



A cross-cultural analysis of aggressive driving: Evidence from Serbia and Romania



Paul Sârbescu^{a,*}, Predrag Stanojević^b, Dragan Jovanović^c

^a Psychology Department, West University of Timișoara, Timișoara, Romania

^b Polytechnic School of Vocational Studies, Uroševac (Leposavić), Serbia

^c Department of Transport, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia

ARTICLE INFO

Article history:

Received 3 February 2014

Received in revised form 29 March 2014

Accepted 4 April 2014

Keywords:

Aggressive driving

Cross-cultural

DAX

Eastern Europe

ABSTRACT

Using data from more than 700 drivers from Serbia and Romania, this study verified the dimensionality of aggressive driving in two countries from Eastern Europe. Specifically, the psychometric properties and invariance of the Romanian Driving Anger Expression Inventory (DAX; Deffenbacher, Lynch, Oetting, & Swaim, 2002; Sârbescu, 2012) were verified. Secondary aspects, such as differences in aggressive driving between countries or gender differences within countries, were also investigated. Our findings support the appropriateness of the three-factor structure in both countries, through the configural invariance of the DAX. Also, males report slightly higher levels of aggressive driving than women (small effect sizes), while Serbian drivers report higher levels of aggressive driving than Romanian drivers (strong effect sizes). Being the first research that verified the invariance of the DAX across two cultures, this study opens new paths and questions for research concerning aggressive driving.

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1. Introduction

Road crashes are a noticeable cause of injury and death. It is estimated that every year 1.2 million people die in road crashes worldwide and that 20–50 million people are injured or permanently disabled (WHO, 2004). It was estimated that human factors are the dominant contributory factors of about 90% in traffic accidents (e.g., Evans, 2004; Lewin, 1982; Rumar, 1985). This was the rationale behind numerous researches conducted with aims to determine the causes of risky driving behavior and which form of risky behavior contributed the most to the accidents.

Aggressive driving can be defined as any form of a drivers' behavior that is conducted with the intention to hurt (physically or psychologically) or cause damage to other road users (Ellison-Potter et al., 2001; Lajunen, Parker, & Stradling, 1998). Aggressive driving may include several forms of behavioral manifestations, namely those expressed verbally, physically, or through use of one's vehicle (Deffenbacher et al., 2002).

Nearly about forty years ago, aggressive driving was identified as a significant traffic safety problem (Parry, 1968; Whitlock, 1971). However, only for last two decades the problem of aggressive driving was actualized and nowadays it is considered to be a global problem. Martinez (1997) has reported that aggressive driving contributed to one third of all personal injuries and two thirds of all fatalities resulting from motor vehicle crashes. A recent study by the American Automobile Association (AAA Foundation for Traffic Safety, 2009) estimated that 56% of the fatal crashes that occurred

* Corresponding author. Address: Psychology Department, West University of Timișoara, Bld. V. Pârvan, 4, 300233 Timișoara, Romania.

E-mail address: paul.sarbescu@gmail.com (P. Sârbescu).

between 2003 and 2007 involved potential aggressive driving behavior. Paleti, Eluru, and Bhat (2010) used data obtained in the National Motor Vehicle Crash Causation Study. The NMVCCS crash report provides much more detail and information about the crash site and crash characteristics than does a traditional police report (see National Highway Traffic Safety Administration (NHTSA), 2008). They reported a positive relationship between aggressive driving and crash injury severity level. This relationship was particularly strong for young participants (16–20 years), indicating that the lack of driving experience combined with aggressive driving could represent a volatile combination. Also, the results of self-reported studies have shown connections between aggressive driving and traffic accidents (e.g. Chliaoutakis et al., 2002; Dahlen, Edwards, Tubré, Zyphur, & Warren, 2012; Sârbescu, 2012). Aggressive driving represents even a more significant problem because of its increasing frequency (American Automobile Association, 1997; Joint, 1995; Lex Motor Group, 1996).

Previous studies showed numerous and different determinants of aggressive driving. Namely, studies showed that situational and environmental factors can stimulate aggressive driving. Research results suggested that aggressive driving was connected with traffic congestion (Hennessy & Wiesenthal, 1997; Shinar, 1998), drivers' anonymity (Ellison-Potter et al., 2001; Ellison, Govern, Petri, & Figler, 1995), the influence of other passengers in the car (Porter & Berry, 2001), the low status vehicles (Doob & Gross, 1968; McGarva & Steiner, 2000), the existence of aggressive stimuli (Ellison-Potter et al., 2001; Turner, Layton, & Simons, 1975), road markers and vehicle identification markers (Szlemko, Benfield, Bell, Deffenbacher, & Troup, 2008).

Also, there is some evidence that individual differences have an effect on aggressive driving. Research results indicated that men are more prone to aggressive driving than women (Blanchard, Barton, & Malta, 2000; Shinar & Compton, 2004; Wells-Parker et al., 2002; Wiesenthal, Hennessy, & Gibson, 2000) and that younger drivers resort to aggressive driving more often than older drivers (Hauber, 1980; Krahé & Fenske, 2002; Lawton, Parker, Manstead, & Stradling, 1997; Shinar & Compton, 2004). Personality traits are also related to aggressive driving (Benfield, Szlemko, & Bell, 2007; Bone & Mowen, 2006; Dahlen & White, 2006; Dahlen et al., 2012; Jovanović, Lipovac, Stanojević, & Stanojević, 2011;), higher levels of trait stress, anger (both trait and state), and negative affect are each positively correlated with aggressive driving (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher, Lynch, Oetting, & Yingling, 2001; Hennessy & Wiesenthal, 1997; Kontogiannis, 2006; Matthews, Dorn, & Glendon, 1991; Nesbit, Conger, & Conger, 2007), and people with a type A personality are prone to aggressive driving (Perry & Baldwin, 2000).

In order to assess drivers' usual ways of expressing anger in the driving context, Deffenbacher et al. (2002), developed the Driving Anger Expression Inventory (DAX). The DAX contains 49 items that asks individuals to rank how often they express anger in the described manner. The items were divided into four subscales for measuring driving-related anger expression: Verbal Aggressive Expression, Physical Aggressive Expression, Using the Vehicle for Aggressive Expression, and Adaptive/Constructive Expression. Several studies verified the validity of the DAX, and their results supported its convergent validity through the high and positive correlations between all aggressive forms of expressing anger, and through their negative correlations with the adaptive form of expressing anger (Dahlen & Ragan, 2004; Deffenbacher, Lynch, Deffenbacher, & Oetting, 2001).

The DAX has so far been validated in several other countries beside the U.S.A., including Spain (Herrero-Fernández, 2011), France (Villieux & Delhomme, 2008), Turkey (Sullman, Stephens, & Kuzu, 2013) and Romania (Sârbescu, 2012). One notable result stands out from all these researches: the original version of the DAX (49 items measuring four factors) did not obtain at least an acceptable fit in neither of the studies (the closest fit was obtained in Turkey, where the authors managed to fit a 47 items version measuring the four factors, but only after correlating 17 errors in the model). Another noteworthy finding regards the Romanian version of the DAX: a three factor structure was identified (with the Verbal and Physical Aggressive Factors united) that obtained a good fit in a shorter 30 items version of the scale. The author suggested that this short version of the DAX (and implicitly the three factor structure) could prove itself to be more appropriate than the original one, in other Eastern Europe countries (Sârbescu, 2012).

Although the Romanian DAX appears to be quite robust and reliable, its psychometric properties and factorial structure need to be replicated in different samples (preferably in other countries from Eastern Europe). Thus, the main objective of this research is to further verify the psychometric properties of the Romanian DAX in two samples: one from Serbia and the other from Romania (implicitly aiming at verifying the appropriateness of the three factor structure). The secondary objective is to compare the way of expressing aggression in traffic between Romanian and Serbian drivers. Additionally, the invariance of the scale was tested and possible gender differences in both countries were explored. To our knowledge, this is the first study that verifies the invariance of the DAX across two different cultures.

2. Methods

2.1. Participants

The Romanian sample consisted of 334 participants, out of which 55.10% were male. The age of the participants ranged from 19 to 60 years ($M = 28.25$, $SD = 10.72$). The number of years since when the participants hold a driver license ranged from 1 to 40 years ($M = 7.37$, $SD = 7.74$).

The Serbian sample consisted of 376 participants, out of which 57.20% were male. The age of the participants ranged from 19 to 57 years ($M = 30.10$, $SD = 9.90$). The number of years since when the participants hold a driver license ranged from 0 to 40 years ($M = 8.90$, $SD = 7.70$).

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