

## THE EFFECT OF PERSONALITY DIMENSIONS AND SUBJECTIVE EXPERIENCE OF FATIGUE ON TRAFFIC SAFETY

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**Abstract.** *The study deals with problem of correlation between conative personality dimensions and subjective experience of fatigue in professional drivers from the aspect of traffic safety, as well as with alteration of correlation in three time spots: in the beginning, in the middle and in the end of the working day. The sample comprised 107 drivers. Conative dimensions were evaluated by the Cybernetic Battery of Conative Tests KON-6. Subjective experience of fatigue was measured by the Psychological Fatigue Test (PFT). The correlation between conative dimensions and subjective experience of fatigue has shown that the coefficients of Multiple Correlation obtained in all three testings are statistically significant ( $F_1=5.182$ ,  $F_2=6.106$ ,  $F_3=5.783$ ,  $df=6$ ,  $p<0.01$ ). We may conclude that except the EPSILON dimension (which is equivalent to Eysenc's extraversion), all other conative dimensions are in positive correlation with subjective experience of fatigue in all the three time spots of our study.*

**Key words:** *personality dimensions, professional drivers, subjective experience of fatigue, traffic safety*

### 1. INTRODUCTION

The term of fatigue is difficult to define in an unambiguous way because the nature of fatigue is very complex. The usual definition is that fatigue represents decreasing of working ability due to the performed work [12] and it has practical value, but it does not

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describe the nature of fatigue, because decreasing of working ability may be caused by many various changes, from chemical to psychological ones. In general, fatigue represents decreasing of working efficiency or performances after longer performing of physical or mental activity, and it may be eliminated by resting. Increasing of fatigue during an intensive work is caused by increasing number of movements during the time unit, that is, by the increased physical effort and lack of resting during the work, but also by increasing voluntary efforts and efforts of attention, as well as by negative emotional background of the activity. Consequently, an increase of number of mistakes during working occurs, which causes decrease of the quality and quantity of work [18]. Subjective signs of fatigue, such as decrease of criticism regarding the work, decrease of attention, change in behavior and mood, do not have to be related to decrease of work performance. Psychological fatigue has been defined as subjective experience of willingness to continue the work [1].

Accordingly, the nature of the fatigue is very complex and changeable because it depends of kind of the work, work conditions, as well as of psychological characteristics of a person who is performing the work. Because of such complexity of fatigue, there are different definitions of fatigue where the aspect of how fatigue is observed is of the greatest importance. From the aspect of production, fatigue is described as decrease of work performance during an intensive and long-lasting work, while there occur increase of number of mistakes, increase of number of injuries, change of the quality and quantity of performance, and similar [19]. From the aspect of physiological changes in the organism, fatigue is defined as the amount of characteristic biochemical and functional changes, which disturb functioning of the organism. The above approach states that fatigue is disorder of equilibrium of physiological functional systems in the organism, so it is generated as a consequence of functional exertion of neural structures.

From psychological point of view, fatigue represents the experience of inconvenience, unwillingness, sometime exhaustion [2]. Levitov stresses that “the sense of prostration, disorganization of attention and disorders in the sensor zone - decrease of volume of attention, defects of memory, decrease of the possibility of attention distribution and transferring” lead to decrease of criticism during the work, decrease of vigilance, due to which changes in behavior appear, which leads to decrease of work efficiency [21]. In addition, during the fatigue process, decrease of efficiency of the thinking process also occurs, which means that fatigue constricts the long-term memory and disturbs the cognitive information processing. Stereotype reaction during performing of tasks becomes dominant, while need for stopping with work, changing the activity and resting appear. For Dingel [4], the strongest effect of fatigue and sleepiness is reduction of vigilance. The empirical data show that the worker feeling fatigue makes more often and more serious injuries compared to the rested one, that injuries happen more often in the end of work time as well as that fatigue is responsible for numerous traffic accidents [13].

Occurrence of mental fatigue is progressive and represents cumulative process that is in relation to unwillingness to persist in certain attempt, decrease of work efficiency, vigilance and mental efficiency [9]. Thus, fatigue is objectively manifested in significant qualitative and quantitative decrease of work performance, that is, working efficiency. In physiological and psychological functional changes of work behavior in mental and psychomotor activities, signs of fatigue are within the work activity, they refer to qualitative changes of the work activity, and are followed by subjective experience of fatigue.

Psychological symptomatology of fatigue is very diverse and changeable, and it is determined by nature of the activity, working conditions and personality traits. The most

obvious signs of fatigue are certain pains in parts of the body that are mostly involved in the working activity, as well as decrease of sensitivity of different analyzers.

Complex feelings that appear during the fatigue are bad mood, general feeling of being down, sleepiness, saturation, exhaustion, desire for finishing the work, changing the activity, and so on. As subjective sign of fatigue, there appears monotony which is not the result of muscle fatigue but is the consequence of repetitive work. Work saturation is due to one's not knowing the result and purposefulness of the work. Working activity loses its meaning and one feels dissatisfied with the work he/she performs [12]. Subjective experience of fatigue represents reflection of specific organic changes generated during the long-term physical or mental activity. The above experience influences the work rhythm and its efficiency. That is why the subjective evaluation of fatigue could be observed as reliable criterion of fatigue, nevertheless it is based on the introspection.

Studies of subjective evaluation of fatigue in physical work show that they are changing in the constant way with duration and intensity of static work [15]. However, in the field of mental work evaluations are less reliable because fatigue is not localized like in the physical work where the subjective evaluations are based on kinesthetic sensations. During mental work, the subjective signs of fatigue appear, which are the result of numerous organic and psychic changes. For instance, during the driving, the long distance drivers most often reported sleepiness, pain in the back and legs, eye pain, irritability, as signs of fatigue. Subjective experience of fatigue is characterized by lack of motivation, low sensibility, exhaustion, boarding, restlessness, unwillingness for continuing the work. On the cognitive level, the study brings into relation sleepiness and fatigue that are characterized by low vigilance (the ability to discover and react to unpredictable signals or events during the long time period), slower reactions, weaker memory, weaker psycho-motoric coordination, slower information processing and slower decision making [11]. According to Johns [8], sleepiness is defined as the neurobiological need for sleeping, while fatigue has primary psychological significance: people stated the subjective experience of bad mood and unwillingness to continue work [1].

There are many different definitions of personality. Allport makes clear difference between two kinds of definitions: biosocial which states that the person exists only in interpersonal sense, that is, that the person is manifested only through reaction of other persons on him or her, and biophysical which states about inner, organic side of the person beside the one which is available to perception. Fulgozi [6] stresses the Allport's definition which states that personality is a dynamic organization of those psycho-physical systems of the individual which determine his/her specific way of behaving and specific way of thinking. For Eysenck [5], personality is relatively stable and constant organization of character, temperament, intellect and physical constitution of a certain person which determine his/her adaptation to environment and are generating and developing in interaction of the four main fields: cognitive, conative, affective and somatic [10].

With regard to conation, there are many different attitudes about what it represents. Generally, it represents willingness for something and determines our readiness to initiate some action or some behavior related to certain object. While some authors regard conation as separate psychological process, the others interpret it as needs, feelings, perceptions. Nowadays, it is often related to motivation as initiation of our activities.

For Momirović and Ignjatović [17] conative dimensions represent personality traits important for understanding and predicting of the individual's behavior in different situations. They represent personality in the narrow sense. Result of the individual's activities does

not depend only on his/her abilities and knowledge, but also on conative dimensions like persistence, emotional stability, toleration to frustration.

Regarding personality traits of professional drivers, study [22] aimed to determine the level of expressing individual personality traits according to the Costa's and McCrae's five-factor model [3] in professional drivers and to determine the correlation between certain personality traits and the tendency to cause traffic accidents. Findings have confirmed that successful and safe vehicle operation in traffic involves successful 'conduct' of oneself, which indicates the importance of personality traits and the need for appropriate professional selection during work engagement/employment of professional drivers.

According to some studies, in monotonous driving situation, the driver's movements with steering wheel are longer and more often, and it is specifically emphasized among those who prefer excitement. Also, the researchers have concluded that the drivers who are looking for visual sensations on the road and who are extrovert, are more prone to fall asleep at the steering wheel. For instance, investigating the role of neuroticism in prediction of subjective experience of fatigue, Galderwood [7] concludes that neuroticism is significant predictor of the state of fatigue. According to him, neuroticism has shown to be the predictor of psychological fatigue in the morning and early evening hours, and before sleeping. He also concludes that relation between those variables has vitiated during the working week and that it is especially expressed in the middle of the week while it is less expressed during the weekend. In that aspect, based on the study results, Sato concludes that there exists a relationship between anxiety and fatigue [20]. On the other hand, the trait of self-directing is negatively related to anxiety and fatigue.

This study examines relationship between mechanisms that determine different types of behavior and subjective experience of fatigue, that is, if different professional drivers with different level of expressed conative dimensions will have different experiences of the fatigue, and how it will be shown during different work periods. The problem that the study deals with is to investigate if there exists (and what it is like) the relationship between subjective experience of professional drivers fatigue and conative dimensions of personality, and how that relationship will be expressed during different work periods.

Main objective of the study is to identify and verify correlation between subjective experience of fatigue in conditions of long lasting driving and conative dimensions of personality, so that, on the basis of the study results, better professional selection of drivers as well as organization of working time can be obtained, for the purpose of preventing risky events in traffic.

## 2. RESEARCH METHODOLOGY

### **Problem**

To investigate the correlation between conative personality dimensions of professional drivers and subjective experience of fatigue during the working day.

### **Variables**

Independent variable is referred to conative personality dimensions, and dependent variable is referred to subjective experience of the fatigue.

### Sample

The sample consisted of 107 mail drivers at the “Nis-Expres” Company, the Public City Traffic Sector. From 118 drivers who are employed by the Public City Traffic Sector, 107 were available for testing while 11 of them, due to the reason of longer absence or performing their working engagements, did not take part in the testing. Drivers at the Public City Traffic Sector have strictly regulated working hours in duration of 7-8 hours of continuous driving, so that they were the most appropriate group for the study.

The average age of our respondents was 39 years, while the average length of their working experience was 10.8 years. The youngest respondent was 22 years old, and the oldest one was 60 years old, while 14 of them had only 1 year of working experience. Only 3 drivers had 28 years of working experience at the position of public city traffic drivers.

### Instruments

Studying of conative personality dimensions was performed by applying the Cybernetic Battery of Conative Tests KON-6 [16]. The KON-6 measures six personality dimensions: EPSILON (regulator of activity), CHI (regulator of organic functions), ALFA (regulator of defense reactions), SIGMA (regulator of attack reactions), DELTA (system for coordination of regulatory functions), ETA (system for integration of regulatory functions).

Cybernetic model of structure of conative factors made by Kosta Momirović derives from his concept of pathological conative factors, which he brought together with Cattell's, Eysenc's and Guilford's theories and created dimensional, hierarchical model of structure of conative factors. After the first version of eight-dimensional model, the last version consists of six conative factors which are operationalized in Cybernetic Battery of Conative Tests KON-6. The model represents hierarchical organization of systems for regulation and control of different conative dimensions, where the efficiency of functioning of higher regulators is conditioned by the volume and stability of lower regulators. On the other hand, higher regulators are controlling functioning of lower subsystems, and efficiency of subsystems depends on heredity, physiological factors which determine volume and stability of functioning of regulators, as well as on their functioning programs, which probably form, in interaction with environmental, social factors, physiological bases of regulatory systems. With different systems there are different influences of heredity, physiological factors and environmental, social factors.

The lowest position in hierarchical model occupies the regulator of activity - EPSILON (function of excitation and inhibition). That dimension is related to activation and modulation of the activating part of reticular formation and represents measure of its efficiency and significance for the general level of excitation, on which all processes in the central nervous system are ongoing, and consequently determines the level on which other systems are functioning, including cognitive and motoric processors. Disordering of this regulator could generate abulia, depression or hypomania.

System for regulation of organic functions - CHI - generates coordination of sub cortical centers for regulation of organic functions and their superior cortical systems for control and regulation, so that disorders of system for regulation of organic functions partly depend on disorders of cortical systems for regulation and control. The basis of that factor comprises the conversive syndrome, and its disorder leads to psychosomatic disorders, disorders of the system for control, primary - to inhibition of the basic physiological processes and secondary - to hypochondria.

System for regulation of defense reactions - ALFA - modulates tonic excitation based on heredity factors (programs), but also programs acquired by individual experiences.

This factor is partly similar to Catell's factor of feeling of guilt and it regulates level of anxiety, as well as to the Eysenck's factor of general neuroticism. Dysfunction of this system is responsible for majority of neurotic disorders, the basis of which is anxiety, and they are obsessive, compulsory, phobic reactions and emotional instability. Systems for coordination and integration of regulatory functions are superiors to this system.

System for regulation of attacking reactions - SIGMA - regulates and controls the aggressive reactions. It is connected to other subsystems. It is subordinated to the systems for coordination and integration of regulatory functions, and its efficiency primary depends on the system for coordination of regulatory functions. Its direct activation leads to primary aggressiveness, while indirect activation based on signals from the system for regulation of defending functions, generates secondary aggressiveness.

System for coordination of regulatory functions - DELTA - is mainly associated with paranoia and schizophrenia. Its task is to control and regulate subordinated systems that allow their coordination, and dissociation symptoms are indicators of inefficiency of those subsystems. This factor is similar to Eysenck's factor of psychoticism. It is directly superior to the systems for regulation of organic functions, functions of defense and attacking, and indirectly to the system for activation and regulation. Disorders of this system lead to disorganization and dissociation of cognitive and conative functions, as well as to disorder of motoric functions.

System for integration of regulatory functions - ETA - is mainly formed under the influence of social factors and is associated with pathological forms of behavior which are manifested in relationship with other people. This system is dominantly acquired during educational process by conditioning, reinforcement, internalization, and is responsible for integration into the social field.

Subjective experience of fatigue has been examined by Milojkovic's PFT test - Psychological Fatigue Test [14]. The questionnaire consisted of 24 five-level scales of Lickert type. The test has high consistency ( $\alpha = 0.97$ ). It registers changes in intensity of mental fatigue during the working activity. Higher score on the questionnaire means the higher intensity of mental fatigue.

### **Procedure**

Investigation that measured the subjective experience of fatigue was conducted in three time spots: in the beginning of the working day, when it is presumed that respondents are rested, in the middle and in the end of the working day. The testing was done with every driver individually. At first, immediately after he arrived to the garage, and before he took over the vehicle. Then, every driver was awaited on the previously arranged location in the middle of working time, and finally in the end of working time, when the driver came back to the garage, refueled and returned the vehicle to the dispatcher, the third, final testing was done. The average time of continuous driving from the first to the second testing was 4 hours and 10 minutes, and average driving period from the second to the third testing was 4 hours and 14 minutes. All respondents underwent the testing at the end of the working hours by using the test of conative abilities KON-6.

### **3. RESULTS AND DISCUSSION**

Average values of subjective experience of fatigue in the beginning of working day and conative personality dimensions are shown at the Table 1.

**Table 1** Descriptive statistics for the first testing

Variable	Mean	Std. Deviation	N
PFT	34.76	9.46	107
EPSILON	109.29	19.19	107
CHI	46.54	17.75	107
ALFA	61.30	21.53	107
SIGMA	79.42	21.00	107
DELTA	43.36	13.36	107
ETA	47.60	15.23	107

Source: Own source

**Table 2** Model summary

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>
1	<b>.487</b>	.237	.191

Source: Own source

**Table 3** Matrix of intercorrelations of all variables and statistic significance for the first testing

	Variable	PFT	EPSILON	CHI	ALFA	SIGMA	DELTA	ETA
Pearson correlation	PFT	1.000	.013	.268	.386	.424	.285	.385
	EPSILON	.013	1.000	-.092	-.214	.094	-.080	-.026
	CHI	.268	-.092	1.000	.671	.440	.726	.629
	ALFA	.386	-.214	.671	1.000	.553	.707	.732
	SIGMA	.424	.094	.440	.553	1.000	.620	.542
	DELTA	.285	-.080	.726	.707	.620	1.000	.704
	ETA	.385	-.026	.629	.732	.542	.704	1.000
	Sig. (1-tailed)	PFT	.	.447	.003	.000	.000	.001
EPSILON		.447	.	.173	.013	.167	.207	.397
CHI		.003	.173	.	.000	.000	.000	.000
ALFA		.000	.013	.000	.	.000	.000	.000
SIGMA		.000	.167	.000	.000	.	.000	.000
DELTA		.001	.207	.000	.000	.000	.	.000
ETA		.000	.397	.000	.000	.000	.000	.

Source: Own source

By investigating the relationship between conative dimensions and subjective experience of fatigue during the first testing, we have concluded that the Coefficient of Multiple Correlation  $R=0.487$  is statistically significant ( $F=5.182$ ;  $df=6$ ;  $p<0.01$ ). So, regressive linear combination of independent variables significantly correlates with dependent variable. Between the group of predictors taken together on one side, and subjective experience of fatigue on the other side, there exists linear correlation in population of professional drivers. Considering the total variability of this criterion variable, 19.1% of variability can be explained by individual differences in personality traits between drivers. From the Matrix of intercorrelation of all variables, one can see that except the conative dimension EPSILON - regulator of activity (equivalent to Eysenc's extroversion), all other variables are in correlation with criterion variable - subjective experience of fatigue, and those correlations are statistically significant. Also, we can conclude that SIGMA - regulator of aggressive reactions, has mainly partial contribution to differences of mental fatigue, because the correlation of this conative dimension with subjective experience of fatigue is positive, of the middle intensity

and is 0.424. So, the stronger level of aggressiveness drivers have, the highest level of the psychological fatigue they will show. Also, ALFA - system for regulation and control of defense reactions which regulates anxiety and which is similar to Eysenc's factor of general neuroticism, and ETA - system for integration of regulatory functions with the main function of integration of conative programs into the structure of social field, are in positive middle correlation (0.386 and 0.385) with subjective experience of fatigue. Accordingly, more anxious drivers, the ones who are less integrated in the social field, experience more fatigue during driving.

After, in average, 4 hours and 10 minutes of continuous driving, there occurred significant increase in subjective experience of fatigue, so we tried to investigate whether subjective experience of fatigue would be manifested differently in drivers, depending on the level of expression of their conative dimensions (Table 4).

**Table 4** Descriptive statistics for the second testing

Variable	Mean	Std. Deviation	N
PFT	37.55	11.92	107
EPSILON	109.29	19.19	107
CHI	46.54	17.75	107
ALFA	61.30	21.53	107
SIGMA	79.42	21.00	107
DELTA	43.36	13.36	107
ETA	47.60	15.23	107

Source: Own source

**Table 5** Model summary

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>
1	<b>.518</b>	.268	.224

Source: Own source

**Table 6** Matrix of Intercorrelations of all variables and statistic significance for the second testing

	Variable	PFT	EPSILON	CHI-	ALFA	SIGMA	DELTA	ETA
Pearson correlation	PFT	1.000	.050	.337	.412	.387	.389	.493
	EPSILON	.050	1.000	-.092	-.214	.094	-.080	-.026
	CHI-	.337	-.092	1.000	.671	.440	.726	.629
	ALFA	.412	-.214	.671	1.000	.553	.707	.732
	SIGMA	.387	.094	.440	.553	1.000	.620	.542
	DELTA	.389	-.080	.726	.707	.620	1.000	.704
	ETA	.493	-.026	.629	.732	.542	.704	1.000
Sig.(1-tailed)	PFT	.	.306	.000	.000	.000	.000	.000
	EPSILON	.306	.	.173	.013	.167	.207	.397
	CHI	.000	.173	.	.000	.000	.000	.000
	ALFA	.000	.013	.000	.	.000	.000	.000
	SIGMA	.000	.167	.000	.000	.	.000	.000
	DELTA	.000	.207	.000	.000	.000	.	.000
	ETA	.000	.397	.000	.000	.000	.000	.

Source: Own source

By checking the correlation between conative personality dimensions and subjective experience of fatigue during the second testing, 3-4 hours of the continuous driving, we have



found that the coefficient of multiple correlation is  $R=0.518$  and is statistically significant ( $F=6.106$ ;  $df=6$ ;  $p<0.01$ ). So, regressive linear combination of independent variables is in significant correlation with depending variable and that relationship is a slightly more expressed in the middle of the working time, when fatigue is increased. Considering the total variability of subjective experience of fatigue during the second testing, 22.4% of variability could be explained by differences in personality traits among the drivers, which is, in some level, more expressed compared to the time before they started driving. The experience of fatigue in relation with personality traits in the sense that the relation of EPSILON is still irrelevant, and the strongest partial contribution of subjective experience of fatigue in the middle of working time, have the ALFA regulator, ETA system and less SIGMA regulator. So, after 3-4 hours of driving, more anxious drivers, those ones who are less integrated in the social field and are more aggressive, experience fatigue at the highest level.

In the end of the working day, the level of subjective experience of fatigue, as it was expected, reaches the highest value, so, in this situation, it has been investigated again the correlation of this variable with the conative personality dimensions (Table 7).

**Table 7** Descriptive statistics on the third testing

Variable	Mean	Std. Deviation	N
PFT -3Test.	44.80	18.73	107
EPSILON	109.29	19.19	107
CHI	46.54	17.75	107
ALFA	61.30	21.53	107
SIGMA	79.42	21.00	107
DELTA	43.36	13.36	107
ETA 6	47.60	15.23	107

Source: Own source

**Table 8** Model summary

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>
1	<b>.508</b>	.258	.213

Source: Own source

**Table 9** Matrix of Intercorrelations of all variables and statistic significance for the third testing

	Variable	PFT	EPSILON	CHI-	ALFA	SIGMA	DELTA	ETA
Pearson correlation	PFT	1.000	.007	.327	.437	.433	.375	.430
	EPSILON	.007	1.000	-.092	-.214	.094	-.080	-.026
	CHI-	.327	-.092	1.000	.671	.440	.726	.629
	ALFA	.437	-.214	.671	1.000	.553	.707	.732
	SIGMA	.433	.094	.440	.553	1.000	.620	.542
	DELTA	.375	-.080	.726	.707	.620	1.000	.704
	ETA	.430	-.026	.629	.732	.542	.704	1.000
	Sig.(1-tailed)	PFT	.	.473	.000	.000	.000	.000
EPSILON		.473	.	.173	.013	.167	.207	.397
CHI		.000	.173	.	.000	.000	.000	.000
ALFA		.000	.013	.000	.	.000	.000	.000
SIGMA		.000	.167	.000	.000	.	.000	.000
DELTA		.000	.207	.000	.000	.000	.	.000
ETA		.000	.397	.000	.000	.000	.000	.

Source: Own source

We have found, as it can be seen in the Table 8, that the coefficient of multiple correlation  $R=0.508$  is practically identical with the one in the middle of working time and is statistically significant ( $F=5.783$ ;  $df=6$ ;  $p<0.01$ ). So, at the end of the work regression linear combination of independent variables is in significant correlation with dependent variable. Considering the total variability of subjective experience of fatigue during the third testing, 25.8% of variability could be explained by individual differences in personality traits among the drivers, which is slightly more than in the middle of the working day. So, as the time passes, the influence of conative dimension on subjective experience of fatigue is higher. Also, at the end of the working time, when the intensity of fatigue is the highest, the influence of the EPSILON regulator is irrelevant, while the strongest partial contribution to influence of individual differences on subjective experience of the fatigue have the ALFA regulator of defense, SIGMA system for regulation of attack reactions that regulates and controls reactions of aggressiveness, and ETA system for integration of regulatory functions.

Thus, on the bases of the obtained data one can conclude that regression linear combination of conative personality dimensions is in significant correlation with dependent variable, that is subjective experience of fatigue during the working day.

Based on the variance analysis, the measure of subjective experience of fatigue obtained in three measurements i.e. in the beginning, in the middle and in the end of the working time, it has been found that  $F$  is statistically significant ( $F=37.687$ ;  $df=2$ ;  $p<0.01$ ), which shows that among differences in the means of the measurement sample, there is at least one difference which is statistically significant. By investigating the differences among the means of the measures obtained from the three testing, we have found that all three of them are statistically significant.

Difference between the means of subjective experience of the fatigue measures during the first and the second testing ( $Dm=-2.78$ ) is statistically significant ( $t=-3.581$ ;  $p<0.01$ ).

**Table 10** Descriptive statistics for the first and the second testing of psychological fatigue

Variable	Mean	N	Std. Deviation
Psychological fatigue - First testing	34.76	107	9.46
Psychological fatigue - Second testing	37.55	107	11.92

Source: Own source

There is also statistically significant difference between the means of the measures obtained on the test of subjective experience of fatigue during the second and the third testing ( $Dm=-7.25$ ;  $t=-6.154$ ;  $p<0.01$ ).

**Table 11** Descriptive statistics for the second and the third testing of psychological fatigue

Variable	Mean	N	Std. Deviation
Psychological fatigue - First testing	37.55	107	11.92
Psychological fatigue - Second testing	44.80	107	18.73

Source: Own source

By investigating the difference of the means of measures of subjective experience of fatigue on during the first and the third testing, we have found that this difference is also statistically significant ( $Dm=-10.05$ ;  $t=-6.648$ ;  $p<0.01$ ).

**Table 12** Descriptive statistics for the first and the third testing of psychological fatigue

Variable	Mean	N	Std. Deviation
Psychological fatigue - First testing	34.76	107	9.46
Psychological fatigue - Second testing	44.80	107	18.73

Source: Own source

So, subjective experience of fatigue is changing in the function of time, that is, gradually during the work, but intensity of experience of fatigue shows statistically significant increasing. That subjective evaluation of behavior and feelings during the long lasting, continuous driving is manifested as experience of diminishing of the movement coordination, sluggishness, weaker concentration on driving situation, high sensitiveness, tension, ect.

#### 4. CONCLUSION

In this study, we have investigated the relationship between the mental fatigue, that is subjective experience of fatigue and the conative personality dimensions. In mental and psycho-motoric activities, signs of fatigue exist within the working activity and refer to qualitative changes in the working activity, and they are followed by the subjective experience of fatigue. In that aspect, the fatigue in drivers is the consequence of gradually increasing influence of different stressing situations that occur during the driving process. In monotonous conditions, such as driving on a highway, or always on the same line in the city driving, the drivers fatigue could be explained by the low level of activation and brain activity which have been generated because of the reduced stimulation of senses [15].

The results of this study have shown that in situation of long-lasting, continuous attention and vigilance which exist during the professional drivers' work, there occurs significant increase of the level of subjective experience of fatigue. Investigating of the correlation between conative personality dimensions and subjective experience of the fatigue has shown that besides the EPSILON dimension = regulator of activity (equivalent to Eysenck's extroversion), all other dimensions are in correlation with the subjective experience of fatigue, and all of those correlations are positive and significant. The strongest partial influence of individual differences on subjective experience of fatigue has the ALFA- system for regulation and control of defense reactions which regulates the level of anxiety and is similar to Eysenck's factor of general neuroticism, SIGMA- system for regulation of the attack reactions which regulates and controls the reactions of aggressiveness, and ETA- system for integration of regulatory functions which has the main function of integration of conative processes in the structure of the social field. Smaller but yet significant contribution, belongs to CHI (regulator of organic functions) and DELTA (system for coordination of regulatory functions). The results obtained in other study show, for instance, that neuroticism is significant predictor of fatigue [7] and that there exists correlation between the trait of anxiety and the fatigue [20]. Those data are in accordance with results of this investigation.

Results that are obtained by this study can significantly improve psychological selection of professional drivers and consequentially contribute to prevention of traffic accidents, as well as to better work organization in the public city traffic companies, which is rather important.

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## UTICAJ DIMENZIJA LIČNOSTI I SUBJEKTIVNOG DOŽIVLJAJA UMORA NA BEZBEDNOST U SAOBRAĆAJU

*Rad se bavi istraživanjem povezanosti između konativnih dimenzija ličnosti i subjektivnog doživljaja umora profesionalnih vozača posmatrano sa aspekta bezbednosti u saobraćaju, merenog u tri vremenske tačke: na početku, u sredini i na kraju radnog dana. Uzorak je činilo 107 vozača. Konativne dimenzije merene su Kibernetičkom baterijom konativnih testova KON 6. Subjektivni doživljaj umora meren je testom psihološkog umora (TPU). Koeficijent višestruke korelacije između konativnih dimenzija i subjektivnog doživljaja umora u sva tri merenja je statistički značajan ( $F1=5,182$ ,  $F2=6,106$ ,  $F3=5,783$ ,  $df=6$ ,  $p<0,01$ ). Možemo da zaključimo, da osim EPSILON dimenzije (koja je ekvivalentna Ajzenkovoju ekstroverziji), sve ostale konativne dimenzije su u pozitivnoj korelaciji sa subjektivnim doživljajem umora u sve tri vremenske tačke merenja.*

**Ključne reči:** *dimenzije ličnosti, bezbednost u saobraćaju, profesionalni vozači, subjektivni doživljaj umora*