Safety Science 66 (2014) 36–46

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

Road traffic culture and personality traits related to traffic safety in Turkish and Iranian samples

Trond Nordfjærn [a,*], Özlem Şimşekoğlu [b], Mohsen Fallah Zavareh [c], Amin Mohamadi Hezaveh [c], Amir Reza Mamdoohi [c], Torbjørn Rundmo [d]

[a] Norwegian Institute for Alcohol and Drug Research, Department of Narcotics, Box 565 Downtown, 0105 Oslo, Norway
[b] Izmir University of Economics, Department of Psychology, Izmir, Turkey
[c] Tarbiat Modares University, Highway Engineering & Transportation Planning Department, Tehran, Iran
[d] Norwegian University of Science and Technology, Department of Psychology, Trondheim, Norway

ARTICLE INFO

Article history:
Received 23 May 2013
Received in revised form 22 January 2014
Accepted 4 February 2014
Available online 26 February 2014

Keywords:
Road traffic culture
Personality
Attitudes
Risk perception
Driver behaviour

ABSTRACT

This study aims to examine differences in cultural road traffic symbol exchange, risk propensity personality traits, risk perception, attitudes towards traffic safety and driver behaviour in a Turkish and Iranian sample. In addition we investigate the capability of personality traits and cultural road traffic symbol exchange to predict risk perception, attitudes towards traffic safety and driver behaviour in these two samples. A questionnaire survey was carried out in samples of Turkish ($n = 213$) and Iranian ($n = 254$) road users. The results showed that Iranian drivers were more likely to conduct rule violations and speeding, and were less likely to use seat belts than drivers in the Turkish sample. The Iranian sample also estimated a lower probability of road traffic accidents and also less severe health consequences of road traffic accidents. Personality traits, and particularly normlessness, were the strongest predictors of attitudes and driver behaviour in both samples. However, cultural variables also added to the explained variance in all three social cognitive constructs among Iranians. Trait theory may have a stronger applicability than cultural theory in developing middle income countries. Human factor campaigns could benefit by focusing on personality traits and, to some extent, on cultural road traffic symbol exchange to facilitate traffic safety in Iran and Turkey. Investments in development of road traffic infrastructure may not be efficient if psychological cognitions and driver behaviour are not addressed accordingly in the two countries.

1. Introduction

Recent estimates have shown that 1.24 million human lives are lost worldwide on a yearly basis in road traffic fatalities (World Health Organization, 2013). As such, road traffic fatalities constitute a major issue for public health. This public health issue is of a stronger concern in developing middle income countries, such as Turkey and Iran, where increased economic and technological development has led to higher motorized activity (e.g. in terms of goods transported and the number of drivers and passengers in the road systems). Meanwhile, the road transportation system in Turkey is substantially safer than in Iran. Fatality rates in the Iranian road transportation system are estimated to be 31.43 deaths per 100.000 inhabitants and 11.25 deaths per 10.000 registered vehicles. The corresponding rates in Turkey are 5.56 and 2.68, respectively (World Health Organization, 2013). The present study aims to contribute to an improved theoretical understanding of traffic safety in developing middle-income countries by testing and comparing assumptions from cultural theory and trait theory in Turkey and Iran.

Turkey and Iran are neighbour countries located in the Middle East and clustered in the upper range of middle income countries (World Bank, 2013). Both countries aim to achieve higher standards in terms of international economic and development rankings. Turkey and Iran have traditionally been heavily based on agricultural activities, with a strong central authority and political sovereignty. The majority of inhabitants in both countries are Muslims, although they belong to different sects of Islam. The two countries also face substantial challenges related to the development of infrastructure, congested road traffic and high traffic volume in the cities, and relatively high accident rates on one hand, and rapidly growing populations and vehicle parks on the other hand. Turkey and Iran are also different in terms of modernization patterns, democratization and their political orientation towards western countries and institutions (see Güraka and Köksal,

* Corresponding author. Tel./fax: +47 22 34 04 00.
E-mail address: tn@sirus.no (T. Nordfjærn).

http://dx.doi.org/10.1016/j.ssci.2014.02.004
0925-7535/

2011). Although both countries are classified in the upper bound of the middle income countries, the Gross Domestic Product (GDP) per capita in Turkey is approximately twice the GDP per capita of Iran (Table 1). As seen in the table, Iran and Turkey have about the same population size, with Iran having a less developed road network and a substantially lower GDP growth rate than Turkey. Moreover, reports on enforcement activities indicate that the level of enforcement of speed limits, drink–driving laws and seat-belt laws are all relatively higher in Turkey compared to Iran.

Iran and Turkey have traditionally been compared on the basis of well-known objective development measures which are routinely collected. A body of research in high income developed countries with good traffic safety records has, however, contributed to improved theoretical frameworks for understanding social cognitive attributes related to traffic safety (e.g. Iversen and Rundmo, 2004; Ulleberg and Rundmo, 2003). There is an overall lack of studies which have put assumptions in these theories to test in developing middle income countries. The risk of road traffic crashes is substantially higher in these countries compared to high income countries, and the crash rates are expected to increase towards epidemic proportions in developing middle income countries if adequate countermeasures are not implemented (Peden et al., 2004; World Health Organization, 2013). As such, it is important that the theoretical assumptions are valid in these countries because these theories may guide the development of countermeasures.

Both cultural and psychological precursors are recognized as important human factors contributing to differences in road crash rates (OECD, 2008). Possibly, cultural tendencies and psychological factors, such as attitudes, perceptions of risks and personality traits, are more likely to influence traffic safety in countries where the enforcement of traffic regulations is scant. According to the World Bank (2002), the police in low and middle income developing countries lack training in dealing with the enforcement of traffic regulations and they also often lack the resources to conduct the enforcement. It may be important to investigate the role of traffic culture and psychological traits for traffic safety in two middle income developing countries, because low levels of enforcement and underdeveloped barrier systems in the road traffic system can open for more individual and informal interpretations of what constitute safe behaviour in the system. For instance, individuals scoring high on the normlessness trait, a personality trait where people have a strong tendency to violate norms in order to obtain individual social goals, could be more likely to violate traffic regulations when there are no impeding engineered countermeasures and no instantaneous clear-cut negative consequences associated with the violations.

The social cognitive perspective is one of the most commonly applied theoretical approaches to understand human factors relevant for road traffic safety. Two of the more important concepts within this framework are risk perception and attitudes towards traffic safety. Risk perception is usually conceptualized as the perceived probability of road traffic accidents multiplied with the perceived potential severity of consequences (Sjöberg, 1999). Attitudes towards traffic safety refer to positive or negative evaluations of road traffic regulations (Iversen and Rundmo, 2004). Risk perception and attitudes towards traffic safety are primarily interesting because they both are central components in social cognitive theories aimed to predict driver behaviour, such as the Theory of Planned Behaviour (Ajzen and Fishbein, 1980), the Health Belief Model (Janz and Becker, 1984) and the Protection Motivation Theory (Rogers, 1983). Low risk perception and unsafe attitudes towards traffic safety have been found to be associated with increased levels of risky driver behaviour in a range of studies (e.g. Iversen and Rundmo, 2004; Machin and Sankey, 2008). Risky driver behaviour, such as speeding, seatbelt non-use and ignorance of traffic regulations, is in turn closely linked with safety criterion variables, such as accident involvement (Parker et al., 1995).

Social cognitive safety factors, such as traffic risk perception and attitudes towards traffic safety, are relevant in middle-income countries because they may shape the basis for human factor interventions aimed to amend risky driver behaviour. Although Peden et al. (2004) argued that engineered countermeasures could be more successful than psychological interventions in increasing safety in developing middle income countries; engineered measures are expensive in their implementation and are often established in urban regions with high traffic load. This could in turn cause a geographic redistribution of the traffic fatality risk to rural regions in these countries. Moreover, in line with the Theory of Safe Systems, human factors and engineered measures are of equal importance in event chains leading to a road traffic crash (Larsson et al., 2010). Psychological interventions targeting risk perception and attitudes could therefore be an important and necessary supplement to engineered measures in middle income countries as these interventions are associated with lower costs and may also be carried out on a broader scale.

Very few studies, if any, have integrated and examined the capabilities of trait theory and cultural theory to predict risk per-

Table 1
Demographic, economic and transportation statistics in Turkey and Iran (World Bank, 2013).

Indicator name	Turkey				Iran			
	2008	2009	2010	2011	2008	2009	2010	2011
Land area (1000 km^2)	769.63	769.63	769.63	769.63	1628.55	1628.55	1628.55	1628.55
Population, total (million people)	70.92	71.85	72.75	73.64	72.29	73.14	73.97	74.80
Population growth (annual %)	1.32	1.29	1.25	1.21	1.19	1.17	1.14	1.11
Literacy rate, adult total (% of people ages 15 and above)	N.A.	90.82	N.A.	N.A.	85.02	N.A.	N.A.	N.A.
GDP (current US$)	7.3	6.15	7.31	7.75	3.38	3.31	N.A.	N.A.
GDP growth (annual %)	0.66	−4.83	9.16	8.50	2.3	1.8	N.A.	N.A.
GDP per capita (current US$)	10297.51	8553.74	10049.77	10524.00	4678.25	4525.95	N.A.	N.A.
GDP per capita growth (annual %)	−0.66	−6.05	7.80	7.20	1.09	0.62	N.A.	N.A.
Roads, total network (1000 km)	351.96	362.66	367.26	N.A.	180.96	192.69	198.87	N.A.
Road density (km of road per 100 km^2 of land area)	45	46	46.87	N.A.	10	11	11.40	N.A.
Motor vehicles (per 1000 people)	138	142	154.8507	N.A.	128	N.A.	N.A.	N.A.
Vehicles (per km of road)	29	29	30.67489	N.A.	51	N.A.	N.A.	N.A.
Goods transported in roads (million ton-km)	181,935	176,455	190,365	N.A.	N.A.	N.A.	N.A.	N.A. (178,679[a])
Passengers carried in roads (million passenger-km)	206,098	212,464	226,913	N.A.	N.A.	N.A.	N.A.	N.A. (58,400[a])

N.A. = Not Available.
[a] Bureau of Information Technology, Iran Road Maintenance and Transportation Organization (2011).