

## Artikel Asli/*Original Articles*

# The Association of Personality Dimensions, Perceived Stress and Emotion Regulation to Driving Anger among Taxi Drivers in Iran (Perkaitan Dimensi Personaliti, Tekanan Pengamatan dan Regulasi Emosi Terhadap Kemarahan Memandu dalam Kalangan Pemandu Teksi di Iran)

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### ABSTRACT

*The purpose of the present study was to determine the associations of personality dimensions, perceived stress and emotion regulation to driving anger among taxi drivers in Iran. Using a convenience sampling procedure, a number of 120 taxi drivers were recruited for the study. Data were collected using a sociodemographic data sheet, the HEXACO personality inventory, the perceived stress scale, the cognitive emotion regulation questionnaire and the driving anger scale. The data were analyzed using Pearson's correlation coefficients and multiple regression analysis. Findings revealed that 5% to 20% of taxi drivers experience high levels of anger while driving. Most taxi drivers agree that slow driving and traffic obstructions as frustrating and anger-provoking. The drivers reported experiencing stress frequently. The personality dimensions of extroversion, agreeableness and honesty/humility were found to be associated with anger specifically related to the presence of police. Among the cognitive emotion regulation strategies, only catastrophizing and positive refocusing were found to be associated with driving anger from the involvement of police. Perception of stress, extroversion and conscientiousness and positive refocusing together explained 19.1% of the variance associated with anger elicited by driving situations, with the personality traits making the largest contribution.*

*Keywords: Personality; stress; emotion regulation; driving anger; road rage*

### ABSTRAK

*Tujuan kajian ini adalah untuk menentukan kaitan dimensi personaliti, tekanan pengamatan dan regulasi emosi terhadap kemarahan memandu dalam kalangan pemandu teksi di Iran. Dengan menggunakan prosedur pensampelan mudah, seramai 120 pemandu teksi telah direkrut untuk kajian ini. Data dikumpul menggunakan lembaran data sosiodemografi, inventori personaliti HEXACO, skala tekanan pengamatan, soal selidik regulasi emosi kognitif dan skala kemarahan memandu. Data dianalisis dengan menggunakan korelasi Pearson dan regresi berbilang. Dapatan kajian menunjukkan bahawa 5% hingga 20% pemandu teksi mengalami tahap kemarahan tinggi semasa memandu. Kebanyakan pemandu teksi bersetuju bahawa pemanduan perlahan dan halangan trafik sebagai mengecewakan dan membangkitkan kemarahan. Pemandu melaporkan kerap mengalami tekanan. Dimensi personaliti bagi ekstroversi, kebertujuan dan kejujuran/rendah diri didapati berhubungkait dengan kemarahan khususnya berkait dengan kehadiran polis. Antara strategi regulasi emosi kognitif, hanya kebencanaan dan pemfokusan semula positif didapati berkaitan dengan kemarahan memandu akibat penglibatan polis. Persepsi tekanan, ekstroversi dan sifat berhati-hati dan pemfokusan semula positif menjelaskan 19.1% varians berkaitan dengan kemarahan yang dibangkitkan oleh situasi memandu dengan sifat personaliti memberikan sumbangan terbesar.*

*Kata kunci: Personaliti; tekanan; regulasi emosi; kemarahan memandu*

### INTRODUCTION

Although the automobile has conferred comfort to man, accidents have been life threatening. From this perspective, Iran is in a state of crisis, as it leads in the number of road deaths per capita and has always maintained this position. However, in other societies too, accidents are damaging. Research shows that in the US alone, damages from driving accidents equal \$230.6 billion per year. Road rage is a relatively novel term which was first described in the US in the late 1980s (Fong et al. 2001). Behaviors associated

with road rage have been contradictorily defined (Smart and Mann 2002; Dula & Geller 2003). Display of insulting gestures to other drivers followed by aggressive behaviors is considered as a kind of road rage (Joint 1995; Wells – Parker et al. 2002; Miller et al. 2002; Smart et al. 2003). Although there is no consensus on a definition of road rage (Smart & Mann 2002; Smart et al. 2005), it can be defined as attempts to intimidate, threaten, hurt or kill other drivers, passengers or pedestrians (Smart 2005). Epidemiological evidence shows that victims and culprits of road rage are at significantly greater risk of being involved in traffic

accidents (Mann et al. 2007). Although road rage has been referred to in other studies (Wells – Parker et al. 2002), road rage is described through risky driving or direct confrontations with other drivers.

Several studies support the effect of various personality traits (sensation seeking, normlessness and aggression) on risky driving behaviors among young drivers in Canada, Norway and Australia. Sensation seeking has been found to be associated with risky driving (Jonah et al. 2001; Ulleberg & Rundmo 2003) and significantly predict driving speed (Jonah et al. 2001; Hatfield et al. 2014). Other personality characteristics like anxiety have also been reported as associated with sensation seeking and risky driving (Olteal & Rundmo 2006). Besides, aggressive behavior (frustration and getting angry in traffic conditions) and violent driving were associated with speed driving in New Zealand (Begg & Langley 2004), USA (Deffenbacher et al. 2003), Australia (Fernandes et al. 2010; 2014), and Norway (Ulleberg & Rundmo 2003). In addition, emotional factors (such as anxiety and aggression) and lack of self-control have also been found to be associated with risky driving (Ulleberg & Rundmo 2003). A review of previous research reveals the role of affective and emotional factors on the perception and appraisal of danger (Rundmo 2002; Sjøberg 2006; Slovic et al. 2004). Emotions and affective components which influence decisions about risk perception through heuristic affects have been used to largely explain the risk perceived (Slovic et al. 2004). Therefore, Barret and Salovey, 2002 have suggested that emotions play a primary role in motivated behavior. Sjøberg (2006) recognized the effect of emotions on risk perception but claimed that emotions do not explain risk perception completely.

Gulian et al. (1989) studied the association of driver stress and coping strategies. These researchers assumed that driver stress could be conceptualized in one or two interrelated ways. Firstly, driver stress can be thought to follow a measurable response to a specific driving situation. Secondly driver stress can be considered in a wider sense as a pervasive personality trait which is found in certain individuals. Driver stress occurs at two levels: situational or as an accumulation of negative feelings and frustrations associated with driving experience. Each level is mutually exacerbated and reinforced by the other level bi-directionally. These researchers found that the interpretation of other drivers' behaviors including aggressive behaviors is one of the factors provoking stress. More importantly, these researchers found that 42 to 75% of drivers' responses to stress include aggressive driving behaviors. It appears that stress and negative mood occur frequently in driving situations. Every day the accompaniment of stress-provoking factors in life together with stressful driving situations can be conducive to aggressive driving (Schaeffer et al. 1988).

Personality traits, a stable pattern of thoughts, feelings and behaviors, are defined as a dimension of individual differences (McCrae & Costa 1990). In some early research, in which the individual differences approach to human

factors was used, the association between personality traits and accident proneness was analyzed with emphasis on the role of personality in accident proneness (Farmer & Chambers 1929). However, this theory was criticized as the tests used to measure the personality traits were found to be of doubtful validity as they actually measured factors such as perceptual motor intelligence and mechanical aptitude (Clarke et al. 2015). Yet, recent studies have provided support for accident proneness as a personality dimension (Neeleman 2001; Neeleman et al. 1998). Recent traffic studies have supported the relationship between personality traits and accidents (Hailakivi et al. 1989; Jonah 1997; West & Hall 1997). The five personality dimensions suggested by the Five Factor Model, Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness, can provide insight into aggressive driving (Costa & McCrae 1992). Aggressive drivers are characterized by restlessness, insulting to other drivers, recklessness and hostility. These characteristics are in association with consistent behavior patterns and personality traits. Yet, results from studies on the five factors of personality and aggressive driving behavior are contradictory. Some studies endorse a direct relationship of these five actors with aggressive driving (Arthur & Graziano 1996; Dahlen & White 2006; Matthews et al. 1991) while others do not (Chen 2009; Furnham & Saipie 1993; Lajunen 2001). Neuroticism is a personality trait defined as a natural tendency to experience negative emotions and problems. People high in neuroticism are inefficient in their attempts to overcome stress and disposed to irrational thoughts. People scoring high on the Neuroticism scale are often restless, distressed, tensed and agitated (Cavrer & Scheier 1999). Previous research (Bone & Mowen 2006; Booth – Kewley & Vickers 1994; Dahlen & White 2006; Matthews et al. 1991; White & Dahlen 2001) shows that Neuroticism is positively associated with risk driving, aggressive driving, and a number of driving accidents and deaths (Kirkcaldy & Furnham 2000; Matthews et al. 1991). Bettencourt, Talley, Benjamin and Valentine (2006) believe neuroticism to be a specific kind of aggression triggered in provocative situations. Reactive aggression is described as being associated with imagined neurotic hostility and the experience of strong and continuous anger (Costa et al. 1989).

Extroversion is a personality trait that reflects social relations and is necessary for stimulation and increase in capacity for positive emotional experiences. People scoring high on the Extroversion scale are active, talkative, optimistic and happy. Researchers have shown that extroversion is positively correlated with risky driving (Renner & Anderle 2000; Smith & Kirkham 1981; White & Dahlen 2001). Lev et al. (2008) discovered that those who violate traffic regulations, compared to those in a control group are more extroverted. Extroversion is also associated with motor vehicle accidents, road deaths, violations of traffic regulations, driving under the influence of substance use (Eysenck 1970; Fine 1963; Lajunen 2001; Martine & Boomsma 1989; Renner & Anderle 2000; Smith

& Kirkham 1981) and the use of physical aggression to other drivers (Benfield et al. 2007).

Openness to experience is defined as need for action based on new experience and resilience to things which are unfamiliar and new. Individuals who possess the trait of Openness are curious, unconventional, and prone to novelty seeking, although they are not unlawful or devoid of a value system. When Openness was explored in relation to driver behavior, only a few studies found a relation between the dimension of Openness and aggressive driving. In one study (Fernandes et al. (2007), it was found that Openness and particular attitudes to aggressive driving were better predictors of aggressive driving. Arthur (1996) found that Openness is positively correlated with accidents caused by an aggressive driver. Benfield et al. (2007) concluded that most of the aggressive behaviors shown by drivers in general were associated with low scores on openness, agreeableness and conscientiousness.

Agreeableness is a characteristic that reflects an individual's interactions and attitudes about other individuals. Individuals scoring high on agreeableness are oriented towards altruism, empathy and enthusiastic help to others. Low scores on this characteristic indicate antagonism, selfishness, manipulation and competition with others. According to Costa et al. (1989) individuals low on agreeableness tend to be hostile, provoking, confrontative, assaulting and punitive to others. Although this dimension may be correlated with aggressive behavior, particularly aggressive driving, this is only based on definition. Only few studies exist that have empirically endorsed this association. Agreeableness was negatively correlated with risky driving, road violations (Boothe – Kewley & Vickers 1994; Cellar et al. 2000) and aggressive driving (Benfield et al. 2007). Bettencourt (2006) has assumed that individuals with an aggressive personality and low scores on the Agreeableness scale are likely to display aggression both in provoking and neutral situations.

Conscientiousness is a personality trait which is studied in connection with traffic behavior. It is defined as an extent of organization, stability, behavior motivation to achieve goals. Individuals scoring high on Conscientiousness are accurate, punctual, reliable, obsessed, conventional, dutiful and self-disciplined. Such individuals are expected to heed road regulations and laws and act thoughtfully. Results of previous research show that Conscientiousness was negatively correlated with risk driving (Booth – Kewley & Vickers 1994; White & Dahlen 2001; Arthur & Doverspike 2001), aggressive driving (Bone & Mowen 2006) and a number of self-reported accidents in a 3 year period. The five factor traits are moderately related to aggressive driving. In a study by Dahlen and White (2001), only the dimension of Neuroticism was related to driving anger while Benfield et al.'s study found a correlation between road rage and agreeableness, conscientiousness and openness.

The studies mentioned above reveal that certain personality traits may be associated with driving anger. However, the association of personality traits of drivers

to the stress they experience and the way they regulate the anger they feel while driving has yet to be investigated. Therefore, the aim of the present study is to explore the relationship between taxi drivers' personality dimensions, perceived stress and emotion regulation strategies to anger experienced in various driving situations.

## METHOD

### ETHICS STATEMENT

This research protocol was approved by the Ethics Committee of the University of Mohaghegh Ardabili, Iran, and informed consent was obtained from the study participants prior to administration of the questionnaires.

### PARTICIPANTS

The population targeted consisted of male taxi drivers who were currently engaged in paid full time employment, and were working within the metropolitan area of Ardabil in Iran. Participants were recruited by approaching taxi drivers at a taxi stand in the downtown area. Only individuals working full-time as taxi drivers with driving experience of at least 2 years, and educational qualifications of at least 6 years of schooling were included in the study. Data were collected from 120 drivers who consented to take part in the study. The age range of the sample was 20-60 years ( $M = 38.4$  years,  $SD = 12.6$  years). All drivers were Farsi and Turkish speaking Iranians, of whom 15.83% had at least 8 years of schooling, 61.67% had a high school diploma, 4.17% had had some university education and 18.33% had a bachelor's degree. All data were analyzed using Pearson's correlation coefficients and multiple regression analysis.

### MEASURES

#### HEXACO PERSONALITY INVENTORY (HEXACO-PI-R; ASHTON AND LEE 2009)

The HEXACO-PI-R consists of 60 items measuring six main personality dimensions. Participants were asked to rate each of the questionnaire items on a 5-point scale (1 = 'Strongly Disagree,' 2 = 'Disagree,' 3 = 'Neutral,' 4 = 'Agree,' and 5 = 'Strongly Agree'). Scores for the six personality dimensions are calculated separately for each participant by averaging across ratings for the relevant questionnaire items. The internal consistency reliability of the HEXACO-60 inventory has been demonstrated and its convergent validity has been confirmed by correlations with measures of self-report and observer report (Ashton & Lee 2009). In the present study we used a Persian version of the HEXACO that was translated according to the recommendations of Hambleton and Patsula (1998). Thus, we selected two translators and used the "back-translation" method; that is, the first translator translated the questionnaire into Persian, and this translation was then

translated back into English. The Iranian version was found to have good reliability (Cronbach's  $\alpha = .94$ ).

#### THE PERCEIVED STRESS SCALE (PSS; COHEN ET AL. 1983)

The Perceived Stress Scale is a widely used instrument for measuring psychological stress. It is a self-reported questionnaire designed to measure "the degree to which individuals appraise situations in their lives as stressful" (Cohen et al. 1983). The PSS items evaluate the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded during the previous month. The assessed items are general in nature rather than focusing on specific events or experiences. Among the 10 items of the PSS-10, six items are negatively worded and the remaining four are positively worded. All items are rated in a 5-point Likert response format (0=never to 4=very often). When computing the total score, the four positive items are reversely coded and then added to the six negative items, so that a higher total score denotes greater perceived stress. Regarding the scale's dimensionality, most researchers have found evidence for a two-factor structure (Eskin & Parr 1996; Orucu & Demir 2009; Otto et al. 2004; Reis et al. 2010; Roberti et al. 2006; Wang et al. 2011; Wongpakaran & Wongpakaran 2010). The two factors were named Perceived Helplessness (comprised of items 1, 2, 3, 6, 9, and 10) and Perceived Self-efficacy (comprised of items 4, 5, 7, and 8, which are reversely coded when computing the total score). The PSS-10 has demonstrated adequate internal consistency, with Cronbach's alpha coefficients ranging from 0.72 to 0.91. In the current study, the internal consistency was found to be 0.71.

#### THE COGNITIVE EMOTION REGULATION QUESTIONNAIRE-SHORT (CERQ-SHORT; GARNEFSKI ET AL. 2001)

The Cognitive Emotion Regulation Questionnaire is a multidimensional questionnaire designed to identify the cognitive emotion regulation strategies an individual uses after having experienced negative events or situations. The questionnaire refers exclusively to an individual's thoughts after having experienced a negative event. The CERQ-short is a 18 item self-report questionnaire with a 5 point Likert response format (1 almost never to 5 almost always) measuring nine dimensions of emotion regulation classified into two categories as adaptive strategies (Acceptance, Positive Focusing, Refocus on Planning, Positive Reappraisal and putting into Perspective) and non-adaptive strategies (Self-Blame, Rumination, Catastrophizing and Blaming Others). Previous research has revealed that all subscales have good internal consistencies ranging from .68 to .86 (Garnefski et al. 2004). The internal consistency of this scale in the present study was 0.72.

#### DRIVING ANGER SCALE (DAS; DEFFENBACHER ET AL. 1994)

Driving anger was measured with the 33item Driving Anger Scale that assesses the degree of anger felt in response to

various driving-related situations. Respondents are asked to imagine themselves in various anger-provoking driving situations and to rate the amount of anger they would feel on a five-point scale from 1 (not at all) to 5 (very much). The DAS has six subscales: (1) hostile gestures, (2) illegal driving, (3) police presence, (4) slow driving, (5) discourtesy, and (6) traffic obstructions. Mean scores of 4 and above were considered to be indicative of high levels of driving anger. The authors have reported acceptable levels of internal consistency and test-retest reliability (Deffenbacher et al. 1994, 2000) for the DAS. The DAS scores also correlate with general trait anger and trait anxiety scores, and the scale has been found to differentiate high-from low-anger drivers (Deffenbacher et al. 2000, 2001). In the present study, the internal consistency of the scale (Cronbach's  $\alpha$ ) was found to be .86.

#### DATA ANALYSES

Descriptive statistics including means and standard deviations were computed for all the variables. Pearson's  $r$  correlation coefficients were used to explore the associations between the variables and multiple regression analysis was used to make some relevant predictions.

#### RESULTS

On average 13.3% of the taxi drivers reported experiencing high levels of driving anger, with hostile gestures and discourtesy from other drivers provoking extreme anger in 5% of the drivers and slow driving provoking high anger levels in 20% of the drivers. The percentage of drivers reporting high levels of anger in the various anger provoking driving situations is displayed in Table 1. The data also indicate that the mean stress scores of the drivers participating in this study was 24.10 ( $SD = 4.49$ ). The mean scores on the various personality dimensions range between 30.74 (emotionality) and 33.79 (openness), on emotion regulation strategies between 3.05 (blaming others) and 4.87 (refocus on planning) and on driving anger from 1.97 (police presence) to 2.66 (discourtesy from other drivers). The means and standard deviations of the scores obtained by the participants on the various variables studied are presented in Table 2. All items on the DAS evoked at least a mean of 1.5 points (Table 2) on the 5-point anger scale. The associations of the personality dimensions, perceived stress and cognitive emotion regulation strategies used with indices of driving anger are displayed in Table 3. As can be seen, only the dimensions of honesty/humility, extroversion and agreeableness show any association with driving anger. To put it precisely, the honesty/humility dimension correlates negatively with the anger induced by the presence of police ( $r = -.24, p < .01$ ), extroversion correlates positively with anger from illegal driving ( $r = .18, p < .05$ ), as well as from the presence of police ( $r = .19, p < .01$ ), and agreeableness correlates negatively with

anger from both police presence ( $r = -.26, p < .01$ ), and slow driving of other drivers ( $r = -.20, p < .05$ ). Stress perceived by the drivers seems to be associated only with anger from the presence of police ( $r = .23, p < .05$ ). None of the other indices of driving anger were related to the general stress experienced by drivers. Among the emotion regulation strategies reported to be used by the drivers, positive re-appraisal correlated negatively with anger from hostile gestures of other drivers ( $r = -.25, p < .01$ ), while positive refocusing ( $r = -.19, p < .05$ ) and catastrophizing ( $r = .22, p < .05$ ) correlated negatively and positively with anger from the police involvement in one form or another, respectively and putting into perspective correlated positively with behaviors of others that are primarily seen as discourteous, or rude, rather than illegal or impeding ( $r = .19, p < .05$ ).

TABLE 1. Percentage of drivers reporting high levels of anger from various reasons

Driving situations	Percentage (%)
Hostile gestures	5
Illegal driving	9.2
Police presence	8.3
Slow driving	20
Discourtesy	5
Traffic obstruction	18.3
Total	13.3

TABLE 2. Mean and standard deviations of obtained by the participants on the variables of the study

		Mean	Std. Deviation
Personality dimensions	Honesty/Humility	32.37	5.28
	Emotionality	30.74	5.38
	Extroversion	31.92	6.41
	Agreeableness	31.81	5.30
	Conscientiousness	32.95	6.02
	Openness	33.79	8.47
	Perceived stress	24.10	4.49
Emotion regulation	Self-Blame	3.30	2.11
	Acceptance	4.49	4.28
	Rumination	4.46	1.91
	Positive Refocusing	3.26	2.03
	Refocus on Planning	4.87	2.14
	Positive Re-appraisal	4.69	2.29
	Putting into Perspective	4.34	1.98
	Catastrophizing	3.48	2.15
Driving anger	Blaming Others	3.05	2.02
	Hostile gestures	2.41	1.45
	Illegal driving	2.24	1.13
	Police presence	1.97	1.06
	Slow driving	2.38	0.75
	Discourtesy	2.66	1.15
	Traffic obstructions	2.28	0.69
	Road rage	2.38	0.66

TABLE 3. Associations of personality dimensions, perceived stress, and emotion regulation strategies with driving anger and its subscales

	Hostile gestures	Illegal driving	Police presence	Slow driving	Discourtesy	Traffic obstructions	Driving anger
<i>Personality dimensions</i>							
Honesty/Humility	.15	.06	-.24**	.01	-.01	.01	.01
Emotionality	.12	-.08	-.01	-.11	.06	.06	.03
Extroversion	-.14	.18*	.19**	-.04	-.01	.02	-.03
Agreeableness	-.10	.07	-.26**	-.20*	.03	-.04	-.09
Conscientiousness	-.08	.16	.06	-.08	.03	-.03	.02
Openness	.01	.14	-.17	-.03	-.03	.06	-.01
Perceived stress	.16	.04	.23*	.08	-.05	.17	.11
<i>Emotion regulation</i>							
Self-blame	.13	-.02	.12	.07	.01	.04	.08
Acceptance	-.05	-.03	-.01	0-.01	-.01	-.02	-.03
Rumination	-.11	-.04	-.10	-.02	.04	-.04	-.04
Positive refocusing	-.01	.14	-.19*	.02	-.02	.16	.09
Refocus on planning	-.05	.13	-.13	.13	.13	.10	.10
Positive re-appraisal	-.25**	.07	-.11	.05	.01	.04	-.03
Putting into perspective	-.09	.09	.09	.02	.19*	.01	.11
Catastrophizing	.14	-.01	.22*	.13	.11	.05	.16
Blaming others	.08	.11	.13	.07	.08	.12	.14

\* $p < .05$ ; \*\* $p < .01$

An attempt was made to delineate the variables that may predict the anger felt from the various driving situations. To do so, a hierarchical regression analysis was run with perceived stress entered first followed by emotion regulation variables and finally the personality variables. The decision to enter the variables in this order was made on the basis of the average size of the correlation between these variables and driving anger. Significant results were obtained only for anger felt from the presence of police. The regression analyses revealed that the general stress experienced by the drivers alone explained 5.2% of the variance in anger from police presence ( $R = .227$ ,  $R^2 = .052$ ,  $F(16, 103) = 6.42$ ,  $p < .05$ ) while the emotion regulation strategy of positive refocusing explained an additional 3.4% ( $R = .293$ ,  $R^2 = .086$ ,  $F(16, 103) = 2.10$ ,  $p < .05$ ) and the personality dimensions of extroversion and conscientiousness explained an additional 10.5% ( $R = .437$ ,  $R^2 = .191$ ,  $F(16, 103) = 2.33$ ,  $p < .05$ ) of the variance in anger from police presence (Table 4).

## DISCUSSION

An increasing number of research reports (Joost-Levin et al. 2016) have indicated that the incidence of anger, aggression and violence on roads is on the rise. In spite of the public awareness regarding these phenomena, not many studies have investigated the correlates of driving anger. The purpose of the present study was to examine the association between perceived stress, emotion regulation, personality dimensions and driving anger. It was hypothesized that personality dimensions, perceived stress and emotion regulation strategies would all influence the amount of anger drivers experience during driving. The drivers participating in this study reported experiencing a considerable degree of anger (Lajunen et al. 1998). Slow driving and traffic obstructions were reported as most anger provoking. Illegal driving and police presence were also reported as causing intense anger to the drivers. Hostile gestures and other discourteous behavior were reported as anger provoking only by 5% of the drivers. These findings are in sharp contrast with those reported for drivers in developed countries such as the USA, Britain and Australia where discourtesy and hostile gestures from other drivers were found to be most anger provoking (Hoggan & Dollard 2007). The findings of the present study are partially in agreement with a recent study (Stephens et al. 2016) conducted in Ukraine where impeded speed and traffic congestion were found to be most anger provoking. The finding that slow driving and traffic obstructions were reported to be extremely anger provoking by a large percentage of drivers may reflect the higher frequency of these events in Iran. That is, this finding may be indicative of the larger number of vehicles plying in the city than the existing road conditions can accommodate. Therefore, an incompatibility between the speed limit and the road characteristics may cause anger in drivers.

Alternatively, the finding might be associated with the fast pace of modern life. The pace of Iranian life in large cities has sped up to such a degree that most working people seem to be affected by a sense of the pressure of time. As a result, when traffic obstructions occur or when the flow of traffic is slow, drivers tend to get impatient and angry. Although anger experienced as a consequence of the illegal driving behavior of other drivers does not seem unreasonable, the finding that a lot of drivers reported experiencing anger by the presence of police involvement in some form or the other may indicate the resentment of the drivers from police presence. Do the drivers feel justified when they break traffic rules blaming the road conditions for their violations? Further research is needed to shed light on this issue. The resentment toward the police may also be due to the association of the police presence with the high fines levied on traffic violations.

The drivers in this study also reported experiencing considerable stress as indicated by the high mean scores on the perceived stress scale. Psychological factors have been found to be associated with driving anger. Some studies have indicated the contribution of the general stress associated with modern living (Lupton 2002), while other authors have mentioned the tendency to displace anger, to attribute blame to others and work stress as contributing factors (Britt & Garrity 2006; Hoggan & Dollard 2007; Lawton, and Nutter 2002). According to the effort-reward imbalance (ERI) model of work stress, high employee effort with low reward (money, esteem, job security/opportunity for career development) can result in work stress (Peter & Siegrist 1997). Taxi driving as a job in Iran is neither considered a prestigious occupation in terms of income and education nor does it provide an opportunity for career development. The association of stress with driving anger might be indicative of the economic and financial demands imposed on the drivers, which are perceived by them as exceeding their coping ability. Financial stress may impact interpersonal relationships within the family, the ability to engage in leisure activities, etc. and frustration from these stressors may result in driving anger (Galovski & Blanchard 2004).

Investigation into the associations between the general stress experienced by the drivers, their emotion regulation strategies and personality dimensions with anger experienced in various driving situations revealed certain interesting results. Perceived stress was associated only with anger from the presence of police. Since the stress scale used in this study detects how unpredictable, uncontrollable, and overloaded respondents find their lives to be, the obtained association between perceived stress and anger from the presence of police likely implies that taxi drivers, who are under a lot of financial and economic pressure do not view the presence of police on the already crowded roads positively. That is, rather than viewing the presence of police as facilitating traffic flow and reducing traffic violations, they probably perceive the presence of police as punitive. Stress and negative

emotions experienced while driving when felt profoundly, are likely to have deleterious effects on the attention level of a driver. Although driving behavior is mostly automatic, active vigilance is essential for road safety. The presence of police, although anger-eliciting, might serve to keep the drivers vigilant. In a recent study in Spain, the male gender (González-Iglesias et al. 2012) and in Malaysia, the age of drivers (Sullman, Stephens & Yong 2014) were found to be positively and negatively associated with anger felt toward police presence, respectively. Findings of the present study are congruent with the findings of these studies.

The emotion regulating strategies of positive refocusing and catastrophizing were found to be associated with anger from the presence of police. Catastrophizing, refers to thoughts of explicitly emphasizing the terror of what has been experienced and positive refocusing refers to thinking about positive experiences instead of thinking about the actual event. Catastrophizing has consistently been associated with negative emotions like depression, anxiety, stress and anger (D'Acremont & van der Linden 2007; Garnefski & Kraaij 2006; Garnefski et al. 2001; Jermann et al. 2006; Kraaij et al. 2003; Kraaij et al. 2003). Martin and Dahlen (2005). The high levels of stress reported by the drivers coupled with the negative correlation between positive refocusing and anger from the presence of police and the positive association of catastrophizing with resentment toward police presence further confirms that the already stressed drivers do not view the presence of police on the roads favorably. Rather than being considered facilitative of road safety and enforcing traffic regulations, the police are viewed as being punitive and adding to the already existing stress levels.

The relationship between the environmental context and driving stress has not been investigated in many studies. In one study (Burns & Katovich 2003), traffic/congestion, poor engineering/road design, and road construction were some of the major environmental factors reported as causes of road rage. The number of miles driven per day, busy roads, traffic density, the context of anonymity, and aggressive environmental stimuli through billboards and building signs have also been reported (Lupton 2002; Parker et al. 2002; Sharkin 2004; Smart et al. 2004). These aversive conditions, which occur with some regularity during daily driving situations in large cities, are stressful owing to their impedance properties. They constrain movement and goal-directed activity, creating an aversive and frustrating condition. Routine exposure to such conditions is stressful. These stressors may serve as aggressive cues, which accumulate or combine with other factors to produce aggressive responses. In the present study, it might be that such environmental stressors along with the added effect of time predispose the driver to react with anger to the presence of police which is perceived as frustrating or punishing.

Among the personality dimensions, only honesty/humility (inversely), extroversion and agreeableness

(inversely) emerged as associated with anger from the presence of police. That is, drivers with high scores on the Honesty-Humility scale feel little temptation to break rules and, therefore, do not feel angered by the presence of police in any form on the roads. Conversely, drivers with low scores on this scale are inclined to break rules for personal profit and, therefore, will feel reasonable resentment toward the involvement of the police on the road. Previous research on the five-factor personality model dimensions and aggressive behaviour of drivers has shown that neuroticism was positively correlated with aggressive driving (Bone & Mowen 2006; Dahlen & White 2006). A few studies have pointed to the association between openness and aggressive driving. Arthur and Graziano (1996) found openness to be positively associated with accidents caused by the aggressive driver. Benfield et al. (2007) concluded that the majority of aggressive behaviors exhibited while driving were associated with low scores on the openness scale as well as low scores on the scales of agreeableness and conscientiousness. Agreeableness was negatively correlated with the expression of aggression while driving (Benfield et al. 2007). Bettencourt et al. (2006) has suggested that individuals with an aggressive personality and low scores on agreeableness are likely to express aggression not only in provoking situations but also in neutral situations. Considering that Individuals scoring high on agreeableness tend to be altruistic, empathetic and willing to help others, it is likely that they tend to forgive the wrongs done by pedestrians and other drivers, are willing to compromise and cooperate with others, and can easily control their temper. Conversely, those with low scores on this scale would be expected to hold grudges against those who have harmed them, be rather critical of others' shortcomings, be stubborn in defending their point of view, and feel anger readily in response to mistreatment. The negative association between agreeableness and anger from the presence of police merely confirms this expectation. The positive correlation between extroversion and driving anger has been reported in previous studies. Research has shown that extraversion is positively correlated with risky driving (Renner & Anderle 2000; Smith & Kirkham 1981; White & Dahlen 2001). Levet et al. (2008) found that extroverts tended to violate traffic regulations much more those in a control group. The connection between extraversion and motor vehicle accidents, traffic mortalities, violation of traffic regulations, driving under the influence of various substances (Eysenck 1970; Fine 1963; Lajunen 2001; Martin & Boomsma 1989; Renner & Anderle 2000; Smith & Kirkham 1981) and the use of physical aggression toward other drivers (Benfield et al. 2007) has also been endorsed. The association of the dimension of extroversion with anger felt toward the presence of police in the present study is in keeping with findings from previous research.

## CONCLUSION

In sum, the findings of the present study reveal that situations that taxi drivers in Iran find most anger provoking are different from those reported for drivers in developed countries. These findings may underscore the need for exploratory studies to identify the various types of anger-inducing situations which are likely to be different from those in developed countries. Furthermore, although taxi drivers in the current study tend to be provoked to driving anger in various situations, apart from overall stress experiences, only anger due to the presence of police force was predictable by the personality traits of extroversion and conscientiousness and the emotion regulation strategies of positive refocusing and catastrophizing. This finding underscores the possibility that extraverted drivers low in conscientiousness are quick to experience anger from noticing the presence of police and may attempt to regulate the anger felt by catastrophizing and expecting the worst and fail to reinterpret negative situations more positively. The fact that most of the personality variables failed to predict driving anger in various situations indicates the likelihood that emotion regulation strategies mediate or moderate the relationship between personality variables and the actual experience of anger. Future research is needed to confirm this hypothesis. It might also be useful to compare the driving anger of taxi drivers with that of drivers of private cars as that would reveal important information regarding anger associated with driving as a profession. Research into the association of driving anger, strategies used by taxi drivers to cope with the driving anger and drivers' record of traffic crimes could also shed light on the contribution of driving anger to road safety.

The findings of the present study need to be interpreted with consideration to certain limitations. The sample recruited was not stratified according to age of taxi drivers. Therefore, the generalizability of the results to the whole population of drivers is limited. Finally, all data were collected using self-report measures and on an individual basis. This increases the probability of the responses having been affected by the 'social desirability' motive.

Despite these limitations, this is the first study to examine the association of personality dimensions and emotion regulation strategies to driving anger in taxi drivers. Future research with more sensitive techniques of data handling can provide more accurate results.

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