Psychological risk factors for road safety

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Abstract

This meta-analytic study examines the latest psychological research focusing on road safety on the four strategic directions proposed by domain practitioners: 1. personality characteristics in young drivers, 2. ageing population and road traffic, 3. relationship between driver personality and accident producing and 4. national profiles of drivers. This study aims to advocate in support of the idea that the Romanian road safety strategy (involving road campaigns education) must take into account the complexity of the relationship between an psychological risk factors (individual’s personality, age, national profiles of drivers) and behavior in traffic.

Keywords: road insecurity; traffic behavior; driving anger; personality; accident; young drivers;

1. Introduction

Romania still stands close to the top in the European Union statistics regarding the number of serious road accidents. European Commission aims to halve, by 2020 the number of victims on EU roads, and all European countries have initiated combined efforts of traffic police, legislators, and also psychologists, with the stated purpose of lowering road insecurity. Although the number of accidents with casualties decreases in 2010 if compared to previous years (leading to 1.210 dead in 2010, according to the Romanian Police - 2011, while the average of the last decade was about 3,000 deaths per year), there still remains a considerable gap between Western European countries and our country in regard to safety on public roads, against Romania.

The role of driving anger as a specific, “risky” personality characteristic of drivers, has been widely recognized by researchers. Hostility, anger, nervousness, low self-control, low levels of altruism and

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anxiety have also been revealed as triggers of behaviors that cause carnage on the roads. Research on drivers’ precipitation, indecision, hesitant attitude and hyperactivity; more or less conscientious self-depreciation of their own lives, combined with a strong self-destruction impulse, the pleasure of taking in risks, the need to impress, to gain prestige in traffic, the need of dominance and competition etc. are few and inconsistent.

2. Personality characteristics in young drivers

The extended groups of young drivers (Ulleberg, 2001; Roché et. al, 2004; F. Lucidi et. al, 2010) have been the subject of numerous studies. They have a definite practical value: indicate a better planning of educational interventions for novice.

As many researchers have noted, young drivers should not be treated as a homogeneous group when road safety measures are to be established. Hence, there have been identified several subgroups of drivers displaying high risk behavior in traffic, mostly men. Usually, these drivers display low levels of altruism and anxiety, an overestimate of their driving knowledge and skills, and high levels of aggressivity (“furious driving”).

The results of one of the studies quoted above (Ulleberg, 2001) have been correlated with the answers provided by drivers during a traffic safety campaign. It was found that this type of campaign seemed to have a lower lever of responsivity in the case of the aggressive drivers subgroup. Identification of subtypes of beginner drivers, on the basis of personality traits (aggressiveness, anxiety, hostility, excitability, selflessness and locus control) has been the subject of a study (Giannini et. al 2010), conducted on 1,008 high school students with the driving license. In this case, there were identifies three subtypes of junior drivers: drivers with risky driving behavior, worried, and careful drivers.

The variables analyzed in this case also showed what kind of errors were committed by the three subtypes of drivers (usually: reasoning errors, and attention errors), as well as the intentional violations of traffic rules. deliberate deviations from the road rules.

The relationship between the “macho role” of personality, the early age of the driver and the power of the automobile was explored by Krahé & Fenske (2002) on 154 male drivers, by using the Hypermasculinity Inventory. These authors show that while comparing the “macho” with the “nonmacho” male drivers group, the first group seems to be much more interested in powerful cars. Moreover, it appears that the first group do not give a very high importance to the vehicle safety issues.

Some authors have also examined the predictive value of some personality questionnaires regarding the production of car crashes by the young drivers.

For instance, Hilakivi et al. (1989) employed the 16 PF (Cattel) questionnaire in order to test 597 soldiers enrolled in a transportation unit of Finish Defense forces. The results of this study showed the followings: drivers involved in traffic accidents obtained higher scores on two specific factors: H (impulsivity, social boldness), and O (apprehension), while obtaining lower scores on the self-control (Q3) factor, as well as in the L factor (a greater confidence in their own strengths and abilities). All these dimensions are primarily linked to emotional control and to adaptation to unforeseen situations. Such results prove that 16 PF questionnaire might provide valuable information during the selection process of young drivers.

In turn, Lajunen et. al (1998) have explored several sub-factors of aggressiveness, hostility, anger or teasing to other road users. These sub factors are present especially at young drivers.

Dahlen et. al (2005) revealed that impulsiveness might help in the prediction of lifetime moving violations, risky driving, and the use of the vehicle to express anger.

Aggressive driving was predicted by reduced emotional stability according to scores provided by Driving Anger Scale (DAS) and Sensation Seeking Scale (SSS). Losses of concentration were associated
with SSS, and losses of vehicular control were predicted by reduced agreeableness and the DAS. Minor accidents, and major accidents were predicted SSS scores (Dahlen & White, 2006). In this study, three hundred and fifteen college students completed measures of driving anger, sensation seeking, Big Five personality factors, unsafe driving behavior, and driving anger expression.

Other studies (Jonah et.al, 2001; Oltedal & Rudmo, 2006; Schwebel et. al, 2006) indicated that high sensation seeking’s (SS) were significantly more likely than low SS’s to speed, not wear belts, drink frequently, drive after drinking, perceive a low risk of detection for impaired driving, and perceive that they could drink more beer before being impaired. High SS’s were also more likely to report aggressive driving habits. Anxiety was significantly correlated to excitement-seeking and risky driving behaviour, and excitement-seeking was significantly correlated to risky driving behaviour and collisions. In multivariate analyses, sensation-seeking emerged as the best predictor of self-reported driving violations.

Another important research (Roché et.al, 2004) targeted the relationship between street delinquency and delinquency on public roads. The two types of criminality have common predictors the impulsiveness and the poor school grades.

3. Ageing population and road traffic

The ageing of drivers is a strong direction of research in Europe, where the natural population growth remains negative. The research focuses on the involution of the functional capabilities of people over 65 years old (the somnolence at the wheel, the attention deficit etc.).

The elderly causes less alcohol-related accidents. But they have trouble assessing distances between vehicles, changing lanes, with complicated intersections. Older women show additional risks for road safety, as compared with men, because of an irregular practice of car driving (Gabaude, 2003).

Many studies on ageing of drivers will take into consideration the cognitive factors involved in driving. Are taken into account, for example, the difficulties that the elderly drivers have in case of change of the known road environment, the heavy adaptation to next-generation auto technologies etc.

Fontaine (2003) claims that elderly people are involved usually in accidents at the intersection. The author notes that the accidents caused by the elderly are very serious, because they themselves are very vulnerable people.

Other studies (Marin-Lamellet et. al, 2003; Van Elslande, 2003) connect the attention disorders and the risk of accidents to persons with dementia or Alzheimer debut.

4. National profiles of drivers

Another field of research aims the exploration of personality traits of drivers residents in different countries.

According to a research conducted on Norwegian drivers (Iversen & Rundmo, 2002), people with high scores of aggressiveness are committing riskier driving maneuvers. These drivers have the feeling that they can master the events, that they are experienced; they are assuming themselves risks and commit serious accidents more than other drivers. A research on Serb drivers (Jovanović et. al, 2011) founds high correlations between neuroticism and anger with driving.

In France, Vernet (2001) made a personologic research on 127 offending drivers and concluded that there are not psychological peculiarities of these subjects compared to drivers who do not break the law. However, the motorcycle permit holders do display some psychological peculiarities that are rather specific to this group. Also, for male drivers, the automobile becomes a “support of the male identity”, thus increasing the risk of producing accidents.
5. Relationship between driver personality and accident producing

Relationship between driver personality and accident remains questionable and unclear. The role of the aggressiveness, as a “risk” particularity in the drivers behaviour, however, is widely recognized by researchers.

Experience in driving (Lajunen & Summala, 1995), even in the case of aggressive drivers, however, was assigned as a good predictor of road safety. Another study of Ulleberg & Rundmo (2003) conducted in Norway, on adolescents (N=1932) who owning a driver licence, suggested that the relation between the personality traits and risky driving behaviour is mediated through attitudes. Altruistic and anxious individuals tended to perceive the risk related to traffic accidents as high, as well as having a positive attitude towards traffic safety. In contrast, those scoring high on sensation seeking and normlessness, perceived the risk of traffic accidents as lower, demonstrated a negative attitude towards traffic safety, and reported more risk-taking in traffic. As shown in the path model, a total of 47% of the variance in attitude towards traffic safety were explained by the different personality traits. The main aim of the present study was to estimate the importance of personality traits and social cognitive variables in relation to risk behaviour in traffic. The results indicate that personality traits primarily have indirect effects on risk-taking behaviour through their influence on attitude towards traffic safety.

Psychologists are interested not only in the identification of configurations of suitable personological factors for traffic, but also in changing the drivers’ harmful behaviors (through strategies like persuasion, reward or penalty). Yi-Lang (2007) revealed that drivers with high aggressiveness scores on personality questionnaires are using mobile phones more while driving than non-aggressive ones.

The behaviors that drivers manifest are also a vast field of action for cognitivist psychologists. They study the role of error in the dysfunctional mechanisms that lead to road accidents and develop models for classification of human functional failures (Van Elslande, 2000).

6. Conclusions

We believe that the results of presented studies allow to better understand the role of psychological risk factors for road safety. This field of study is able to provide a scientific background and support for organising new road safety education campaigns, that should be specifically targeted on well differentiated audience categories, and also it could provide strong arguments for changing the existing legal framework, in order to a decrease of victims on the roads in Romania.

References


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