



Driving anger, emotional and instrumental aggressiveness, and impulsiveness in the prediction of aggressive and transgressive driving

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ABSTRACT

The present study investigates the potential contribution of three predictors of aggressive and transgressive behaviors on the road: driving anger, impulsiveness and aggressiveness. A total of 455 participants (laypersons), of all age and gender, filled self-reported measures evaluating driving anger, impulsiveness, two forms of aggressiveness (instrumental and emotional forms), driving behaviors and aggressive and transgressive behaviors. Main results indicate: (1) a significant gender effect for almost all variables; (2) gender was involved in the prediction of Lapses and Errors; (3) driving anger, impulsiveness and aggressiveness were involved in a complementary manner in the prediction of aggressive and transgressive driving; (4) Aggressiveness and Impeded Progress were the best predictors of violations and aggressive violations. Results support that transgressive driving behaviors are relevant indicators of aggressive driving.

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1. Introduction

For over ten years, a particular interest has been shown to drivers' behaviors (AAA Foundation for Traffic Safety, 1997). Research in this domain has studied different behaviors that might influence dangerous driving and motor vehicle accidents (Dahlen et al., 2005; Houston et al., 2003; Shinar and Compton, 2004). In particular, aggressive driving has been frequently studied. For instance, nowadays road users perceive aggressive driving as one of the most significant problems encountered on the road (AAA Foundation for Traffic Safety, 1997; NHTSA, 1998; Shinar and Compton, 2004). In many countries, aggressive driving and incivility seem to increase (Delhomme and Villieux, 2005). Martinez (1997) and Snyder (1997) have reported that one to two serious accidents can be attributed to an aggressive behavior on the road. Moreover, aggressive driving is a major cause of traffic accidents and injuries (NHTSA, 2000).

According to the AAA Foundation for Traffic Safety (2009) aggressive driving has been defined as "Any unsafe driving behavior, performed deliberately and with ill-intention or disregard for safety". Aggressive driving includes behaviors such as headlight flashing (Diekmann et al., 1996; Ellison-Potter et al., 2001; Turner et al., 1975), yelling at other drivers (Hennessy and Wiesenthal, 1999; Tasca, 2000), profanity and obscene gestures (Ellison-Potter et al., 2001; Sarkar et al., 2000; Turner et al., 1975), among others. On the

other hand, some authors (Ellison-Potter et al., 2001) have emphasized that along with aggressive driving behaviors, transgressive behaviors may take place at the same time. For example overspeeding (James and Nahl, 2000), running stop signs and red lights (James and Nahl, 2000; Tasca, 2000) and tailgating (Diekmann et al., 1996; Ellison-Potter et al., 2001; Turner et al., 1975) are transgressions that might take place while driving aggressively. Further research has analyzed the general concept of aggressive driving (Beck et al., 2006; Lajunen and Parker, 2001; Lennon and Watson, 2011; Shinar and Compton, 2004) and its extreme form called "road rage" (Britt and Garrity, 2006; Roberts and Indermaur, 2008). However, few studies have analyzed the transgressive dimension of aggressive driving which can be determined by different psychological processes.

Bergeron (2002) is one of the first authors to propose an explanatory model for aggressive driving. In this model, aggressive driving is the last element linked in a causal sequence composed of several determinants (situational, personal and socio-cultural) and psychological processes (cognitive and emotional). This sequence can be modulated by various coping strategies. Many studies have focused on the situational determinants (Hennessy and Wiesenthal, 1999, 2001) and the socio-cultural aspects (Marsh and Collet, 1986, 1987) of aggressive driving. However, few studies have analyzed the psychological processes that can explain the various steps leading to aggressive and transgressive behaviors on the road. Moreover, few studies have investigated the combination of multiple psychological processes in the prediction of both aggressive and transgressive driving (Dahlen et al., 2005). To

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date, even though most of the studies have examined the separate effect of various psychological variables, their combination as predictive factor for unsafe driving has not yet been explored. As a consequence, it seems of prime importance to provide an in-depth examination of these issues. The aim of the present study was to analyze the relationship between psychological variables (driving anger, aggressiveness and impulsiveness) and aggressive and transgressive driving behaviors. Specifically, the main objective of the current study was to examine the combination of these psychological variables and their predictive value regarding unsafe driving.

Previous studies have linked driving anger and aggressive driving, demonstrating that driving anger interferes with cognitive processes such as attention and decision making (Deffenbacher et al., 1994, 1996, 2000, 2001). Indeed, anger is already central to the frustration–aggression hypothesis developed by Berkowitz (1993) where “*frustration must entail an emotional response of anger in order to incite aggression*”. As well, driving anger has been considered important in Weiner’s “Attributional theory” (1985, 1986, 1995a,b, 2001), depicted later by Pouliot et al. (2007) as the explanatory model of “reactive” aggressive driving. This model highlights the possible occurrence of a direct relationship between attributional and emotional (driving anger) processes during frustrating or stressful situations on the road. On this regard, Lerner and Tiedens (2006) raised the issue of decision making under the influence of anger. These authors argue that anger interferes with “*objectivity and rationality useful for decision making. Individuals in anger can demonstrate trust and excessive optimism, highlighting unnecessary risks taken . . .*”. Many studies have focused on driving anger as the motivational determinant of aggressive driving. More research on this concept was conducted by Deffenbacher et al. (1994, 1996, 2000, 2001, 2002, 2003): these authors assumed a relationship between driving anger, aggressive driving and breaches of legal rules of conduct. Resulting from this extensive research, the Driving Anger Scale (DAS) was developed. Studies using this scale showed that individuals who had a high score in driving anger (when compared to those who scored low) engaged more frequently and more intensively in aggressive and risky behaviors (Deffenbacher et al., 2000, 2001, 2002) and were therefore involved in more road accidents. Previous research has often studied driving anger as single determinant of aggressive and risky driving. Nevertheless, as already stated, few studies have examined the combination of driving anger with other possible predictors of aggressive and transgressive driving (Dahlen et al., 2005).

Aggressiveness, considered as a personality factor or trait involving the predisposition to which one causes acts of aggression, is another psychological variable that has received attention for its role in both dangerous and aggressive driving. In the literature concerning aggressive driving, there is a consensus indicating that aggressive tendency would be a relatively stable personality dimension. Therefore, it is not surprising that characteristics related to an individual’s aggressive behavior can be found in various everyday life situations (Baron and Richardson, 1994; Berkowitz, 1993; Scheier et al., 1978). Lajunen and Parker (2001) strongly support the idea that these individual differences in aggressive predisposition may be reflected within driving behavior; this might even be a stable mode of aggressiveness expression. Indeed, these authors assume that people who usually engage in a particular type of aggression will carry on this tendency when facing a steering wheel. However, few studies have investigated the possibly different role that the two forms of aggressiveness that have now been identified (i.e. the emotional-reactive and instrumental-proactive forms) may have. Pouliot et al. (2007) emphasize this distinction which seems “*particularly useful for interpreting aggressive behaviors*” (Baron and Richardson, 1994; Berkowitz, 1993; Pouliot et al., 2007). The emotional form is defined

as an emotional reaction that can be triggered by various emotions such as anger (“angry aggression”; Buss, 1961). Its purpose is to injure or cause damage to a responsible target for these negative feelings. This form of aggression occurs in response to a perceived threat which provokes anger, or even a feeling of frustration which brings the individual to take revenge by committing an aggressive act. To illustrate this concept in terms of driving, we can imagine a motorist bumping at another driver’s car trunk to take revenge, violently demonstrating his anger (Pouliot et al., 2007). Concerning instrumental aggression, this aggressive form does not have the primary purpose of causing damage or injury, even if this can happen in some situations: for instance, someone in a hurry and driving fast might collide with a pedestrian he cannot avoid. His real goal was to achieve something pleasant or rewarding, independently from the victim of the accident. This distinction is important because each form of aggressiveness has different goals and can therefore lead to different aggressive behaviors on the road.

Another important and multifaceted psychological construct that has been defined in multiple ways by different authors is impulsiveness (Barratt, 1972; Zuckerman et al., 1993; Zuckerman, 1994). For example, Zuckerman et al. (1993) described a lack of planning, a tendency to act impulsively and unguardedly, and researching intense experiences. Generally, impulsiveness is defined as a personality dimension. Recently, to clarify the multi-dimensional nature of this construct, Whiteside and Lynam (2001) have developed the UPPS Impulsive Behavior Scale that distinguishes four dimensions of impulsiveness: Urgency, (lack of) Premeditation, (lack of) Perseverance, and Sensation Seeking. This scale includes four subscales corresponding to the four personality traits proposed in the Five Factors Model of personality (Costa and McCrae, 1992): “(1) *Urgency*, which can be defined as the tendency to experience strong impulses, often under conditions of negative affect; (2) *(lack of) Premeditation*, which represents the tendency of not thinking of the consequences of an action before engaging in it; (3) *(lack of) Perseverance*, defined as the inability to remain focused on a boring or difficult task; and finally (4) *Sensation Seeking*, described as the tendency to pursue exciting activities as well as an openness to try new possibly dangerous experiences” (Van der Linden et al., 2006). Regarding the relationship between impulsiveness and aggressive driving, studies have shown the following results: according to Lajunen and Parker (2001), impulsiveness could be related to the frequency and degree of aggressive response in situations of provocation. These authors add that impulsive people would also tend to interpret the behavior of other drivers as a provocation and respond to these behaviors according to their own interpretation. Even if few studies have examined impulsiveness in aggressive driving, there seems to be a strong link between impulsiveness and the tendency to adopt an aggressive or reckless driving style (Dahlen et al., 2005). Moreover, few studies have considered the emotional dimension of impulsiveness (Whiteside and Lynam, 2001).

1.1. Aim and objective

The general objective of this study was to examine the combined effect of three predictors of aggressive and transgressive driving: driving anger, aggressiveness and impulsiveness. The originality of this research is based on four points: (1) considering the transgressive aspect of aggressive driving, (2) combining driving anger with other possible predictors of aggressive and transgressive driving, (3) aiming to refine the predictive value of aggressiveness by taking into account two distinct forms (emotional and instrumental forms) that can lead to various aggressive behaviors on the road, (4) and finally considering impulsiveness as a multifaceted psychological construct taking into account the emotional dimension (Whiteside and Lynam, 2001). Driving behaviors and aggressive

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