



# Anger, aggression and road rage behaviour in Malaysian drivers



Mark J.M. Sullman<sup>a,\*</sup>, Amanda N. Stephens<sup>b</sup>, Michelle Yong<sup>c</sup>

<sup>a</sup> Driving Research Group, Cranfield University, UK

<sup>b</sup> Accident Research Centre, Monash University, Clayton, Australia

<sup>c</sup> School of Psychology, University of Hertfordshire, UK

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## ABSTRACT

This study tested the four factor structure of the Driving Anger Expression Inventory (DAX) in a sample of young Malaysian drivers and the relationship these factors had with several other variables. Confirmatory Factor Analysis broadly supported the four factor solution of the DAX, being: Personal Physical Aggressive Expression, Use of a Vehicle to Express Anger, Verbal Aggressive Expression and Adaptive/Constructive expression. The short version of the Driving Anger Scale was positively correlated with the three types of aggressive responses and not surprisingly with a variable comprised of all three types of aggressive responses (Total Aggressive Expression). Total Aggressive Expression was higher for males and negatively related to age, years licensed and slower preferred driving speed. All three of the aggressive forms of expression had significant relationships with crash-related conditions, such as: loss of concentration, losing control of their vehicle, having received a ticket and involvement in near-misses. In particular, all three of the aggressive forms of expression had significant relationships with losing control of the vehicle and Total Aggressive Expression was correlated with all crash-related conditions. In addition, Personal Physical Aggressive Expression and Total Aggressive Expression were both significantly related to crash involvement.

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## 1. Introduction

Road safety is a substantial issue facing Malaysia, with a large and increasing number of people being killed and injured in motor vehicle crashes each year. For example, in 2008 there were more than 6500 people killed and 32,274 injured on Malaysian roads (MIROS, 2013). This translates into a rate of 23.5 per 100,000 people (MIROS, 2013), which is considerably higher than the rates reported by the developed countries in the Asia-Pacific region, such as New Zealand (8.6/100,000) and Australia (6.8/100,000), and is more than five times higher than those reported by the world leaders in road safety (4.1/100,000 in the Netherlands, 4.3/100,000 for the UK and Sweden) (NZTA, 2009).

Some of this high rate may be related to aggressive driving. In the UK and USA, aggressive driving has been cited as a main contributor to traffic crashes (AAA Foundation for Traffic Safety, 1995; DfT, 2011). Further, motorists reported frequent experiences of aggression during day-to-day driving (AAA Foundation for Traffic Safety, 1995). Berkowitz (1993) distinguishes between two types of aggression, both of which are applicable in the driving context. The first is instrumental aggression, which are proactive behaviours derived to achieve a specific goal. For example, engaging in aggressive driving behaviours to avoid traffic obstructions when running late, or extensive honking at a stationary driver who has failed to notice the green

\* Corresponding author.

light signal. The second is hostile aggression, which has an affective element and usually occurs as a response to situation perceived by the aggressor to be frustrating and/or anger provoking. For example, following too closely behind a lead car that is travelling unreasonably slow. Aggressive driving can result solely from situational events, such as an anger-provoking impediment from other motorists; or from individual differences, including trait propensities for aggression (Buss & Perry, 1992). It is commonly accepted that aggression results from a combination of state and trait factors. For example, Berkowitz's (1993) model of aggression stipulates that hostile aggression results from frustration and anger over provoking situations. However, the degree to which a driver is likely to become angered in these situations can be determined by their trait driving anger propensities (Deffenbacher, Oetting, & Lynch, 1994). Trait driving anger is a situation-specific anger propensity and has been shown to predict aggressive driving beyond general anger tendencies (Sullman & Stephens, 2013).

Given that anger and anger propensities can underlie hostile aggression, it is not surprising that some researchers suggest anger while driving is one of the most influential predictors of aggressive driving behaviour (Dahlen & Ragan, 2004). Researchers have shown that, when angry, drivers drive faster (Mesken, Hagenzieker, Rothengatter, & de Waard, 2007; Stephens & Groeger, 2009), more aggressively (Stephens & Groeger, 2011, 2014) and with less caution (Stephens & Groeger, 2011). Drivers more prone to driving anger also report engaging more often in aggressive and dangerous driving behaviours (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Deffenbacher et al., 1994; Lajunen, Parker, & Stradling, 1998; Maxwell, Grant, & Lipkin, 2005; Stephens & Ohtsuka, 2014).

Research has also found driving anger to be significantly related to crash related conditions, such as: near-misses, loss of concentration, tailgating and losing control of the vehicle (Deffenbacher, Lynch, Oetting, & Swaim, 2002; Deffenbacher, Lynch, Oetting, & Yingling, 2001; Deffenbacher, Deffenbacher, et al., 2003; Sullman, Gras, Cunill, Planes, & Font-Mayolas, 2007; Underwood, Chapman, Wright, & Crundall, 1999). Furthermore, evidence from simulator research has found angry drivers have more collisions (Deffenbacher, Deffenbacher, et al., 2003; Stephens & Groeger, 2011).

Based upon the above-mentioned research, it is surprising that there is almost a complete absence of peer-reviewed research on driving anger and aggression from Malaysia. Particularly because research has reported that angry and aggressive driving is a growing problem in this country (Ismail, Ibrahim, Rad, & Borhanuddin, 2009). The only research on this topic was conducted by Ismail et al. (2009) who used the shortened version of the Driving Anger Scale (DAS-short) to test whether trait driving anger was able to predict crash involvement and being fined (along with the Driving Behaviour Questionnaire; Reason, Manstead, Stradling, Baxter, & Campbell, 1990). Their results showed that a driver's propensity to become angered was not significantly related to crash involvement, although DAS scores were a significant predictor of being fined. The relationship trait driving anger had with driving behaviour, other than crash involvement and being fined, was not analysed in this study. Therefore, there is currently almost no scientific research about trait driving anger tendencies in Malaysian drivers and none about whether Malaysian drivers express their driving anger in an aggressive manner.

One widely used measure of hostile aggressive driving is the Driving Anger Expression Inventory (DAX; Deffenbacher, Lynch, et al., 2002). The DAX measures how often individuals respond to anger while driving. The scale provides 49 different ways of expressing or reducing anger (Deffenbacher, Lynch, et al., 2002). The DAX contains four subscales: Verbal Aggressive Expression – which measures a driver's tendency to express anger through verbally aggressive means (e.g. yelling at the other driver); Personal Physical Aggressive Expression – which measures the ways in which the driver uses themselves to express anger (e.g. give the other driver the finger); Use of Vehicle to Express Anger – which measures how often drivers use their vehicle to express their anger (e.g. drive a little faster); and Adaptive/Constructive expression – which measures constructive or adaptive behaviours the driver can engage in during potentially anger inducing situations (e.g. decide not to stoop to their level).

Although a number of studies have used the four factor arrangement (e.g. Dahlen & Ragan, 2004; Deffenbacher, Lynch, Deffenbacher, & Oetting, 2001; Jovanović, Lipovac, Stanojević, & Stanojević, 2011; Moore & Dahlen, 2008), very few studies have factor analysed the scale. Further, those that have performed factor analysis on the DAX, have not factor analysed the full 49-item version (Deffenbacher, Lynch, et al., 2002; Herrero-Fernández, 2011; Villieux & Delhomme, 2010).

One study which has factor analysed the 49-item version of the DAX is Sullman, Stephens, and Kuzu (2013). They used Confirmatory Factor Analysis (CFA) to test the original four factor model of the DAX amongst a sample of Turkish taxi drivers and after some minor modifications they found that the four factor solution fitted the data. However, this was only one study and it was conducted amongst professional male Turkish taxi drivers. Thus, there is some degree of uncertainty about the scale's underlying structure.

Another issue surrounding research into the expression of driving anger is that most peer-reviewed research has been conducted in America (e.g. Dahlen & Ragan, 2004; Deffenbacher, Filetti, Lynch, Dahlen, & Oetting, 2002; Deffenbacher, Kemper, & Richards, 2007; Deffenbacher, White, & Lynch, 2004; Deffenbacher, Lynch, Deffenbacher, et al., 2001; Deffenbacher, Lynch, Oetting, et al., 2001; Deffenbacher, Deffenbacher, et al., 2003; Deffenbacher, Lynch, et al., 2003; Moore & Dahlen, 2008). When research of this kind has been conducted outside of America, it has still been in westernised countries with predominantly European-based cultures. For example, driving anger and aggression have been examined in drivers in New Zealand (Sullman, 2015; Sullman & Stephens, 2013), France (Villieux & Delhomme, 2010), the British Isles (Stephens & Sullman, 2014) and Spain (Herrero-Fernández, 2011). Research has also been undertaken in Turkey (Eşiyol, Yasak, & Korkusuz, 2007; Sullman et al., 2013), although there may be some debate as to whether Turkey fits within the definition of a westernised European-based society. Research in the broad field of psychology has been characterised as highly skewed towards Western societies and it has been argued that findings made in a westernised country may not generalise to an Eastern society (Henrich, Heine, & Norenzayan, 2010). Thus, there is a clear need to obtain data relating to anger and

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