Measuring situations that stress Mexicans while driving

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ABSTRACT

The purpose of this paper is to construct a scale that will help determine the aspects involved in driving a motor vehicle that influence the levels of stress in a human being. Two complementary studies were conducted: the first one determined, by qualitative methods, the aspects of driving that 103 participants found most stressful whilst driving; the second was a validation of the scale constructed with said information on 295 participants (142 males, 153 females, age mean 37.41, std. dev. 14.008). The scale included 22 situations that were then evaluated on a Likert scale to assess the level of stress they evoke. These items were arranged on 3 factors, and descriptive statistics were computed for significantly stressful situations. The 5 largest differences found in the group were: (1) People that drive violently, (2) Corrupt Policemen, (3) Driving on roads in bad state, (4) People that cut in line, and (5) Arrogant Policemen. Main findings include: violent drivers and a lack of respect for social rules are the most stressful elements of the context in which drivers are immersed, and no differences in stress levels across sex or age groups were found.

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1. Introduction

Consensus turns around adaptation of the person to its environment and the events that are demanding, threatening, or dangerous to the individual (Lazarus & Folkman, 1984). This process of adaptation generates what is now commonly regarded as stress, or stress reaction (Selye, 1978). This stress can be triggered by a great variety of perceptual and emotional stimuli that are commonly involved in urban contexts. These can center on other drivers, size and variety of vehicles, traffic regulations and their enforcement by authorities, traffic jams, or other elements involved in urban daily life, such as violence and rush. Hans Selye (1978) includes driving motor vehicles, social interactions and crowds as important causes of stress, especially in urban contexts.

Although other efforts have been carried out to construct a scale that evaluates this variable (Matthews, Desmond, Joyner, Carcardy, & Gilliland, 1997), it has been found that instruments are not generally applicable trans-culturally, even when constructed in the same language but not validated in the same country (Dorantes-Argandar, López-Vázquez, Tortosa-Gil, Ferrero-Berlanga, & Ayala-Sánchez, November 2010). It also differs from Matthews et al. (1997) in that the present study aims to only explore the variable of stress, so that it may be studied by itself in further efforts.

The volume of research developed to understand and evaluate the factors that promote stress as a means to develop successful interventions has increased rapidly in the last few years. Living in an area with a higher rate of stress experienced by individuals is correlated with a higher rate of accidents in the same area (Su, Tran, Wirtz, Langteau, & Rothman, 2009). Stress

affects the individual through several mechanisms, including fatigue (Neubauer, Mathews, Saxby, & Langheim, 2010), attention demand-level transitions and hysteresis (Morgan & Hancock, 2011), sleeping disorders (Wells & Vaughn, 2012), Posttraumatic Stress Disorder (PTSD)-related aggression and impulsivity, and their relation to a higher risk of having a car accident (Kuhn, Drescher, Ruzek, & Rosen, 2010). Based on these findings, researchers have concluded that the risk of suffering an accident is directly related to speeding and intentionally violating traffic regulations (Elander, West, & French, 1993). This is also related to several personality factors, such as a general disposition to anger and a specific wrathful style of driving (Deffenbacher, Filetti, Richards, Lynch, & Oetting, 2003; Deffenbacher, Oetting, & Lynch, 1994; Lynch, Deffenbacher, Oetting, & Yingling, 1995), where anger is related to dispositional factors (such as personality factors) and the situation itself (Ellison-Potter, Bell, & Deffenbacher, 2001), and wrath is strongly associated with speeding and risk driving (Arnett, Offer, & Fine, 1997). An important personality factor involved in aggression and stress is the ease individuals have to obey or break social norms, which is influenced by a multiple set of contextual variables such as social environment, laws and regulations, and infrastructure, as well as individual variables, such as moral codes, stereotypes, and social groups (Haavind, 2003). Some studies link hereditary baggage of aggressive behavior and rule-breaking (Bartels et al., 2003). Others argue that the transgression of social norms is an integral element of the process by which individuals adapt to a society that threatens their well-being (Dahling, Chau, Mayer, & Gregory, 2012).

Anger and wrath have been closely related to stress since the formulation of the concept of stress as a clinical factor (Selye, 1978) and further developing of the concept (Lazarus & Folkman, 1984) and has expanded to an incredibly diverse field of study in human contexts, such as cancer (Barinkova & Mesárosová, 2013; Vines, Xuan-Nguyen, Ta, Esserman, & Baird, 2010), inhalation of stress sweat (Rubin, Botanov, Hajcak, & Mujica-Parodi, 2012), PTSD and violence (Finley, Baker, Pugh, & Peterson, 2010; Teten et al., 2010), or caregivers (Benson & Karlof, 2009) and incarcerated boys (Kimonis, Ray, Branch, & Cauffman, 2011) among thousands of others.

Research on stress and driving has centered on: terrorist attacks and an increase in mortality rates in traffic accidents (Su et al., 2009), traffic accident survivors and PTSD (Aleksandra et al., 2010; Wu, Chan, & Yiu, 2008), PTSD on long term basis in major traffic accidents (Amberg, Rydelius, & Lundin, 2011). Research in Mexico has focused on natural and technological catastrophes (López-Vázquez & Marván, 2003, 2004, 2012), as well as labor conditions imposed on public transportation workers (Espinosa-Yañez, 2012; Lima-Aranzaes, Juárez-García, & Arias-Galicia, 2012; Rodriguez-Chica & Vite-San-Pedro, 2012). Researchers in Mexico have neglected focusing their efforts in how stress is manifest in drivers, and how the environments they must face have an influence on their stress reactions.

Population in México exceeds the 106 million mark (INEGI, 2005), and has registered over 27 million vehicles (which amounts up to almost a vehicle for every 4 people), which use 360,000 km of roads (CONAPO, 2008). Ávila-Burgos (2010) points out that lesions caused by traffic accidents in México are the 4th cause of death, and an important factor of economic and social impact. According to numbers reported by the same author, traffic accidents are translated into an economic value that represents 1% of the GDP. During 2007, 13% of emergency room attendees in public hospitals were due to traffic accidents. These represent one fourth of all medical attention required. Average hospitalization for a traffic injury is around 5 days (Cervantes-Trejo, 2009; Ávila-Burgos, 2010). On average, some 17,000 people lose their lives because of traffic accidents in México each year. A third of them were pedestrians. For every person that loses his or her life, there are 17 more that are hospitalized (Pérez-Núñez, 2010).

Considering the statistics presented in the previous paragraph, one may conclude that driving contexts in México are significantly aversive towards drivers, so that citizens use a great amount of their collective resources to insure their survival (or at least arriving at one's home without bodily harm), which subjects them to a high quantity of stress, which in turn affects their health and their quality of life. What is it then that stresses drivers in México? Are there any differences across some groups, such as age or sex? The main objective of this study is to construct a scale that will allow measuring elements drivers are exposed to in an urban environment in Mexico, such as the city of Cuernavaca. Other objectives are (1) to determine which elements from the context of driving are more stressful, and (2) to determine which groups, such as gender or age, are more stressed than others. Our working hypothesis are: (1) not respecting social rules inflicts a higher amount of stress on participants, (2) men have a higher level of stress than women, and (3) younger people experience more stress than their elders.

It is necessary to understand which elements of the context one faces whilst driving, for it plays a role in stressing individuals, which in turn may evoke aggressive and risk behavior, wrath and violence in general, so that effective interventions may be drawn. This study is divided into two: Study 1 determines the elements that stress drivers, whilst Study 2 develops the scale using said elements and submit it to statistical analysis to determine its internal consistency. This will help develop an instrument that is capable of assessing levels of stress in people that reside in Mexico.

2. Study 1

2.1. Method

The first sample was used to collect exploratory information regarding stressors found while driving a motor vehicle. Subjects were selected through a non-probabilistic method, approached through a variety of settings. They were required to fill out Questionnaire 1, which was available in a paper and pencil format.