

Original article

Driver stress in five Spanish-speaking countries: Construct validity of the LatinSET



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ABSTRACT

Introduction: Driver stress is a phenomenon many have studied in probably all five continents. It has been the focus of curiosity for all sorts of disciplines, and science has been unable to curb it, much less park it.

Objectives: This study aims to generate a unique scale that can be used in Spanish speaking countries regardless of culture or geography.

Method and Materials: A sample of 1954 drivers from Mexico, Guatemala, Costa Rica, Chile and Spain was comprised. Through this study, the original 21 items of the ISET (Stressful Situations in Transit Inventory, in Spanish) were used to carry out both an Exploratory Factorial Analysis as well as a Confirmatory Factorial Analysis.

Results: As a result, a 9 item scale was created that is valid for use in Spanish countries.

Conclusions: Although further research is warranted, the LatinSET is now valid for its use in Spanish-speaking countries.

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Estrés en conductores de cinco países hispanoparlantes: validez de constructo para el LatinSET

RESUMEN

Introducción: El estrés en conductores es un fenómeno que muchos han estudiado en probablemente los cinco continentes del mundo. Ha sido el enfoque de estudio de una gran variedad de disciplinas, pero la ciencia no ha podido desgranarlo, ni mucho menos eliminarlo por completo.

Objetivos: Este estudio tiene como objetivo generar una nueva escala que pueda ser usada en países de habla hispana sin importar la cultura o la geografía.

Material y métodos: Una muestra de 1,954 conductores de México, Guatemala, Costa Rica, Chile y España fue recolectada. A través de este estudio, el juego original de 21 ítems del ISET (Inventario de Situaciones Estresantes en el Tránsito) fueron utilizados para llevar a cabo análisis factorial exploratorio y confirmatorio.

Palabras clave:

Estrés

Análisis factorial

Validación de instrumentos

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Resultados: Como resultado, una escala de 9 ítems fue creada que es válida para su uso en países hispanoparlantes.

Conclusiones: A pesar de que se requiere de más estudios relevantes, el LatinSET está listo para ser usado.

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Introduction

Selye (1978) described stress as a phenomenon in human well-being more than 40 years ago. Lazarus and Folkman (1984) made a vital breakthrough in the study of stress and its impact on psychological and cognitive mechanisms related to how a human being copes with the strain he or she is subjected to. Since then, its study has permeated fields of study and fields of application, such as self-esteem and humor (Stieger, Formann, & Burger, 2011), hormones (Zilioli & Watson, 2012), neurotransmitters (Jonassaint et al., 2012), war (Eggerman & Panter-Brick, 2010), sports performance (Calleja & Lorenzo, 2008), education (Twenge & Zhang, 2004), and of course, traffic psychology (Dorantes-Argandar, Cerda-Macedo, Tortosa-Gil, & Ferrero Berlanga, 2015; Dorantes-Argandar, Rivera-Vázquez, & Cárdenas-Espinoza, 2019; Dorantes Argandar, Tortosa Gil, & Ferrero Berlanga, 2016).

The definition of urban context has seen several difficulties during its conception, probably because there are several issues in consensus around the particularities that are inherent to every situation, every city, and every country (Dorantes-Argandar, Rivera-Vázquez, et al., 2019). Some characteristics have been described in several studies (Durán Romero, 2000; Ho, Wong, & Chang, 2015; Kelly et al., 2010; Lima-Aranzaes, Juárez-García, & Arias-Galicia, 2012; Routledge, 2016): such as crowds, size of population, infrastructure involved in means of transportation, activities other than agriculture carried out by the population, exposition to violent acts, environmental pollution, stress vulnerability, crime, traffic and vulnerable neighborhoods.

Studies on the matter of urban contexts have been carried out in other cities, regarding stress or stress related topics, such as risk (Cats, Yap, & van Oort, 2016), crowding (Haywood, Koning, & Monchambert, 2017), psychology of use (Fu & Juan, 2017; Jaśkiewicz & Besta, 2014), commodity (Imre & Çelebi, 2017), accidents (La, Duong, Lee, & Meuleners, 2017), aberrant driving (Mallia, Lazuras, Violani, & Lucidi, 2015), and preferences regarding the interior of buses (Waerden, Couwenberg, & Wets, 2018). Stress has also been studied in diverse urban settings, such as urban drivers (Dorantes-Argandar & Ferrero-Berlanga, 2016; Dorantes-Argandar, Tortosa-Gil, & Ferrero-Berlanga, 2016), urban violence victims (Rocha-Rego et al., 2012), health and illness (Segerstrom & O'Connor, 2012), parenting skills (Ajilchi, Borjali, & Janbozorgi, 2011), cocaine use (Ross et al., 2013), video-game playing (Hébert, Béland, Dionne-Fournelle, Crête, & Lupien, 2005), post-traumatic stress disorder (Aleksandra, Martinovic, Vuckovic, & Dickov, 2010; Polusny et al., 2008), car accidents (Dorantes-Argandar, Cerda-Macedo, Tortosa-Gil, & Ferrero-Berlanga, 2015), and aggressive driving (Wickens, Mann, Stoduto, Ialomiteanu, & Smart, 2011), amongst many others.

Stress in the field of traffic psychology has seen a surge in studies over the last ten years, including driver aggression (Herrero-Fernández, 2011; Li, Yao, Jiang, & Li, 2014; Sârbescu, Stanojević, & Jovanović, 2014; Stephens, Hill, & Sullman, 2016; Wickens et al., 2011), pressure and time (Cœugnet, Naveteur, Antoine, & Anceaux, 2013), and risky driving (Beck & Watters, 2016; Emo, Matthews, & Funke, 2016; Sarma, Carey, Kervick, & Bimpeh, 2013; Ulleberg, 2001), personality (Beck, Wang, & Mitchell, 2006; Ge et al., 2014; Taubman – Ben-Ari, Kaplan, Lotan, & Prato, 2016) amongst others. However, little work has been done in how these phenomena

behave in Spanish-speaking countries, much less the development of useful instruments to evaluate them. This is why the main goal of this study was to create an instrument that is valid for use in Spanish-speaking countries, and that this instrument should evaluate stress in drivers. This study provides information relevant to content validity of the instrument here presented, although it is based in a study that had the same goal, but only provided content validity for a single city in Mexico. Said content validity is acquired for 5 Spanish-speaking countries, which allows further studies to be carried out to make up for the limitations this study has.

Method

Procedure

The main researcher sought colleagues, fellows and friends to collaborate in the project here stated. A team of 10 researchers collected data through an online platform in all five countries, and a pen and pencil format was used when quotas were not met. The data recollection period lasted about six months. This paper attempts to provide construct validity (Cohen & Swerdlik, 2009; Hair, Anderson, Tatham, Black, & Cano, 1999) for the instrument here presented. Analyses were carried out on the SPSS v. 19 and the AMOS module for the same software v. 20.

Participants

A total sample of 1954 drivers was comprised, throughout five different Spanish-speaking countries: Mexico (28.5%), Costa Rica (25.6%), Guatemala (25.4%), Chile (10.2%), and Spain (10.2%). Fifty two point five percent of participants were male, and the most frequent occupations were: student (19.6%), psychologist (5.8%), employee (5.1%), engineer (4.8%), salesperson (3.6%), teacher (3.4%), lawyer (2.5%), and manager (2.4%). Seventeen point eight percent of participants manifested having been in a car accident in the last 12 months, 59.5% in all of their lives. Age mean was 35.44 ($SD = 11.63$), mean for years of schooling was 15.08 ($SD = 3.06$), and mean for daily hours of driving was 2.62 ($SD = 1.77$).

Instruments

The instrument used for this study was the Stressful Situations in Traffic Inventory (its name in Spanish is ISET) which has been used in several studies that were carried out in Mexico (Dorantes-Argandar, Cerda-Macedo, & Ferrero-Berlanga, 2019; Dorantes-Argandar, Cerda-Macedo, Tortosa-Gil, Ferrero-Berlanga, & Ferrero Berlanga, 2015; Dorantes-Argandar, Cerda-Macedo, Tortosa-Gil, & Ferrero Berlanga, 2015; Dorantes-Argandar and Ferrero-Berlanga, 2016; Dorantes-Argandar et al., 2016; Sedano-Jiménez & Dorantes-Argandar, 2018), however, these studies are restricted to only a few cities in the same country. All 21 items used in (Dorantes-Argandar et al., 2016) were used in this study for purpose of the LatinSET's validation, here presented. Internal consistency in these studies has scored an $\alpha = .80$ or higher. It evaluates stress in a 5 point Likert scale, being 1 *not stressful* and 5 *very stressful*.

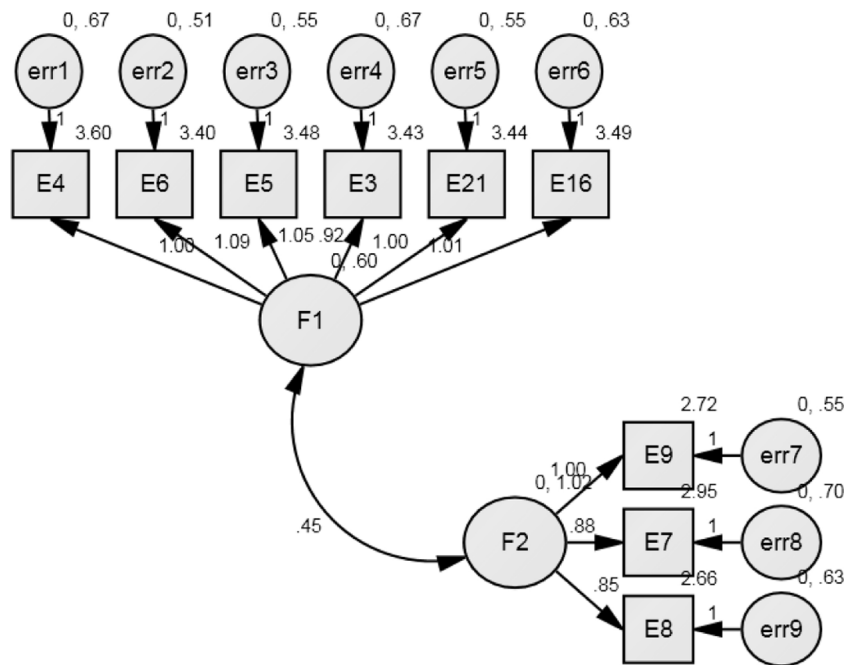


Fig. 1. Confirmatory Factorial Analysis for the LatinSET.

Table 1
Factor loadings for the EFA of the LatinSET.

Item Code	Item	Factor 1	Factor 2
E4	People that drive violently.	.706	.233
E6	Jaywalkers.	.697	.175
E5	Disrespectful drivers.	.682	.265
E3	People that cut in line.	.671	.125
E21	Imprudent pedestrians.	.622	.242
E16	Careless pedestrians.	.617	.200
E9	Passengers that criticize the driver.	.190	.804
E7	Passengers that give indications on how to drive.	.291	.728
E8	Passengers that speak loudly or argue amongst them.	.198	.703

Results

The sample was divided in half using the SPSS random assigning feature. Half was used for the exploratory factor analysis, and the other half for the confirmatory factor analysis. Cronbach's alphas are presented for each factor analysis, and both samples are not statistically different. The EFA was attempted on the 21 original items of the ISET using the maximum likelihood extraction method, which yielded a 2 factor scale that includes 9 items. Factor loadings are displayed in Table 1. This half of the sample had a mean of 3.27 and a standard deviation of .79. The items here presented are translated from Spanish and are stated in the questionnaire as is.

Table 1 displays the factor loadings for the two factor structure found in the ISET. All items have communalities above .5 and the scale explains 62.94% of total variance. Varimax rotation was applied, and the scale passed the Goodness-of-fit Test ($X^2 = 320.75$ d.f. = 19 $p < .001$). All items correlate significantly with each other, and the scale scored a Cronbach's α of .86, which is an excellent level of internal consistency (Vera-Jiménez, Ávila-Guerrero, & Dorantes-Argandar, 2014). This structure was then tested on the AMOS for the Confirmatory Factorial Analysis.

The CFA was then calculated on the other half of the sample, which is depicted in Fig. 1. This half of the sample had a mean of 3.24 and a standard deviation of .79.

This factorial structure achieved minimum requirements of fit ($X^2 = 430.04$ d.f. = 26 $p < .001$), but did not meet requirements for excellent levels of adjustment (CFI = .88 TLI = .8 RMSEA = .13) (Escobedo-Portillo, Hernández-Gómez, Estebané-Ortega, & Martínez-Moreno, 2016; Ruiz, Pardo, & Martín, 2010). Internal consistency acquired excellent levels through an α that scored .86 (Vera-Jiménez et al., 2014). The LatinSET has a good level of fit and is valid for use in at least these five Spanish-speaking countries, although higher levels of fit were expected.

Discussion

The instrument here provided had good indicators of construct validity, and is now ready for further studies in Spanish speaking countries. The methodology here presented furthers the work presented in Dorantes Argandar, Tortosa Gil, and Ferrero Berlanga (2016). This paper holds content validity (Cohen & Swerdlik, 2009) for the LatinSET with good measures of fit (Escobedo-Portillo et al., 2016; Ruiz et al., 2010; Vaz-Leal et al., 2014), and very good internal consistency (Vera-Jiménez et al., 2014). The study of stress in traffic psychology in Spanish-speaking countries now holds a powerful tool for further studies that aim to understand the relationship stress has in well-being and other psychological phenomena, or other phenomena in general, for that matter. Selye (1978) himself stated that urban settings, people gatherings and traffic have an impact on an individual's relationship with its environment, and Lazarus and Folkman (1984) agreed later. Since then, many have flocked to lay bricks on the road to understanding stress (Campos, Iraurgi, Páez, & Velasco, 2004; Casado, 2002; Emo et al., 2016; Hennessy & Wiesensthal, 1999; Herzberg, 2009; Qu, Zhang, Zhao, Zhang, & Ge, 2016). Urban concentrations have made transportation not only a complex system; it also subjects individuals to situations which place drivers in extreme difficulties while operating a moving vehicle, which may cause him or her bodily harm, to the extent that the mere exposure to said risks is a cause of loss of the well-being an individual possessed prior to being exposed. The accurate measurement of this loss is a corner stone in developing policy that faces these factors head on. Urbanization was supposed to help develop communities, yet it has had a negative effect

on people's lives (Muggah, 2012). Although there are previous instruments that evaluate stress (Cœugnet et al., 2013; Dorantes-Argandar et al., 2016; Emo et al., 2016), there are not many that focus on drivers, or instruments that are valid for use in Spanish-speaking countries.

Future studies should focus on further validation in other Spanish-speaking countries that were not included in this study, larger samples, and a better equilibrium of samples. This study's main limitation is that it did not include all Spanish-speaking countries. It cannot be said that the LatinSET is valid for its use in all of Latinamerica, much less a collection of countries or a specific country. However, the work here presented allows other researchers to generate other studies to include other countries and/or replicate the results here presented. Further studies should aim to provide convergent validity, test re-test, and more statistical information required for an instrument that should be able to evaluate stress in drivers in a more precise manner.

Conflict of interests

The authors declare that they have no conflict of interest.

References

- Ajlchi, B., Borjali, A., & Janbozorgi, M. (2011). The impact of a parenting skills training program on stressed mothers and their children's self-esteem level. *Procedia - Social and Behavioral Sciences*, 30, 316–326. <http://dx.doi.org/10.1016/j.sbspro.2011.10.063>
- Aleksandra, D., Martinovic, S. M., Vuckovic, N., & Dickov, V. (2010). Post traumatic stress disorder (ptsd) after traffic accident. *HealthMED*, 4(4), 1037–1044. <http://dx.doi.org/10.1016/j.alit.2015.10.005>
- Beck, K. H., & Watters, S. (2016). Characteristics of college students who text while driving: Do their perceptions of a significant other influence their decisions? *Transportation Research Part F: Traffic Psychology and Behaviour*, 37, 119–128. <http://dx.doi.org/10.1016/j.trf.2015.12.017>
- Beck, K. H., Wang, M. Q., & Mitchell, M. M. (2006). Concerns, dispositions and behaviors of aggressive drivers: What do self-identified aggressive drivers believe about traffic safety? *Journal of Safety Research*, 37(2), 159–165. <http://dx.doi.org/10.1016/j.jsr.2006.01.002>
- Calleja, J., & Lorenzo, A. (2008). Factores condicionantes del desarrollo deportivo. *Vasa*.
- Campos, M., Iraurgi, J., Páez, D., & Velasco, C. (2004). Afrontamiento y regulación emocional de hechos estresantes: Un meta-análisis de 13 estudios. *Boletín de Psicología*, 82, 24–44.
- Casado, F. D. (2002). Modelo de afrontamiento de Lazarus como heurístico de las intervenciones psicoterapéuticas. *Apuntes de Psicología*, 20(3), 403–414. <http://dx.doi.org/10.1017/CBO9781107415324.004>
- Cats, O., Yap, M., & van Oort, N. (2016). Exposing the role of exposure: Public transport network risk analysis. *Transportation Research Part A: Policy and Practice*, 88, 1–14. <http://dx.doi.org/10.1016/j.tra.2016.03.015>
- Cœugnet, S., Naveteur, J., Antoine, P., & Anceaux, F. (2013). Time pressure and driving: Work, emotions and risks. *Transportation Research Part F: Traffic Psychology and Behaviour*, 20, 39–51. <http://dx.doi.org/10.1016/j.trf.2013.05.002>
- Cohen, R. J., & Swerdlik, M. (2009). *Psychological Testing and Assessment: An Introduction to Tests and Measurement* (7th ed.). McGraw-Hill.
- Dorantes Argandar, G., Tortosa Gil, F., & Ferrero Berlanga, J. (2016). Measuring situations that stress Mexicans while driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, 37. <http://dx.doi.org/10.1016/j.trf.2015.12.014>
- Dorantes-Argandar, G., & Ferrero-Berlanga, J. (2016). Impulsivity and aggressive driving as mediators between self-esteem and stress in Mexican drivers. *Journal of Psychology & Behavioral Science*, 4(2), 131–141. <http://dx.doi.org/10.15640/jpbs.v4n2a12>
- Dorantes-Argandar, G., Cerda-Macedo, E. A., Tortosa-Gil, F., & Ferrero Berlanga, J. (2015). Road aggressiveness as a predictor of stress and prosocial behavior, and its influence on Mexican drivers' accident rates. *Ansiedad y Estrés*, 21(2–3).
- Dorantes-Argandar, G., Cerda-Macedo, E. A., Tortosa-Gil, F., & Ferrero-Berlanga, J. (2015). Accidentalidad de automóviles de uso particular en México: Influencia del estrés y la agresividad Psiciencia. *Revista Latinoamericana De Ciencia Psicológica*, 7(3), 418–427. <http://dx.doi.org/10.5872/psiciencia/7.3.121>
- Dorantes-Argandar, G., Cerda-Macedo, E. A., Tortosa-Gil, F., Ferrero-Berlanga, J., & Ferrero Berlanga, J. (2015). Accidentalidad de automóviles de uso particular en México: Influencia del estrés y la agresividad. *Psiciencia Revista Latinoamericana de Ciencia Psicológica*, 7(7), 418–427. <http://dx.doi.org/10.5872/psiciencia/7.3.121>
- Dorantes-Argandar, G., Cerda-Macedo, E. A., Tortosa-Gil, F., & Ferrero Berlanga, J. (2015). Agresividad vial como predictor del estrés y del comportamiento prosocial, y su influencia en la siniestralidad de vehículos particulares en México. *Ansiedad y Estrés*, 21(3), 207–217.
- Dorantes-Argandar, G., Tortosa-Gil, F., & Ferrero-Berlanga, J. (2016). Measuring situations that stress Mexicans while driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, 37, 154–161. <http://dx.doi.org/10.1016/j.trf.2015.12.014>
- Dorantes-Argandar, G., Cerda-Macedo, E. A., & Ferrero-Berlanga, J. (2019). Hope, self-efficacy, prosocial and aggressive behavior, and the anger and frustration scale for Mexican drivers. *Journal of Psychology and Behaviour*, 7(2), 35–47. <http://dx.doi.org/10.15640/jpbs.v7n2a4>
- Dorantes-Argandar, G., Rivera-Vázquez, E. Y., & Cárdenas-Espinoza, K. M. (2019). Measuring situations that stress public bus users in Mexico: A case study of Cuernavaca, Morelos. *Public Transport*, 11(30), 1–11. <http://dx.doi.org/10.1007/s12469-019-00215-y>
- Durán Romero, G. (2000). Medir la Sostenibilidad: Indicadores Económicos Ecológicos y Sociales. VII Jornadas de Economía Crítica, 1–19. <http://files.urbanismo3.webnode.com.co/200000001-5bbe75cb7a/MEDIR-SOSTENIBILIDAD.pdf>
- Eggerman, M., & Panter-Brick, C. (2010). Suffering, hope, and entrapment: Resilience and cultural values in Afghanistan. *Social Science & Medicine*, 71(1), 71–83. <http://dx.doi.org/10.1016/j.socscimed.2010.03.023>
- Emo, A. K., Matthews, G., & Funke, G. J. (2016). The slow and the furious: Anger, stress and risky passing in simulated traffic congestion. *Transportation Research Part F: Traffic Psychology and Behaviour*, 42, 1–14. <http://dx.doi.org/10.1016/j.trf.2016.05.002>
- Escobedo-Portillo, M. T., Hernández-Gómez, J. A., Estebané-Ortega, V., & Martínez-Moreno, G. (2016). Modelos de ecuaciones estructurales: Características, fases, construcción, aplicación y resultados. *Ciencia & Trabajo*, 18(55), 16–22.
- Fu, X., & Juan, Z. (2017). Exploring the psychosocial factors associated with public transportation usage and examining the "gendered" difference. *Transportation Research Part A: Policy and Practice*, 103, 70–82. <http://dx.doi.org/10.1016/j.tra.2017.05.017>
- Ge, Y., Qu, W., Jiang, C., Du, F., Sun, X., & Zhang, K. (2014). The effect of stress and personality on dangerous driving behavior among Chinese drivers. *Accident Analysis & Prevention*, 73, 34–40. <http://dx.doi.org/10.1016/j.aap.2014.07.024>
- Hair, J. F., Anderson, R. E., Tatham, R. L., Black, W. C., & Cano, D. (1999). *Análisis Multivariante. Análisis Multivariante* (5th ed.). Madrid: Prentice Hall.
- Haywood, L., Koning, M., & Monchambert, G. (2017). Crowding in public transport: Who cares and why? *Transportation Research Part A: Policy and Practice*, 100, 215–227. <http://dx.doi.org/10.1016/j.tra.2017.04.022>
- Hébert, S., Béland, R., Dionne-Fournelle, O., Crête, M., & Lupien, S. J. (2005). Physiological stress response to video-game playing: The contribution of built-in music. *Life Sciences*, 76(20), 2371–2380. <http://dx.doi.org/10.1016/j.lfs.2004.11.011>
- Hennessy, D., & Wiesenthal, D. (1999). Traffic congestion, driver stress, and driver aggression. *Aggressive Behaviour*, 25(January), 1098–2337. [http://dx.doi.org/10.1002/\(SICI\)1098-2337\(1999\)25](http://dx.doi.org/10.1002/(SICI)1098-2337(1999)25)
- Herrero-Fernández, D. (2011). Psychometric adaptation of the driving anger expression inventory in a Spanish sample: Differences by age and gender. *Transportation Research Part F: Traffic Psychology and Behaviour*, 14(4), 324–329. <http://dx.doi.org/10.1016/j.trf.2011.03.001>
- Herzberg, L. (2009). Direction, causation, and appraisal theories of emotion. *Philosophical Psychology*, 22(2), 167–186. <http://dx.doi.org/10.1080/09515080902802777>
- Ho, S.-H., Wong, Y.-D., & Chang, V. W.-C. (2015). What can eco-driving do for sustainable road transport? Perspectives from a city (Singapore) eco-driving programme. *Sustainable Cities and Society*, 14, 82–88. <http://dx.doi.org/10.1016/j.scs.2014.08.002>
- Imre, Ş., & Çelebi, D. (2017). Measuring comfort in public transport: A case study for Istanbul. *Transportation Research Procedia*, 25, 2445–2453. <http://dx.doi.org/10.1016/j.trpro.2017.05.261>. Elsevier
- Jaśkiewicz, M., & Besta, T. (2014). Heart and mind in public transport: Analysis of motives, satisfaction and psychological correlates of public transportation usage in the Gdańsk-Sopot-Gdynia Tricity Agglomeration in Poland. *Transportation Research Part F: Traffic Psychology and Behaviour*, 26(PART A), 92–101. <http://dx.doi.org/10.1016/j.trf.2014.06.012>
- Jonassaint, C. R., Ashley-Koch, A., Whitfield, K. E., Hoyle, R. H., Richman, L. S., Siegler, I. C., ... & Williams, R. (2012). The serotonin transporter gene polymorphism (5HTTLPR) moderates the effect of adolescent environmental conditions on self-esteem in young adulthood: A structural equation modeling approach. *Biological Psychology*, 91(1), 111–119. <http://dx.doi.org/10.1016/j.biopsycho.2012.05.004>
- Kelly, P. J., Rasu, R., Lesser, J., Oscos-Sanchez, M., Mancha, J., & Orriega, A. (2010). Mexican-American neighborhood's social capital and attitudes about violence. *Issues in Mental Health Nursing*, 31(1), 15–20. <http://dx.doi.org/10.3109/01612840903159744>
- La, Q. N., Duong, D. Van, Lee, A. H., & Meuleners, L. B. (2017). Factors underlying bus-related crashes in Hanoi Vietnam. *Transportation Research Part F: Traffic Psychology and Behaviour*, 46, 426–437. <http://dx.doi.org/10.1016/j.trf.2016.06.023>
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping behaviour research and therapy* (23) New York: Springer Publishing Company. [http://dx.doi.org/10.1016/0005-7967\(85\)90087-7](http://dx.doi.org/10.1016/0005-7967(85)90087-7)
- Li, F., Yao, X., Jiang, L., & Li, Y. (2014). Driving anger in China: Psychometric properties of the Driving Anger Scale (DAS) and its relationship with aggressive driving. *Personality and Individual Differences*, 68, 130–135. <http://dx.doi.org/10.1016/j.paid.2014.04.018>
- Lima-Aranzaes, C. C., Juárez-García, A., & Arias-Galicia, F. (2012). *Un estudio exploratorio sobre estresores laborales en conductores de transporte público colectivo en el estado de Morelos México. In Agotamiento profesional y estrés: Hallazgos desde México y otros países latinoamericanos* (1st ed.). México: Miguel Ángel Porrúa.
- Mallia, L., Lazuras, L., Violani, C., & Lucidi, F. (2015). Crash risk and aberrant driving behaviors among bus drivers: The role of personality and

- attitudes towards traffic safety. *Accident Analysis & Prevention*, 79, 145–151. <http://dx.doi.org/10.1016/j.aap.2015.03.034>
- Muggah, R. (2012). *Researching the urban dilemma: Urbanization poverty and violence*. pp. 1–118. Ottawa: Centro Internacional de Investigaciones Para. <http://www.iadb.org/intal/INTALCDI/PE/2012/12203.pdf>
- Polusny, M. A., Ries, B. J., Schultz, J. R., Calhoun, P., Clemensen, L., & Johnsen, I. R. (2008). PTSD symptom clusters associated with physical health and health care utilization in rural primary care patients exposed to natural disaster. *Journal of Traumatic Stress*, 21(1), 75–82. <http://dx.doi.org/10.1002/jts>
- Qu, W., Zhang, Q., Zhao, W., Zhang, K., & Ge, Y. (2016). Validation of the Driver Stress Inventory in China: Relationship with dangerous driving behaviors. *Accident Analysis & Prevention*, 87, 50–58. <http://dx.doi.org/10.1016/j.aap.2015.11.019>
- Rocha-Rego, V., Pereira, M. G., Oliveira, L., Mendlowicz, M. V., Fiszman, A., Marques-Portella, C., . . . , & Volchan, E. (2012). Decreased premotor cortex volume in victims of urban violence with posttraumatic stress disorder. *PLoS ONE*, 7(8.) <http://dx.doi.org/10.1371/journal.pone.0042560>
- Ross, E. L., Yoon, J. H., Mahoney, J. J., Omar, Y., Newton, T. F., & De La Garza, R. (2013). The impact of self-reported life stress on current impulsivity in cocaine dependent adults. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 46, 113–119. <http://dx.doi.org/10.1016/j.pnpb.2013.06.002>
- Routledge. (2016). *Transport planning and traffic safety: Making cities, roads, and vehicles safer*. <https://trid.trb.org/view/1403563>
- Ruiz, M. A., Pardo, A., & Martín, S. (2010). Modelo de ecuaciones estructurales. *Papeles Del Psicólogo*, 31(1), 34–45. www.redalyc.org/articulo.oa?id=77812441004
- Sârbescu, P., Stanojević, P., & Jovanović, D. (2014). A cross-cultural analysis of aggressive driving: Evidence from Serbia and Romania. *Transportation Research Part F: Traffic Psychology and Behaviour*, 24, 210–217. <http://dx.doi.org/10.1016/j.trf.2014.04.002>
- Sarma, K. M., Carey, R. N., Kervick, A. A., & Bimpeh, Y. (2013). Psychological factors associated with indices of risky, reckless and cautious driving in a national sample of drivers in the Republic of Ireland. *Accident Analysis & Prevention*, 50, 1226–1235. <http://dx.doi.org/10.1016/j.aap.2012.09.020>
- Sedano-Jiménez, S., & Dorantes-Argandar, G. (2018). Inventario de apego a las normas en el tránsito: Validación para cuernavaca morelos. *Psicología Revista Latinoamericana de Ciencia Psicológica*, 10(4).
- Seegerstrom, S. C., & O'Connor, D. B. (2012). Stress, health and illness: Four challenges for the future. *Psychology & Health*, 27(2), 128–140. <http://dx.doi.org/10.1080/08870446.2012.659516>
- Selye, H. (1978). *The stress of life* (2nd ed.). McGraw-Hill Education.
- Stephens, A. N., Hill, T., & Sullman, M. J. M. (2016). Driving anger in Ukraine: Appraisals, not trait driving anger, predict anger intensity while driving. *Accident Analysis & Prevention*, 88, 20–28. <http://dx.doi.org/10.1016/j.aap.2015.11.017>
- Stieger, S., Formann, A. K., & Burger, C. (2011). Humor styles and their relationship to explicit and implicit self-esteem. *Personality and Individual Differences*, 50 <http://dx.doi.org/10.1016/j.paid.2010.11.025>
- Taubman – Ben-Ari, O., Kaplan, S., Lotan, T., & Prato, C. G. (2016). The combined contribution of personality, family traits, and reckless driving intentions to young men's risky driving: What role does anger play? *Transportation Research Part F: Traffic Psychology and Behaviour*. <http://dx.doi.org/10.1016/j.trf.2015.10.025>
- Twenge, J. M., & Zhang, L. (2004). It's beyond my control: A cross-temporal meta-analysis of increasing externality in Locus of Control, 1960–2002. *Personality and Social Psychology Review*, 8(3), 220–247. <http://dx.doi.org/10.1207/s15327957pspr0803>
- Ulleberg, P. (2001). Personality subtypes of young drivers: Relationship to risk-taking preferences, accident involvement, and response to a traffic safety campaign. *Transportation Research Part F: Traffic Psychology and Behaviour*, 4(4), 279–297. [http://dx.doi.org/10.1016/S1369-8478\(01\)00029-8](http://dx.doi.org/10.1016/S1369-8478(01)00029-8)
- van der Waerden, P., Couwenberg, E., & Wets, G. (2018). Travelers' preferences regarding the interior of public buses: A hierarchical information integration approach. *Public Transport*, 10(3), 529–543. <http://dx.doi.org/10.1007/s12469-018-0189-z>
- Vaz-Leal, F. J., Rodríguez-Santos, L., García-Herráiz, M. A., Chimpén-López, C. A., Rojo-Moreno, L., Beato-Fernández, L., & Ramos-Fuentes, M. I. (2014). The role of depression and impulsivity in the psychopathology of bulimia nervosa. *Revista de Psiquiatría y Salud Mental (English Edition)*, 7(1), 25–31. <http://dx.doi.org/10.1016/j.rpsmen.2013.06.002>
- Vera-Jiménez, J. A., Ávila-Guerrero, M. E., & Dorantes-Argandar, G. (2014). *Manual de evaluación de la victimización y percepción de la violencia, delincuencia, e inseguridad y la confianza en las instituciones* (1st ed.). Cuernavaca: Editorial UAEM. <http://libros.uaem.mx/?product=manual-de-evaluacion-de-la-victimizacion-y-percepcion-de-la-violencia-delincuencia-e-inseguridad-y-la-confianza-en-las-instituciones>
- Wickens, C. M., Mann, R. E., Stoduto, G., Ialomiteanu, A., & Smart, R. G. (2011). Age group differences in self-reported aggressive driving perpetration and victimization. *Transportation Research Part F: Traffic Psychology and Behaviour*, 14(5), 400–412. <http://dx.doi.org/10.1016/j.trf.2011.04.007>
- Zilioli, S., & Watson, N. V. (2012). The hidden dimensions of the competition effect: Basal cortisol and basal testosterone jointly predict changes in salivary testosterone after social victory in men. *Psychoneuroendocrinology*, 37(11), 1855–1865. <http://dx.doi.org/10.1016/j.psyneuen.2012.03.022>