



# Driver anger in France: The relationships between sex, gender roles, trait and state driving anger and appraisals made while driving

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## ARTICLE INFO

### Article history:

Received 10 January 2017

Received in revised form 25 September 2017

Accepted 23 November 2017

### Keywords:

Driving Anger Scale (DAS)

France

Gender roles

Sex

Appraisals

## ABSTRACT

This study aimed to further understand the relationships between sex, gender identity, trait and state driving anger and situational appraisals made while driving, and to validate the 33-item Driving Anger Scale (DAS) in a sample of drivers from France. In total, 378 drivers (males = 38%) aged from 18 to 79 years completed a survey containing the 33-item DAS, the Bem Sex-Role Inventory (BSRI) and eight questions regarding self-reported state anger and appraisals in relation to a recalled recent anger provoking situation experienced while driving. Confirmatory Factor Analysis supported the original six-factor structure of the 33-item DAS. Moreover, Structural Equation Modelling of the factors associated with the recalled anger event showed that trait anger influenced state anger through negative appraisal tendencies, and this was influenced by both sex and gender roles. Females and those reporting more masculine traits tended to have higher levels of trait driving anger. Conversely, drivers with feminine traits had low state anger except if they negatively appraised the situation. This new model could be taken into consideration for developing interventions to reduce anger and “road rage” incidents.

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## 1. Introduction

An estimated 90% of road crashes are due to human error (Amditis et al., 2010). Therefore, it is not surprising that a driver's state, such as anger, also contributes to error and subsequent crashes (Sullman, 2006). Anger has been related to aggressive and risky driving behaviours (Dahlen & Ragan, 2004; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Ellison-Potter, Deffenbacher, & Deffenbacher, 2001). These can include following lead vehicles more closely (Ellison-Potter et al., 2001; Stephens & Groeger, 2014), having worse vehicle control (Garrity & Demick, 2001; Lansdown & Stephens, 2013), running stop signs and red lights (James & Nahl, 2000; Tasca, 2000), driving faster (Abdu, Shinar, & Meiran, 2012; James & Nahl, 2000; Mesken, Hagenzieker, Rothengatter, & de Waard, 2007; Stephens & Groeger, 2009) and at speeds above the posted speed limit (James & Nahl, 2000). Angry drivers have been found to violate the Highway Code (Berdoulat, Vavassori, & Sastre, 2013; King & Parker, 2008) and report a higher number of near misses (Underwood, Chapman, Wright, & Crundall, 1999) and crashes (Deffenbacher, 2008; Deffenbacher, Oetting, & Lynch, 1994; Deffenbacher et al.,

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2003; Sullman, 2015; Sullman, Stephens, & Kuzu, 2013). It is thus important to prevent or limit driving anger in order to reduce the risks related to the aggressive expression of anger while driving. In this paper, we explore self-reported driving anger propensities in a sample of drivers from France and explore the relationships these propensities have with other individual factors.

Deffenbacher et al. (1994) developed the Driving Anger Scale (DAS) to assess “trait driving anger”, which is defined as the propensity to become angry while driving. The DAS measures anger propensities across six types of driving situations. These are discourtesy (acts of discourtesy from other road users); illegal driving (by others); traffic obstructions (such as roadworks and detours); hostility (directly from other road users); police presence; and, slow driving (by other drivers). Trait driving anger is highly correlated with state experiences of anger while driving, or state anger. State anger is a transitory emotional–physiological condition characterized by physiological arousal and subjective feelings ranging from annoyance to rage (Spielberger, 1988; Spielberger, Reheiser, & Sydeman, 1995). Several studies have shown that trait driving anger can be positively correlated with state anger in certain types of driving situations as well as with aggressive and risky behaviours on the road (Deffenbacher, Lynch, Oetting, & Swaim, 2002; Deffenbacher, Lynch, Oetting, & Yingling, 2001). However, Stephens and Groeger (2009) did not find direct links between trait driving anger and state driving anger across all driving situations, probably because the relationship was mediated by the individual’s evaluation or appraisal of the situation.

According to the framework of Lazarus (Lazarus, 1991; Smith & Lazarus, 1993), appraisal tendencies of drivers are realized in two stages. Primary appraisals are (1) goal relevance: the perceived relevance of the situation to the person’s goals, and (2) goal congruence: the perceived congruence of the situation with the person’s goals. Secondary appraisals are (1) responsibility: whether there is an obvious target of blame (other responsibility) or not (self-responsibility), (2) coping: the ability to overcome the current situation, with a problem focused coping potential (the extent to which the person feels they can make changes to improve the current situation) or with an emotion focused coping potential (the extent to which the person can improve their interpretation of the situation), and (3) future expectancy: how much they believe the situation can improve. State anger occurs when the situation is appraised as being goal relevant, yet goal incongruent (Parkinson, 2001), and it appears there is an external target of blame (Kuppens, Van Mechelen, Smits, & De Boeck, 2003; Parkinson, 2001; Quigley & Tedeschi, 1996). Alternate combinations of appraisals result in different emotions from anger. For example, fear/anxiety occurs when future expectancy and emotion coping are low (Smith & Lazarus, 1993); whilst high levels of the first three appraisals provoke anger rather than anxiety. A first model examining appraisal tendencies on driving anger was hypothesised and tested in Ukraine, and which confirmed that trait driving anger influences state anger intensity through negative appraisal tendencies (Stephens, Hill, & Sullman, 2016). However, the extent to which sex influences these relationships was not explored.

In France, more men, than women, aged 15–59 are involved in road collisions (Assailly, 2001). This trend is reflected in most developed countries, such as the United States (Kahane, 2013) and in Europe with males accounting for over 75% of the recorded fatalities in 2012 (European Union, 2015). While driving anger is well-known to be a contributing factor to road crashes (Deffenbacher, 2008; Deffenbacher et al., 1994, 2003; Sullman, 2015; Sullman et al., 2013), there are inconsistent findings regarding which sex experiences more driving anger. Data from drivers in Spain suggest that females have higher levels of trait driving anger, especially with regards to discourtesy from other drivers, traffic obstructions and illegal driving (Sullman, Gras, Cunill, Planes, & Font-Mayolas, 2007). However, a French study found that females reported higher anger propensities for hostile gestures from other drivers, while males had higher anger tendencies over illegal driving

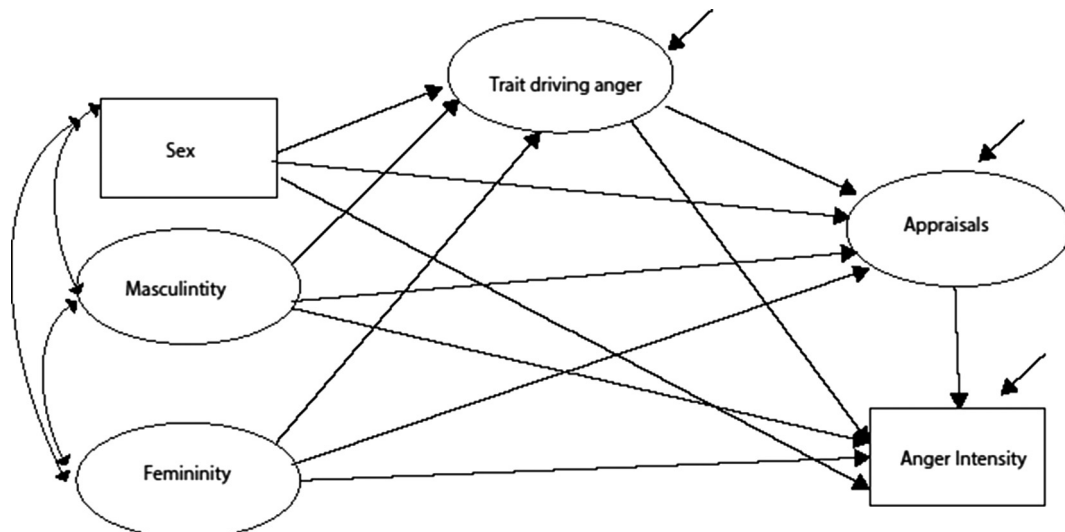


Fig. 1. Proposed model to assess relationships between sex, gender roles and trait driving anger.

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