such as when used to warn other drivers of impending danger or hazardous conditions ahead.

When considering the road rage literature, it becomes apparent that there are few objective measures of road rage available. The Driving Behavior Inventory (DBI) is a reliable and valid tool designed to assess participants' general disposition (or trait susceptibility) to driver stress (Gulian et al., 1989); while the Driving Anger Scale (DAS) is a reliable and valid measure with 33 items that divide into six subscales (hostile gestures, illegal driving, police presence, slow driving, discourtesy, and traffic obstructions) (Deffenbacher et al., 1994). A limitation for the use of the DBI and DAS is that both scales assess stress or anger *experienced*, as opposed to what people would actually *do* in those situations. This is an important limitation, considering evidence that driving anger may not always be congruent with aggressive reactions (Lajunen and Parker, 2001). Thus a tool that assesses both anger and aggressive behavioural response is needed.

The Propensity for Angry Driving Scale (PADS) (DePasquale et al., 2001) assesses what respondents would do in a number of driving situations, as well as making inferences about the severity of anger

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experienced. The PADS contains 19 items, and reports an adequate internal consistency (Cronbach's alpha) of .88 ($N = 318$) (DePasquale et al., 2001). The scale presents driving situations and asks participants to indicate how they would respond to the given situation by circling one of the four reaction options. The scoring technique for the scale was developed in a pilot study, where the severity of responses to each item was rated on a Likert scale from 1 (*very mild*) to 7 (*very extreme*) by a sample of 51 drivers (DePasquale et al., 2001). These mean severity ratings formed the scoring technique for the questionnaire. Thus, the scale tells not only what a person would do in the given situation, but also gives an indication of the comparative degree of anger involved, as the scores reflect severity.

The PADS has demonstrated convergent validity, as scores correlate with other measures of hostility (Buss-Durkee Hostility Index), anger (trait subscale of the State-Trait Anger Scale), and Eysenck's impulsivity subscale (DePasquale et al., 2001). The divergent validity of the PADS was demonstrated by a non-significant correlation with scores on Eysenck's venturesomeness subscale (DePasquale et al., 2001). The PADS has established criterion validity, as scores also predicted frequency of verbal confrontations and obscene gestures, over and above the anger and hostility measures (DePasquale et al., 2001). Since its publication, the validity of the scale has been established by other researchers with samples of American (Dahlen and Ragan, 2004) and British drivers (Maxwell et al., 2005).

However, the scale is not appropriate for research with an Australian sample without minor adjustments. "Americanisms" in the language should be amended to aid clarity, and differences in road rules and measurement systems need to be addressed. These types of adjustments were made when the validity of the PADS was established within a British sample (Maxwell et al., 2005). Further, as research with an American sample was conducted to develop the scoring technique of the PADS, it is not clear whether the resulting severity ratings and thus scoring technique are appropriate for use within an Australian driving context.

The purpose of the present program of research (consisting of two studies) was to fill this obvious gap in the literature and use the PADS study (DePasquale et al., 2001) as a basis from which to develop a tool appropriate for use in Australian road rage research, using a sample of Queensland drivers. The purpose of Study 1 was to adapt the PADS for use in Australia, resulting in the initial form of the Australian Propensity for Angry Driving Scale (Aus-PADS). The purpose of Study 2 was to conduct a Factor Analysis and assess the scale reliability (Cronbach's alpha) of the final Aus-PADS. A further purpose of Study 2 was to provide normative data. It was expected that the present series of studies would result in a tool appropriate for use in Australian road rage research.

2. Study 1: Item scoring and response selection

The general aims of Study 1 were to: adapt the PADS (DePasquale et al., 2001) for use within Australia; develop a new scoring technique; and select four response options from a pool of six. There are a number of reasons why the scale may not be appropriate for use in Australian road rage research without the above modifications. Firstly, there are subtle language differences between American and Australian English that should be addressed to aid clarity. In the present study, this involved substituting American terms or phrases that may not be widely understood by Australians for those terms that are in popular use in Australia.

Also, it is plausible that differences in the rates and experience of aggression and violence between America and Australia may influence the scoring technique of the PADS, which, as described above, was population-specific (DePasquale et al., 2001). That is, an Australian pilot study sample may rate the severity of the response options differently to the manner in which the American participants rated responses in the PADS study. As the purpose of the present program of research was to develop a tool appropriate for use in Australia, it was important that the scoring technique accurately reflect the Australian experience of road rage. Thus all response options were to be rated for severity by a pilot study using Australian drivers in Study 1. In line with the PADS study (DePasquale et al., 2001), mean severity ratings would form the scoring technique for the Aus-PADS.

The PADS appears to have poor discriminant validity on some items. For example, item 17 asks "You are driving on the highway in the overtaking lane. You come up behind another car in the overtaking lane. You flash your headlights as an indicator for the other car to move over. Instead of moving over, you see the driver in the other car give you the finger and remain in the overtaking lane. How do you respond?", with possible scores of 1.2 ("Start flashing your lights with greater frequency, hoping to influence the driver to move over"), 3.1 ("Get right on the rear bumper of the car, flash your lights, and honk your horn in order to intimidate the other driver into moving over"), 4.8 ("Roll your eyes in disbelief and wait for the car to move over or exit") or 4.9 ("Get right on the rear bumper of the other car and lay on your horn") (DePasquale et al., 2001, p. 15).

As questionnaires should differentiate between individuals (Cohen and Swerdlik, 1999), it is important that the distances between pairs of response options on the scale are maximised. Thus in order to maximise the ability of scale scores to discriminate between individuals, response options were also addressed in Study 1.

2.1. Method

2.1.1. Participants

There were 33 participants in Study 1 (9 male, 24 female), ranging in age from 17 to 56 years ($M = 23.97$, S.D. = 8.00). The driving experience of the sample ranged from 1 to 31 years ($M = 6.05$, S.D. = 6.71). Participants were first year students from the School of Psychology at the University of Queensland, Australia, who received course credit for their participation.

2.1.2. Materials

Participants indicated their age, gender, and number of years driving experience on a questionnaire, which was an adapted form of the PADS (for the original scale, see Appendix A, DePasquale et al., 2001, p. 12). Several terms throughout the scale were changed to suit the Australian sample used in the present program of research. For example, "interstate" was changed to "highway", "parking lot" was changed to "car park", all references to miles were converted into kilometres, and references to right or left sides of the road and lanes were adjusted as appropriate. Any reference to the other driver's gender was replaced with "him/her" or "the other driver" so any gender biases could not influence responses. Two additional response options were added to each item, so that each multiple choice item now had six response possibilities. These items were developed after a previous discussion with two male traffic controllers (aged 43 and 37). No identifying information was collected, as participation was anonymous.

As an illustrative example, item 1 as rated by participants in Study 1 was as follows:

1. You are driving your car down a two-lane road. Without warning, another car pulls out in front of you from a car park. You had to brake suddenly to avoid hitting it. How do you respond?

---- Let out a sigh of relief and drive on