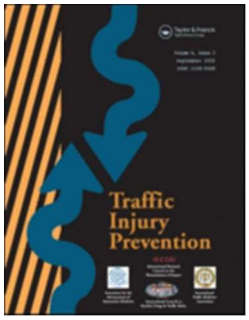

A Study on the Relationship Between Personality and Driving Styles

Journal:	*Traffic Injury Prevention*
Manuscript ID:	GCPI-2012-0067.R3
Manuscript Type:	Original Article
Date Submitted by the Author:	29-Jul-2012
Complete List of Authors:	Poó, Fernando; Consejo Nacional de Investigaciones Científicas y Técnicas. Universidad Nacional de Mar del Plata, Facultad de Psicología Ledesma, Ruben; CONICET-Universidad Nacional de Mar del Plata,
Keywords:	Driving Style, Personality, Gender, Age, Multidimensional

A STUDY ON THE RELATIONSHIP BETWEEN PERSONALITY AND DRIVING STYLES

ABSTRACT

Objective: Research on driving behavior and personality traits is a key factor in the development of driver-oriented safety interventions. However, research is fragmented and a multidimensional perspective is lacking. The primary aim of this study is to assess the multiple relationships between driving styles and personality traits using the Alternative Five Factor Model. A secondary goal is to determine if these relationships vary by gender and age.

Methods: Data were collected from a sample of 908 Argentine drivers. Driving styles were assessed using the Multidimensional Driving Style Inventory. Personality was assessed with the ZQPQ-50-CC questionnaire.

Results: Different patterns of personality are associated with different driving styles. These relationships appear to be robust with respect to gender and age; however, in some cases these variables did influence the observed relationships.

Conclusion: The results provide researchers with a more comprehensive understanding of the relationships between personality traits and driving styles. Practical prevention measures are discussed.

KEY WORDS

Driving Style, Personality, Gender, Age, Multidimensional

INTRODUCTION

How a person's personality affects his/her driving style is an issue of interest in psychology, and is also relevant to road safety (see for example, Lajunen, 2001; Ulleberg & Rundmo, 2003). The ability to identify different driving styles (e.g., risky, anxious or aggressive) based on personality traits (e.g. Neuroticism, Extroversion, Sensation Seeking) has important practical applications. For instance, it could help predict risky driving behavior and make it possible to better segment the driver population and design interventions that take varying personality types into account.

Although there already exists a wealth of literature about driving and personality traits, it is incomplete and fragmented. This is largely due to: (1) the diversity of variables that influence driving behavior (e.g., personal characteristics, road environment, cultural context, etc.); (2) the prevailing use of models and measures that assess isolated aspects of driving style instead of multidimensional approaches; and (3) the lack of studies that address personality from a unified theoretical perspective (i. e. The Big Five model –Mc Crae & John, 1992- or the Alternative Five Factor Model –Zuckerman, 2005). Consequently, it is difficult to ascertain a clear relationship between personality and driving style, and, therefore, to base preventive practices on such a relationship.

In this context, the purpose of this study is to analyze the relationships between multiple driving behaviors and multiple personality traits. This study differs from previous research in that it approaches both driving behaviors and personality traits using comprehensive, multidimensional models. It is expected that the present study will contribute a more accurate description of the relationship between personality and driving, and offer a clearer basis on which to design interventions.

Driving Style: a multidimensional definition and measure

Driving is a complex activity that develops in a dynamic context. It involves not only cognitive processes (e.g., attention and perception), but also motivational, emotional, and social interaction processes. Driving style refers to the personal manner in which a subject performs this activity. Thus, driving style is, by definition, a complex and multidimensional construct. It includes dimensions related with driving performance, such as emotions and feelings while driving, and attitudes and values regarding road traffic and other factors (Taubman – Ben-Ari, et al. 2004). Because driving style is a manifold concept, it is difficult to completely encompass and evaluate it. This difficulty manifests itself in the existence of diverse measurement instruments designed for this purpose, including, among others: the Driving Behavior Questionnaire (Parker et al. 1995); the Driving Behavior Inventory (Glendon et al. 1993); and the Driving Style Questionnaire (French et. al 1993).

In an effort to overcome the widespread use of numerous measurement tools for the evaluation of driving behavior, Taubman – Ben-Ari et al. (2004) proposed a multidimensional

conceptualization of driving style and an instrument for its assessment: the Multidimensional Driving Style Inventory (MDSI). Basically, MDSI evaluates the following driving style dimensions: (1) *reckless and careless driving style*, which refers to seeking sensations and thrills from driving, and is characterized by a tendency to drive at high speeds and give the appearance of being in a rush; (2) *anxious driving style*, which implies feelings of anxiety, fear and discomfort while driving, and a tendency to engage in relaxing activities to reduce these feelings; (3) *angry and hostile driving style*, which reflects hostile and aggressive behaviors toward other drivers and intense feelings of anger behind the wheel, (4) *patient and careful driving style*, which manifests a tendency to be polite toward other drivers and behave in a rational way on the road; and (5) *dissociative driving style*, which describes a tendency to be distracted while driving, to show cognitive gaps and dissociations, and to commit driving errors as a result. Taubman – Ben-Ari et al. (2004) have provided evidence of reliability and validity for MDSI as applied to the population of Israel. Psychometric results also proved satisfactory with the Argentine population (Poó, 2011). In summary, the MDSI offers a valid, comprehensive (non-fragmented) measure of driving style that allows for the more thorough study of the multiple relationships that may exist with personality variables.

Driving Behavior, Personality Traits and the Alternative Five-Factor Model

As mentioned earlier, although there is a good deal of literature on personality and different driving styles, its fragmented nature makes it difficult to develop a coherent picture of the relationships that exist. Prior studies predominantly assess isolated driving behaviors and personality traits. Further, some driving styles (e.g., risky and aggressive) and personality traits (e.g., Sensation Seeking) have been studied more than others; for instance, the dissociative driving style and other personality traits have not received much attention from researchers. On occasion, we have also found studies that assess various personality traits, but using different theoretical models. Collectively, these issues make it difficult to compare and integrate results.

One way to avoid these limitations is by using a comprehensive personality model to assess personality traits. The use of a common model can yield a more comprehensive perspective on the problem, and a clearer picture as to the relative contributions of different personality factors on the various driving styles. In this respect, the Alternative Five-Factor

Model (Zuckerman, 2005) is worth considering, given that it is comprised of traits that maintain a certain correspondence with driving style dimensions. The personality traits that comprise this model are: (1) Impulsive Sensation Seeking; (2) Aggression-Hostility; (3) Neuroticism-Anxiety; (4) Activity; and (5) Sociability. These traits are considered basic personality dimensions and it is generally accepted that they are grounded in a psychobiological basis (Zuckerman, 2005).

The Impulsive Sensation Seeking trait includes two components, the first of which is Impulsivity (referring to a lack of planning, carelessness, and hasty decision-making) and the second of which is Sensation Seeking (defined as seeking novel and varied experiences, and a propensity for taking physical, social, legal or financial risks just for the thrill of it). Due to these characteristics, this trait is clearly associated with a risky driving style. In fact, previous studies suggest that both sensation seeking and impulsivity are related with risky driving (Dahlen et al. 2005; Iversen & Rundmo, 2002; Jonah et al. 2001; Ryb et al. 2006). It is also to be expected that this trait would be negatively correlated with a careful driving style, but there is no evidence to this effect. There is evidence, though, to suggest that both the impulsive and sensation seeking traits contribute to an aggressive driving style (Dahlen et al. 2005). Lastly, there is no evidence associating the Impulsive Sensation Seeking trait with other, maladaptive driving styles, such as the anxious and dissociative styles.

The Aggression-Hostility trait refers to a propensity for behaving in an aggressive, thoughtless and rude manner, and demonstrating antisocial, vengeful and malevolent behavior. This trait is clearly associated with an aggressive driving style. In fact, prior studies suggest that general aggression and anger are related to aggressive and angry driving (e.g. Krahé, 2005; Stephens & Groeger, 2009). This trait may also contribute to a risky driving style. Many risky driving behaviors can be interpreted as manifestations of aggressiveness or anger. For instance, tailgating and driving faster than others. Lastly, it is also to be expected that the Aggression-Hostility trait would be negatively correlated with the careful driving style, but there is no evidence to this effect.

The Neuroticism-Anxiety trait includes negative affective states, feelings of anxiety, emotional distress, hostility, excessive worrying, a lack of self-confidence and sensitivity to criticism. By definition, this trait is associated with the anxious driving style, and indeed previous research bears this out (e.g., Dorn & Matthews, 1992; Mesken et al., 2007; Stephens &

Groeger, 2009). We believe it may also be associated with the dissociative driving style. Shahar (2009) provides preliminary evidence of this relationship, having observed that drivers with high anxiety trait values commit a greater number of driving errors and have more lapses while driving.

The Activity trait describes people who are continuously active and involved in challenging activities that require effort and dedication. It also reflects an inability to relax and high levels of energy. Prior research shows that some typical characteristics of this trait are associated with the aggressive driving style. For example, the Type A behavior pattern that is characterized by, among other things, impatience and a feeling that time is running out was associated with aggressive driving (Miles & Johnson, 2003). For this reason, one might suppose that the Activity trait is associated with the aggressive and risky driving styles, and negatively correlated with the careful driving style, but such relationships have not been established in previous studies.

Lastly, the Sociability trait describes individuals predisposed to spend time with friends and become involved with others in recreational activities, and who also demonstrate an aversion to being alone. This trait is similar to the Big Five's Extroversion trait (Zukerman, 2005). We consider that the relationship between this trait and the various driving styles is less evident, although some researchers have found that Extroversion is associated with the anxious driving style. For example, Taubman – Ben-Ari et al. (2004) found a negative correlation between anxious driving and Extroversion. Also, Matthews et al. (1991) showed that extroverted people are more likely to feel distress in low stimulation conditions. Beyond these results, the relationships appear capricious and are probably due to the fact that Extroversion is negatively correlated with traits such as Aggression-Hostility and Neuroticism-Anxiety.

Aims and Hypotheses

The objective of this study is to evaluate the relationships between driving styles and personality traits as defined in the Alternative Five Factor Model. We expect that personality traits (personal variables that generally characterize an individual) will manifest themselves in the various driving styles. Thus, we predict that each driving style can be explained in part by a combination of specific personality traits. Based on the literature and the definitions of the

Alternative Five factors we hypothesize that: (1) the risky driving style will be predicted by the Impulsive Sensation Seeking, Aggression-Hostility, and Activity personality traits; (2) the angry driving style will be predicted by the Aggression-Hostility personality trait and, to a lesser degree, the Impulsive Sensation Seeking and Activity personality traits, and that it will negatively predicted by the Sociability personality trait; (3) the anxious and dissociative driving styles will be predicted by the Neuroticism-Anxiety personality trait; and (4) the careful driving style will be negatively predicted by the Impulsive Sensation Seeking and Aggression-Hostility personality traits, and positively predicted by the Sociability personality trait.

Further, we expect these relationships to be globally robust with respect to the different age and gender subgroups. Nonetheless, differences might present themselves since it is known that certain traits are more pronounced in certain groups (e.g. Impulsive Sensation Seeking in younger people and Neuroticism-Anxiety in women). Therefore, our second objective is to explore whether the relationships between personality traits and driving styles vary according to gender and age.

METHOD

Sample

Data were gathered from a non-probabilistic sample of 908 drivers from the general population of the City of Mar del Plata, Argentina. The following inclusion criteria were used: (1) must be older than 18 years of age; (2) must have a valid driver's license; and (3) must have driven at least once a week during the past month. The sample's age range was 18 to 87 years old (M = 36.20; SD = 13.95). The sample had slightly more males (57.7%) than females. Most participants (72%) drove regularly (most days of the week). The sample included: 38.1% public and private employees; 35.8% business owners, independent contractors and professionals; and 8.1% students, with the remainder mostly homemakers and retirees. Most participants (80.6%) had an education level of at least high school.

The sample was subdivided into groups by age and gender. There were two age groups: young (under 30 years of age) (n = 389) and adult (over 30 years of age) (n= 518). The cutoff age is based on evidence that indicates that the structure of one's personality reaches

maturity at the age of 30; afterwards, only small and modest changes in personality traits take place (Costa & McCrae, 2006; McCrae & Costa, 1999).

Variables and Measures

Driving style was assessed by a Spanish-language version of the Multidimensional Driving Style Inventory (MDSI-S) (Poó, 2011). The Spanish-language version and the original MDSI do not have any significant structural differences. The instrument requires study participants to report how often they exhibit certain driving behaviors and experience certain emotions while driving. Responses are recorded on a six-point Likert scale (ranging from 1=never to 6=always). Factor analysis revealed the same five main dimensions: (1) risky driving style (example item: Enjoy the excitement of dangerous driving); (2) angry driving style (example item: Arguing with other drivers or pedestrians); (3) dissociative driving style (example item: I am often distracted or preoccupied, and suddenly have to slam on the brakes to avoid a collision); (4) anxious driving style (example item: Driving makes me feel frustrated); and (5) careful driving style (example item: Tend to drive cautiously).

Personality traits were evaluated with the short form of the Zuckerman-Kuhlman Personality Questionnaire, the ZQPQ-50-CC (Aluja et al. 2006). The ZKPQ-50-CC is composed of 50 binary items (true-false) that assess the five dimensions of the Alternative Five Factor Model. In the present study, an Exploratory Factor Analysis revealed five factors in accordance with this model.

Procedure

Data were collected anonymously during the autumn and winter of 2009. Two procedures were used. Firstly, researchers contacted participants individually through a snowball strategy and invited them to complete the surveys at our research facilities. Secondly, participants were contacted at several public venues, such as while standing on bank queues and while waiting to renew their driver's license. In the latter case, potential participants were informed that the surveys were strictly for research purposes and were unrelated with the license renewal process. Participants who met eligibility criteria and provided informed consent were handed the self-administered questionnaire. Researchers were present while the subjects

completed the questionnaire to assist them in the case of questions and to assure that all fields were completed. One hundred and twenty four people refused to participate. All interviews were realized on weekdays. No monetary or other kind of reward was given to study participants.

Data Analysis

Pearson's *r* correlations were analyzed between the personality trait and the driving style variables for the sample as a whole, as well as for the different age and gender subgroups. The statistical significance of the observed differences in correlation coefficients was analyzed using the Fisher's r-to-z transformation. Additionally, different multiple linear regression analyses were carried out to assess the effect of personality traits (predictor variables) on each driving style dimension (dependent variables). These analyses were performed for the general sample and for the sub-samples defined by gender and age. Additionally, the difference of means for the measures of personality traits and driving styles were calculated for the gender and age groups.

RESULTS

Tables 1, A1 and A2 show descriptive statistics and mean differences for gender and age groups for personality trait and driving style measures. Table 2 shows Pearson's correlations between personality traits and driving styles in the different groups. The most relevant results include: (1) positive correlations between the Impulsive Sensation Seeking personality trait and the risky, angry and dissociative driving styles; (2) positive correlations between the Aggression-Hostility personality trait and the risky and angry driving styles; (3) positive correlations between the Neuroticism-Anxiety personality trait and the anxious and dissociative driving styles; (4) negative correlations between the careful driving style and the Impulsive Sensation Seeking and Aggression-Hostility personality traits; and (5) the absence of correlations or very low correlations among driving styles and the Activity and Sociability personality traits.

Small variations in correlation patterns were observed with respect to the different subgroups. Significant differences were observed between the young subgroups in the correlations between Impulsive Sensation Seeking and risky driving ($z = 2.51$, $p<0.05$),

Impulsive Sensation Seeking and angry driving (z =2.81, $p<0.01$), and Impulsive Sensation Seeking and careful driving (z= -2.46, $p<0.05$). For the adult subgroups, significant differences were observed in the correlations between Aggression-Hostility and risky driving (z = 2.09, $p<0.05$) and Aggression-Hostility and careful driving (z= -2.28 $p<0.05$).

[Tables 1 and 2 about here]

Table 3 shows the results of the regression analysis between the dimensions of driving styles (response variables) and personality traits (predictors) for groups defined by gender and age. As stated in the first hypothesis, the main predictors for the risky driving style were Impulsive Sensation Seeking and Aggression-Hostility. These predictors are most accurate for young men. For women, Neuroticism-Anxiety emerges as a good predictor of the risky driving style. Contrary to what we had expected, no correlation was found with Activity.

[Table 3 about here]

As anticipated in our second hypothesis, Aggression-Hostility was the main predictor for the angry driving style in the sample overall, followed by Impulsive Sensation Seeking. There was no evidence of a relationship with Activity and Sociability. With respect to the subgroups, the Impulsive Sensation Seeking personality trait proved to be a predictor of the angry driving style only among men.

As expected, for the dissociative driving style, Neuroticism-Anxiety was the main predictor for the sample as a whole and in the subgroups, as well. The relationship was most pronounced for young women. Impulsive Sensation Seeking might also help predict the dissociative driving style among young drivers of both genders. With regards to the anxious driving style, the principal predictor for the sample as a whole was Neuroticism-Anxiety, but in the subgroups, this correlation held only for the adult subgroups.

As anticipated in hypothesis number four, the careful driving style was negatively predicted by Impulsive Sensation Seeking and Aggression-Hostility. We also expected to find Sociability as a predictor, but we failed to find this association. Instead, careful driving was

predicted, to a small degree, by Activity. For this driving style, the patterns of relationships varied a bit for the age subgroups. While Aggression-Hostility was a better negative predictor for the young subgroups, Impulsive Sensation Seeking was a better negative predictor for the adult subgroups.

DISCUSSION

The use of a unified personality model together with a multidimensional driving style assessment allowed us to analyze relationships across variables; in previous studies, the variables were analyzed separately or in a fragmented manner. The results obtained coincide in part with existing knowledge in this area and contribute a more comprehensive perspective and new evidence on personality traits and driving styles that have not received much attention in the literature.

As anticipated by our general hypothesis, the results indicate that individual differences in driving styles can be explained by the different Alternative Five Factor Model traits. In the case of the most studied driving styles—risky and aggressive—our findings coincide with those of other researchers who concluded that they are related with Sensation Seeking and Aggression (Jonah et al. 2001; Schwebel et al. 2006; Stephens & Groeger, 2009). But our findings go even further, identifying which trait is the most influential for each driving style and estimating the relative weight of each one. Additionally, the results indicate some variations with respect to our sample's subgroups. Among young women, the Neuroticism-Anxiety personality trait appears to predict a risky driving style. This finding partially coincides with Ulleberg (2002), which, via cluster analysis, identified a group characterized by elevated anxiety scores and low sensation seeking scores. The percentage of women in this group was higher than in the sample overall. Among men, the Impulsive Sensation Seeking trait contributes to the aggressive driving style, especially among young men, reinforcing previous findings linking Impulsivity and experiences of anger in young drivers (Dahlen et al. 2005).

Our study also provides evidence of a relationship between personality traits and other driving styles, such as the dissociative, anxious and careful driving styles. In the literature on driving behavior and personality, these styles have not received the attention that the risky and aggressive driving styles have. In general terms, the results obtained were consistent with our

hypotheses and indicate some variations in the different subgroups. In terms of the dissociative driving style, the Neuroticism-Anxiety trait proved the principal predictor (Shahar, 2009); additionally, the Impulsive Sensation Seeking trait could also predispose one to this driving style. This pattern of association was observed in the sample overall, as well as in the different age and gender subgroups, although with varying intensity. The observed relationship is novel and we recommend further research to confirm that this relationship is indeed substantive. In terms of the anxious driving style, the only predictor was the Neuroticism-Anxiety personality trait, a result that coincides with previous research (e.g. Mesken et al., 2007; Stephens & Groeger, 2009). However, in the subgroups, this effect manifests itself only among adults and not among young drivers. Finally, the careful driving style is negatively correlated with the Impulsive Sensation Seeking and Aggression-Hostility traits, which makes sense since this style is the antithesis of the risky and angry styles. Here, as well, some variations were observed in the subgroups. In general, the Aggression-Hostility trait proved a better negative predictor for young drivers, especially for women, while the Impulsive Sensation Seeking trait proved a better negative predictor for adult drivers. The negative relationship between Impulsive Sensation Seeking and careful driving for young men is an exception to this pattern. As previously indicated, this relationship can be understood as the polar opposite of the relationship with risky driving. In this sense, sensation seeking is greatest among young men and is clearly related to risky behaviors (Jonah et al. 2001).

In summary, the results provide a clearer picture of the multiple relationships between personality and driving style, and alert researchers to the potential role that other variables, such as age and gender, may have in determining driving style. At the practical level, the results show that it is incorrect to think of drivers as a homogenous group with regards to driving behavior and psychological traits. Consequently, interventions and prevention programs undertaken without clearly defining the target population may not be adequate. For example, many campaigns directed at the general population use rational arguments on the negative consequences of risky behaviors. These campaigns, though, may have dubious or even counterproductive results for certain subgroups. In this case, sensation seekers (generally young men) may be attracted to driving behaviors that are prohibited or generally considered dangerous (Ulleberg, 2002). In the case of anxious drivers, these messages may constitute a

source of anxieties, increasing their stress levels while driving.

We believe that the recognition of differences in driver subgroups can lead to more effective forms of social influence. A personality test administered to driver's license applicants may serve to identify driver subgroups. Based on this evaluation, education, orientation and training programs can be geared for different driver groups based on their personal characteristics and the types of driving behaviors they are likely to exhibit. For example, anxious drivers might receive more information and training on controlling stress and managing anxiety while driving; aggressive drivers might receive education on anger management in traffic situations. Thus, knowledge of the relationships between personality traits and driving behaviors have the potential to more effectively guide the use of resources dedicated to accident prevention and road safety.

Although the results are interesting and theoretically consistent, it is important to note the limitations of this study. First, the explanatory power of regression models tends to be lower for some driving styles, such as the anxious style. It is evident that there are other personal and situational variables that we have not measured and that could explain a person's driving style. Another limitation is related to the measurement instruments; we are aware of the problems that may present themselves with self-reporting instruments (af Whalberg, 2010). However, it is also true that there is previous evidence of validity for the instruments used. Nonetheless, it would be desirable for future studies to use alternative methods, such as in-vehicle observations, together with self-reports.

Acknowledgements

This research was supported by a contribution from the World Bank's Global Road Safety Facility and the Global Forum for Health Research through their grant facility to the Road Traffic Injuries Research Network (Agreements No. RTIRNWB-004d and RTIRNWB-005d). It also recived partial support from the Universidad Nacional de Mar del Plata and Consejo Nacional de Investigaciones Científicas y Técnicas (Argentina). We express our gratitude to these institutions for their support.

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Table 1. Descriptive statistics, mean differences and effect size for personality and driving style scales.

Variables		Cronbach's Alpha	Total Sample		Male Sample (N=524)		Female Sample (N=381)		*t*	*d*
			M	SD	M	SD	M	SD		
P.	ImpSS	.73	8.2	4.7	8.90	4.59	7.36	4.69	-4.89*	.33
Traits	Agg-Host	.70	4.3	2.4	4.65	2.49	3.82	2.37	-5.01*	.34
	N-Anx	.70	2.5	2.1	2.26	1.87	2.87	2.22	4.46*	-.29
	Act	.73	4.8	2.6	4.85	2.59	4.93	2.68	.44 ns	
	Sy	.72	4.9	2.5	4.66	2.51	5.43	2.62	4.44*	-.30
	Risky	.85	13.7	5.2	17.48	8.45	13.24	5.60	-8.51*	.59
Driving	Angry	.75	19.6	6.4	14.53	5.34	12.58	4.80	-5.62*	.38
Styles	Dissociative	.76	19.6	6.4	18.98	6.24	20.64	6.55	3.84*	-.26
	Anxious	.69	9.01	3.7	8.53	3.46	9.63	3.90	4.47*	-.29
	Careful	.75	40.9	7.1	39.93	7.29	42.41	6.53	5.24*	-.36

Note: ImpSS: Impulsive Sensation Seeking, Agg-Host: Aggression-Hostility, N-Anx: Neuroticism-Anxiety, Act: Activity, Sy: Sociability. * $p < 0.001$

Table 2. Pearson's correlations between personality traits and driving styles.

Personality Traits[a]	Drivers' Samples	Driving Styles				
		Risky	Angry	Dissociative	Anxious	Careful
Imp-SS	Total	.38**	.33**	.22**	.01	-.36**
	Young Male	.44**	.44**	.17*	-.01	-.41**
	Young Female	.21**	.18**	.26*	-.08	-.18**
	Adult Male	.34**	.32**	.23**	.05	-.35**
	Adult Female	.31**	.17**	.25**	.05	-.35**
Agg-Host	Total	.37**	.49**	.08*	.004	-.36**
	Young Male	.44**	.40**	.01	-.04	-.45**
	Young Female	.30**	.45**	.15	.11	-.35**
	Adult Male	.39**	.53**	.10	.04	-.36**
	Adult Female	.22**	.46**	.13	.04	-.17*
N-Anx	Total	.14**	.13**	31**	.19**	-.07*
	Young Male	.19**	.16**	.22**	.12	-.13
	Young Female	.30**	.12	.36**	.05	-.05
	Adult Male	.15**	.16**	.28**	.25**	-.18**
	Adult Female	.19**	.16**	.28**	.24**	-.18**
Act	Total	-.002	-.07*	-.03	-.04	.11**
	Young Male	.14*	.06	.15*	-.02	.15*
	Young Female	.11*	.01	.16*	.05	.08*
	Adult Male	-.08	-.15**	-.06	-.10	.16**
	Adult Female	-.04	.07	-.06	-.10	-.07
Sy	Total	.01	-.003	.03	-.01	-.01
	Young Male	.14*	.08	.01	-.02	-.14*
	Young Female	-.07	-.08	.02	-.02	-.01
	Adult Male	-.01	-.06	-.11*	-.12*	.07
	Adult Female	-.01	-.06	.05	-.04	.07

[a] ImpSS: Impulsive Sensation Seeking, Agg: Aggression-Hostility, Anx: Neuroticism-Anxiety, Act: Activity, Sy: Sociability

** $p < .01$ (two-tailed), *$p < .05$ (two- tailed)

Table 3. Regression analysis between the dimensions of driving style and personality traits

Response Variables (Driving Styles)	Drivers' Samples	Predictors (Personality traits[a]) Standardized Beta and statistical significance for personality predictors	R^2
Risky	Total Sample	(.29)**ImpSS**** + (.25)**Agg**** + (.05)Anx^{ns} + (.01)Actns +(-05) Sy^{ns}	.21**
	Young Woman	(.20)**ImpSS**** + (.06)Agg* + (.30)**Anx**** + (.-04)Act^{ns} + (.04)Sy^{ns}	.14**
	Young Men	(.25)**ImpSS**** + (.29)**Agg**** + (.03)Anx^{ns} + (.08)Act^{ns} + (-02)Sy^{ns}	.21**
	Adult Woman	(.10)ImpSS + (.20)**Agg*** + (.25)**Anx**** + (.14) Act^{ns} +(-.02)Sy^{ns}	.17**
	Adult Men	(.27)**ImpSS**** + (.14)**Agg*** +(.12) Anx^{ns} +(-.06)Act^{ns} + (-.05)Sy^{ns}	.14**
Angry	Total Sample	(.17) **ImpSS**** + (.42) **Agg**** + (.03) Anx^{ns} + (-.05) Act^{ns} +(-04)Sy^{ns}	.27**
	Young Woman	(.001)ImpSS^{ns} + (.43)**Agg**** + (.09)Anx* + (.02)Act^{ns} + (-03)Sy ^{ns}	.22**
	Young Men	(.31)**ImpSS**** + (.26)**Agg**** + (.08)Anx^{ns} + (.04)Act^{ns} + (-.03)Sy ^{ns}	.26**
	Adult Woman	(.03)ImpSS^{ns} + (.44)**Agg**** + (.07)Anx^{ns} +(-.09)Act^{ns} + (07)Sy^{ns}	.24**
	Adult Men	(.20)**ImpSS**** + (.45)**Agg**** + (.01)Anx^{ns}+ (.-13)**Act*** + (-.05)Sy^{ns}	.32**
Dissociative	Total Sample	(.20)**ImpSS**** + (-.06)Agg ^{ns} + (.30)**Anx**** + (-.04)Act ^{ns} + (.04)Sy^{ns}	.14**
	Young Woman	(.22)**ImpSS*** + (-.01)Agg ^{ns} + (.32)**Anx**** + (-.12)Act^{ns} + (-.02)Sy^{ns}	.19**
	Young Men	(.19)**ImpSS*** + (-.12)Agg* + (.21)**Anx**** + (.10)Act^{ns}+ (-.02)Sy^{ns}	.10**
	Adult Woman	(.17)**ImpSS*** + (.03) Agg + (.35)**Anx**** + (-.09)Act^{ns} + (.08)Sy^{ns}	.19**
	Adult Men	(.24)**ImpSS*** + (-.04)Agg ^{ns} + (.22)**Anx**** + (-.04)Act^{ns}+ (-.09)Sy^{ns}	.12**
Anxious	Total Sample	(-.01)ImpSS ^{ns} + (-.03)Agg ^{ns} + (.20)**Anx**** + (.04)Act^{ns} +(.02)Sy^{ns}	.04*
	Young Woman	(-.10)ImpSS^{ns} + (.01)Agg ^{ns} + (.09)Anx ^{ns} + (.11)Act^{ns} +(03)Sy^{ns}	.02^{ns}
	Young Men	(.01)ImpSS ^{ns} + (.09)Agg ^{ns} + (.14)Anx^{ns} + (-.05)Act^{ns} + (.02)Sy ^{ns}	.02^{ns}
	Adult Woman	(-.02)ImpSS ^{ns} + (-.06)Agg ^{ns} + (.23)**Anx**** + (-.06)Act^{ns} + (.001)Sy ^{ns}	.07*
	Adult Men	(.05)ImpSS ^{ns} + (-.03)Agg ^{ns} + (.22)**Anx**** + (-.07)Act^{ns}+ (-.05)Sy^{ns}	.07*
Careful	Total Sample	(-.28)**ImpSS**** + (-.25)**Agg**** +(.02)Anx ^{ns} + (.10)**Act**** + (.05)Sy^{ns}	.20**
	Young Woman	(-.05) ImpSS ^{ns} + (-.37) **Agg**** + (.09) Anx ^{ns} + (.08) Act^{ns} +(.01)Sy^{ns}	.12**
	Young Men	(-.26)**ImpSS**** +(-.30)**Agg**** +(-.08)Anx ^{ns} + (.20)**Act** ** + (-.09)Sy^{ns}	.30**
	Adult Woman	(-.34)**ImpSS**** + (-.09)Agg^{ns} + (.02)Anx ^{ns} + (.07)Act^{ns} + (.00)Sy ^{ns}	.13**
	Adult Men	(-.30)**ImpSS**** + (-.23)**Agg**** + (-.04)Anx ^{ns} + (.16)**Act**** +(.08)Sy^{ns}	.22**

[a] ImpSS: Impulsive Sensation Seeking, Agg: Aggression-Hostility, Anx: Neuroticism-Anxiety, Act: Activity, Sy: Sociability.

*p < 0,05, ** p < 0,01, ns: not significant

Table A1. Descriptive statistics, mean differences and effect size for personality and driving style scales for young subsamples

Variables		Young Male (N=224)		Young Female (N=167)		*t*	*d*
		M	SD	M	M		
P. Traits[a]	ImpSS	10.32	4.57	8.53	4.06	-3.56***	.41
	Agg-Host	4.83	2.44	4.04	2.51	-3.09**	.32
	N-Anx	2.18	1.87	2.76	2.22	2.76***	-.28
	Act	4.67	2.53	4.30	2.51	-1.36 ns	
	Sy	5.35	2.47	5.86	2.55	1.94 ns	
Driving Styles	Risky	18.58	8.78	14.61	4.65	-4.92**	.56
	Angry	15.18	5.23	13.01	4.51	-4.07 ns	
	Dissociative	20.12	6.97	20.84	6.30	1.00 ns	
	Anxious	8.73	3.35	10.20	3.66	3.85**	-.42
	Careful	39.31	6.99	41.04	6.74	2.53*	-.25

[a] ImpSS: Impulsive Sensation Seeking, Agg: Aggression-Hostility, Anx: Neuroticism-Anxiety, Act: Activity, Sy: Sociability.

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table A2. Descriptive statistics, mean differences and effect size for personality and driving style scales for adult subsamples

Variables		Adult Male (N=299)		Adult Female (N=218)		*t*	*d*
		M	SD	M	SD		
P. Traits[a]	ImpSS	6.46	4.32	7.83	5.19	3.62**	-.28
	Agg-Host	4.53	2.53	3.64	2.49	-4.05**	.35
	N-Anx	2.32	1.88	2.97	2.22	3.56**	-.31
	Act	4.98	2.62	5.41	2.76	1.88 ns	
	Sy	4.15	2.42	5.11	2.66	4.29**	-.37
Driving	Risky	16.59	8.03	12.21	6.39	-7.16**	0.60
Styles	Angry	14.03	5.36	12.27	5.13	-3.90**	0.33
	Dissociative	18.12	5.47	20.45	6.88	4.45**	-.37
	Anxious	8.41	3.54	9.19	4.14	2.41*	-.20
	Careful	40.36	7.51	43.52	5.97	4.88**	-.46

[a] ImpSS: Impulsive Sensation Seeking, Agg: Aggression-Hostility, Anx: Neuroticism-Anxiety, Act: Activity, Sy: Sociability.

* p< .0.05, ** p < .001