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Inclinations Depending on Driving Behavior

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The human factor is one of the main criteria determining the safety of functioning technical means. A mistake in the work of people can lead to economic losses, and often to human losses. The purpose of this work is to analyze the impact of psycho-physiological factors on the safety of driving.

It is assumed that somatic, behavioral and emotional characteristics can have an impact on driving style, because these conditions of a driver could change any time a driver runs over a path. The analyzed drivers' conditions included such characteristics as tiredness, sleepiness, sickness, gloom, worry, nervousness, boredom, and anger. Driving style was defined by means of two kinds of indicators: firstly, this indicator was regarded as a subjective manner for defining driving style. Secondly, the kinematic parameters were recorded to define driving style; these data allowed to indicate the driving behavior that can be considered as an objective manner for defining driving style [1].

The correlation analysis of the characteristics obtained showed that the relationship between all parameters were positive; in certain cases a moderate correlation was shown, but in many cases the strength of relationship was weak (values lower than 0.3), and no strong correlation was highlighted (values higher than 0.7). The stronger relationships were shown between tiredness and sleepiness, gloom and worry, and finally between anger and gloom, worry and nervousness.

Standard Regression weight was estimated and showed that the behavioral-emotional latent construct weighed in average 30 % more than the somatic-emotional latent construct, and it positively affected driving style. On the contrary, somatic-emotional latent construct negatively affected driving style. This means that when a driver is tired, sleepy, sick or bored while driving, he inclines towards a more cautious driving style. On the other hand, if the individual when driving is gloomy, worried, nervous, or angry he inclines towards a more aggressive driving style. Such driver's conditions as tiredness, sleepiness, worry and anger mainly affected the way in which a driver runs over a path. Our interpretation of the emerging results is the following: if a driver feels bad because he is tired, sleepy, bored or with certain physical temporary problems, he has the perception that his driving style is cautious, probably because he has the tendency to drive more slowly. On the contrary, if a driver is gloomy, worried, nervous, or angry he has the tendency to perceive his driving style as aggressive because he drives speedily and with sudden changes of acceleration values.

We made the comparison of 2 groups of drivers. The aim of our research was to describe the personality and performance characteristics of risky drivers (those who had had their driving licenses suspended) and to compare them with safe drivers.

The group of risky drivers included:

- drivers whose driving licenses were suspended,
- drivers who were banned from driving because they had committed a serious traffic violation or a criminal offence (especially driving under the influence of alcohol or other drugs and speeding).

The group of non-risky drivers consisted of drivers who met the following criteria:

- they were professional drivers,

- in their previous driving career, they had not been fined for more than three traffic offences,
- they had committed no traffic violations in the past two years, and they had never had their driving licenses suspended.

A comparison of the results for the risky driver and safe driver groups was made by performance tests and personality testing methods. The following performance testing methods were used: the Bourdon Test, D2, Comp. ACT-Co, Comp. ACT-SR, the Determination Test, the test of decision making and attention, the Vienna Matrix Test (VMT), IST, and a test of general intelligence (the Memory subtest). The following areas of human cognition were examined: attention, concentration, memory, reaction time and correctness of response, resilience to monotony, and intelligence.

The following personality tests were used: NEO-PI-3, PSSI, and the Hand test. NEO-PI-3 (Revised NEO Personality Inventory) contained 5 factors: neuroticism, extraversion, openness, agreeableness, conscientiousness. PSSI was used to identify special skills. Hand test is mainly applied to diagnose aggressiveness among adults and children. In addition, the test allows to predict the propensity for open aggressive behavior.

In general, the vast majority of the performance testing methods found no differences between risky and non-risky drivers. Moreover, in some of the tests risky drivers achieved better scores than safe drivers (especially as far as the domain of memory, both verbal and non-verbal, is concerned). This can be explained by the well-known phenomenon, which implies that safe driving does not only involve performance personality characteristics, but also personal values, norms, beliefs, and other personality characteristics which determine the way in which we use our abilities. In addition, the higher scores recorded by risky drivers in performance tests can be explained by the theory of risk homeostasis and subjective perception of risk, which proposes that a person is prepared to take a certain

degree of risk, but if a given situation poses a risk that goes beyond that degree, a person seeks to eliminate it. If the level of risk is below this degree, drivers tend to increase the risk. In the context of driving, this instance of increasing the risk may take the form of speeding or engaging in secondary tasks such as telephoning [2].

As regards personality tests, statistically significant differences between risky and non-risky driver groups were shown. In general, it can be concluded that risky drivers tend to be less deliberate and cooperative, they are more likely to seek excitement, show less self-control and less respect for responsibilities and commitments, and are more likely to break rules and flout social norms. They are more preoccupied with their feelings and show a greater sense of their own incompetence and insecurity. They have a stronger inclination to manipulate others.

References:

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