

# The relationship between personality traits and anxiety/depression levels in different drug abusers' groups

---

**Tatalović Vorkapić, Sanja; Dadić-Hero, Elizabeta; Ružić, Klementina**

*Source / Izvornik:* **The Annali dell'Istituto Superiore di Sanità, 2013, 49, 365 - 369**

**Journal article, Published version**

**Rad u časopisu, Objavljena verzija rada (izdavačev PDF)**

*Permanent link / Trajna poveznica:* <https://urn.nsk.hr/urn:nbn:hr:184:551692>

*Rights / Prava:* [Attribution-NonCommercial-NoDerivatives 4.0 International/Imenovanje-Nekomercijalno-Bez prerada 4.0 međunarodna](#)

*Download date / Datum preuzimanja:* **2024-11-23**



*Repository / Repozitorij:*

[Repository of the University of Rijeka, Faculty of Medicine - FMRI Repository](#)



# The relationship between personality traits and anxiety/depression levels in different drug abusers' groups

Tatalović Vorkapić Sanja<sup>(a)</sup>, Dadić-Hero Elizabeta<sup>(b)</sup> and Ružić Klementina<sup>(c)</sup>

<sup>(a)</sup> Educational Sciences, Faculty of Teacher Education, University of Rijeka, Croatia

<sup>(b)</sup> Department of Social Medicine and Epidemiology, School of Medicine, Rijeka, Croatia

<sup>(c)</sup> University Psychiatric Clinic Rijeka, Clinical Hospital Centre, Rijeka, Croatia

## Abstract

**Aim.** Since psychosocial characteristics of drug abuse involve mainly specific personality and emotional changes, it is very important to investigate characteristics of addictive personality in relationship with emotional state of the individual. Considering that, the objective of this study was to analyse the relationship between personality structure and emotional state of two different groups: heroin addicts and recreate drug abusers.

**Methods.** The total of 288 (219 males and 69 females; 191 heroin addicts and 97 recreate drug users) clients of Centre for the prevention and treatment of drug abuse in Rijeka completed Eysenck's Personality Questionnaire (EPQ R/A), Beck's Anxiety Inventory (BAI) and Beck's Depression Inventory (BDI). Their average age was 22.

**Results.** In the group of heroin addicts, higher levels of anxiety and depression were significantly correlated with higher levels of psychoticism, neuroticism, criminality and addiction. In the group of recreate drug users, higher extraversion and social conformity were determined. Furthermore, in the first group was found even higher depression. However when the anxiety level was compared between these two groups, there was no significant difference.

**Conclusion.** Overall, the findings implied that the used measurement instruments could serve as the useful diagnostic tools that could ensure advantageous treatment directions.

## Key words

- personality traits
- anxiety
- depression
- addicts
- recreate drug users

## INTRODUCTION

In order to ensure higher level of understanding, it is very important to analyse the relevant factors associated with the development of substance abuse in adolescents for several reasons. One of them is based on the fact that adolescent substance abuse and developed drug addiction presents a major public health concern due to its frequency and wide range of negative consequences: disrupted psychosocial development, academic failure, high-risk sexual behaviour, accidental injury, violent and criminal behaviour, suicidality, psychopathology in adulthood, etc. [1]. Although the DSM-defined substance use disorder is more prevalent in psychiatric patients [2] and among individuals with non-substance-related psychiatric disorders, there is evidence that coexisting substance abuse may result in poor response to treatment and worsening psychopathology [3]. Psychosocial characteristics of drug abuse mainly involve specific personality change with affective and behaviour deregulation, which includes depressed mood, irritability, inattention, impulsivity, and antisocial tendencies [4]. Therefore, it is very important to investigate characteristics of addictive personality in relation to emotional state of the individual.

In a relevant scientific literature, very often one can find the presence of anxiety/depression as the risk factors that "push" adolescent to the drug abuse. Studies have determined that anxiety and depression could be described as pre-existing factors or as coexisting, substance-related factors [5]. As it was earlier mentioned in co-morbidity case, when depression appears during substance abuse treatment, especially when the depression is present at the time of its entry, the one has been significantly linked to poorer post treatment outcomes [6]. A great number of studies showed that 15% to 50% of clinical samples of adolescents with substance use disorders have had co-occurring depressive disorders [7-10]. Furthermore, similar processes will appear if higher levels of anxiety are present during treatment. In addition, when analysing the neurobiology of addiction in his integrative review, Goodman [11] stated that beside others, addictive disorders are characterized by having mood-altering effects on behaviour. Other studies have confirmed this by determining that affective disorders, primarily major depression and anxiety disorders have a significant degree of co-morbidity with psychoactive substance use disorders [12-14]. The co-morbidity between anxiety, depressive and substance use disorders is

very common, because at some point in their lives a one-third to a half of persons with any mental disorder meet the criteria for another mental or substance use disorder [15, 16]. Nevertheless, while answering the question why does co-morbidity matter, Hall, Degenhardt and Teesson [17], have put their accent on the co-morbidity as the most significant factor concerning the expected result of treatment or creating the program of drug abuse prevention.

Taken all into account, it is very important to analyse the depression/anxiety level in adolescents with substance abuse disorder, because it can serve as a fine preventive, diagnostic and therapeutic tool. Therefore, in order to investigate personality traits structure in recreate drug users who did not develop substance disorder, and drug addicts who already develop addiction, this study uses well-known Eysenck Personality Questionnaire – Revised Version [18] that measures psychoticism, neuroticism, extraversion, social desirability tendency, criminality and addiction. According to Eysenck's personality theory, addictive personality type has higher levels of psychoticism and neuroticism [19-23]. Furthermore, drug abusers showed higher results on Eysenck's criminality and addiction subscales than controls [24], which emphasise their importance as valuable diagnostic and preventive tools. In addition, similar study determined that addicts showed significantly higher results on psychoticism and neuroticism scales, and significantly lower results on extraversion and on the lie-scale [25]. Even though certain temperamental traits are one of the risk factors for developing one of two substance-related disorders, it could not be said that there is such a thing as an addictive personality, because substance abusers represent very heterogeneous population. However, as Feldman and Eysenck [22] stated, there is a great certainty that all addicts demonstrate a great amount of different difficulties in psychological functioning, and thus have certain similarities in their personality traits.

## OBJECTIVE

The main objective of this study was to analyse the relationship between personality structure and emotional state of two different types of drug abusers. In order to answer this main objective, the following problems have been identified:

- a) to determine the levels of Eysenck's personality dimensions the levels of anxiety and depression of heroin addicts and recreate drug users;
- b) to analyse the relationship between personality and emotional variables; and
- c) to analyse differences between these two groups of subjects concerning their personality traits and emotional state.

## Hypothesis

On one side, it is expected to find higher levels of psychoticism, neuroticism, addiction, criminality, depression and anxiety levels in the group of opiate addicts. On the other side, it is expected to establish the higher levels of extraversion and social desirability in the group of the recreate drug abusers, who still have not developed addiction problem. According to that, relevant differences are expected to be found between those two groups of subjects concerning their personality traits and emotional state.

## METHODS

### Subjects

288 subjects (219 males and 69 females) participated in this study. All of them have been enrolled at the ambulatory treatment of the Centre for the prevention and treatment of drug abuse in Rijeka, Croatia. Their average age was 22, ranged from 14 to 44. According to DSM-IV disorder classification N = 191 of subjects were in the group of heroin addicts with diagnosis of Mental and behavioral disorders due to use of opioids: Harmful use (F11.1) and Dependence syndrome (F11.2). N = 97 participants were in the group of recreate drug abusers without developed clinical picture of addiction, so that group had the next diagnoses: F12-Mental and behavioral disorders due to use of cannabinoids: Harmful use (F12.1) and Dependence syndrome (F12.2); F13-Mental and behavioral disorders due to use of sedatives or hypnotics – Harmful use (F13.1); F15-Mental and behavioral disorders due to use of other stimulants, including caffeine: Harmful use (F15.1) and Dependence syndrome (F15.2); F18-Mental and behavioral disorders due to use of volatile solvents – Harmful use (F18.1); and F19-Mental and behavioral disorders due to multiple-drug use and use of other psychoactive substances – Harmful use (F19.1).

### Measuring instruments

In order to measure personality traits, Eysenck's Personality Questionnaire (EPQ R/A) has been used in this study. This questionnaire measures level of extraversion, neuroticism, psychoticism and social desirability. Furthermore, this questionnaire showed satisfactory psychometric characteristics [18]. Considering the depression and anxiety variables and in order to measure their levels in two groups of substance users, two questionnaires, Beck's Anxiety Inventory (BAI) and Beck's Depression Inventory (BDI) have been used in this study. Finally, these questionnaires also showed satisfactory level of reliability and clinical utility [5].

### Procedure

During their ambulatory admission, 288 patients completed 3 questionnaires previously described. All patients were informed about the purpose of questionnaires used for the purpose of this particular study and they gave their verbal consent to participate in this research. In the case of the underage patient (under 18 years), his or her parents were informed about the aim of this research and they also gave their verbal consent about his/hers son or daughter participation in the study. The data have been collected during the period of three years. Every time when a new patient came in the Centre for the prevention and treatment of drug abuse in Rijeka, he or she completed relevant questionnaires, while getting through the admission procedure in the Centre.

## RESULTS AND DISCUSSION

### Descriptive statistics and the analyses of significant differences

Concerning the analysis of personality traits, when compared to the group of the recreate drug users, the results of the group of the heroin addicts showed significantly higher levels of psychoticism ( $t = 6.92, p < 0.01$ ), neuroticism

( $t = 27.04$ ,  $p < 0.01$ ), criminality ( $t = 33.77$ ,  $p < 0.01$ ) and addiction ( $t = 43.01$ ,  $p < 0.01$ ). The determined levels of those personality traits were presented and could be seen in the *Table 1*.

Even though all results in this study were higher than those determined in normal population [18], the major difference could be seen at two personality dimensions: psychoticism and neuroticism. As Gossop and Eysenck [25] tried to identify which specific temperament items best distinguished alcohol and drug addicts from non-addicts which subsequently led to construct of the scale how to measure the "addictive personality", it could be stated that the results in this study confirmed their hypothesis.

So it follows that, there are indeed a certain personality traits such as high psychoticism and neuroticism, which especially characterize an addictive personality, or could present a personality traits which have very high level of risk to develop one of the substance-related disorders. These data have also confirmed the structure of addiction psychopathology according to the DSM IV, where specific temperamental traits such as: impulsiveness, novelty seeking, behavioral disinhibition, antisociality, mood instability, hyperthymic and cyclothymic temperaments, all present clinical manifestations of developed substance-related disorder [26].

Furthermore, significantly higher levels of extraversion ( $t = 8.36$ ,  $p < 0.01$ ) and social conformity ( $t = 12.28$ ,  $p < 0.01$ ) were determined in the group of recreate drug users who still had dispositions to resist developing the addiction problem (see *Table 1*). According to the Eysenck's personality theory [21], extraversion is the personality trait that shows a great positive relationship with lots of other positive traits, such as positive emotionality, qualitative interpersonal relationships and overall higher level of psycho-physiological health of the person. Also, considering great number of mental illness, extraversion is one of the protective factors [18]. Thus, it is understandable that young people who tried some drugs once or twice, or smoke marihuana once a month, still have not generated an addiction problem and kept their personality within their normality frame. Finally, significantly higher results on social conformity scale suggest that these young people

still care about opinions of others, social values and thus they still have respect for making clear differentiation between good or bad behaviour. Furthermore, in prior studies, the pattern of high addiction scores (high psychoticism, high neuroticism and low social conformity) has been substantiated in subsequent studies involving drug addicts [27, 28], and also eating disorders (e.g. bulimia; [22]), anorexia and bulimia [27-29].

Concerning the findings of depression and anxiety levels in those two groups of subjects, that could be seen in *Table 1*, the levels of depression and anxiety were higher in the group of the opiate addicts group, while on the other side, same levels were lower in the group of recreate drug users. Although, both differences were expected to be significant as prior studies showed [26], the difference was significant only in the depression results. The possible explanation of these findings could lie on the fact that addicts have already developed very high level of depression that is closely connected with the feelings of helpless and hopeless because of their failures in abstinence attempts. On the other hand, anxiety and narrowness are very often recognized in the case of young people that showed problematic behaviour pattern such as experimenting with (il)legal drugs. Therefore, it could be easily understood why their level of anxiety was similar to the anxiety level of opiate addicts. As Pani and his colleagues ([26], p. 185) proposed: "...mood, anxiety and impulse-control dysregulation is at the very core of both the origins and clinical manifestations of addiction and should be incorporated into the nosology of the same, emphasising how addiction is a relapsing chronic condition in which psychiatric manifestations play a crucial role". Therefore, from that proposition, the explanation for similar anxiety level in recreate drug users and opiate addicts rely on the fact that in the first group, it presented the psychological/psychiatric precursor of addictive disorder, and in the second group, it presented the clinical manifestation of addiction. Furthermore, expert's work experiences in the Centre for the prevention and treatment of drug abuse in Rijeka, emphasized the fact that unfortunately most of the recreate drug users, could be seen in the later years as drug addicts, what confirmed the Pani's proposal reliability [26].

**Table 1**

Descriptive statistics of personality and emotional variables in groups of: opiate addicts, recreate drug users and all subjects together

Subjects' groups differences Personality and emotional variables	Opiate addicts (N = 191)		Recreate drug users (N = 97)		Differences T-Test (p)	All subjects (N = 288)	
	M (SD)	Range	M (SD)	Range		M (SD)	Range
Extraversion	15.21 (4.27)	1-22	16.71 (3.69)	3-23	<b>8.36 (0.00)</b>	15.73 (4.1)	1-23
Psychoticism	9.88 (4.13)	2-27	8.53 (3.59)	2-22	<b>6.92 (0.01)</b>	9.4 (3.99)	2-27
Neuroticism	13.76 (5.73)	0-24	9.99 (5.51)	2-23	<b>27.04 (0.00)</b>	12.45 (5.92)	0-24
Social desirability	6.99 (3.8)	1-17	8.81 (4.46)	1-20	<b>12.28 (0.00)</b>	7.62 (4.13)	1-20
Addiction	4.77 (5.96)	2-26	9.71 (5.38)	11-24	<b>43.1 (0.00)</b>	13 (6.24)	1-26
Criminality	16.4 (6.29)	4-28	11.72 (5.49)	2-26	<b>33.77 (0.00)</b>	14.77 (6.43)	2-28
Depression	17.64 (14.01)	1-68	9.74 (9.28)	0-40	<b>3.6 (0.00)</b>	14.64 (12.97)	0-68
Anxiety	13.67 (10.19)	0-43	11.89 (9.68)	0-35	0.78 (0.44)	13.11 (10.01)	0-43

M: means; SD: standard deviations; Range: Results' range; p: Probability level of KS-z result; T-test: T-test of mean differences; p: Probability level of T-test result.

### Correlation analyses

Furthermore, higher levels of psychoticism, neuroticism, criminality and addiction significantly and positively correlate with the higher levels of anxiety and depression in both groups, and this could be seen in Table 2. In another words, all subjects: recreate drug users and opiate addicts who showed higher levels of psychoticism, neuroticism, criminality and addiction also showed higher levels of depression and anxiety. The results confirmed earlier findings [26], whether the explanation lied on the co-morbidity of addiction and anxiety/depression [30] or on the model of addiction as the product of the interaction between psychological/psychiatric precursors and addictive processes [26].

In addition, these findings confirmed the hypothesis that includes the diagnostic and therapeutic need to detect the existing level of addiction, anxiety and depression in the young people who were admitted in the Centre for the prevention and treatment of drug abuse. This kind of diagnostic ability of the instrument is very important since, the appropriate medication therapy and psychotherapeutic approach for the patients could be determined. This is especially important in the cases of addicts with very high level of depression and great possibility of presented suicidal thoughts and behaviour. Therefore, in the Centre, during the psychodiagnostic processes the use of diagnostic tools such as BAI and BDI has great significance, what should be taken into consideration within future empirical studies.

### CONCLUSION

Finally, it could be concluded that all presented findings confirmed expected higher levels of psychoticism,

neuroticism, addiction, criminality, depression and anxiety in opiate addicts, and higher levels of extraversion and social desirability in recreate drug users. Even there was a great chance that recreate drug users develop one of two substance-related disorders, high level of their extraversion and social conformity present their protective personality factors. So, in the psychotherapeutic approach it would be very useful to use them as such. Furthermore, as it was expected, the strongest correlation has been found between negative aspects of personality and higher levels of depression and anxiety. These findings confirmed prior empirical findings and the possibility of understand anxiety/depression not as totally independent variables, but rather more as one crucial element of addiction, as it was discussed earlier. Finally, the results implied that the used measurement instruments in this study could serve as very useful diagnostic tools that could provide with advantageous treatment directions.

### Acknowledgements

We would like to thank all clients that have participated in this study, and Homolka Maja for her contribution in proofreading.

### Conflict of interest statement

There are no potential conflicts of interest or any financial/personal relationship with other people/organizations that could inappropriately bias conduct and findings of this study.

Received on 22 October 2012.

Accepted on 10 October 2013.

**Table 2**

Correlations between all personality and emotional variables: for all subjects above diagonal and for recreate drug users (first line) and opiate addicts (second line) under diagonal

	Extraversion	Psychoticism	Neuroticism	Social desirability	Addiction	Criminality	Depression	Anxiety	Sex
<b>Extraversion</b>		.05	-.08	-.09	-.17**	-.02	-.08	.10	-.00
<b>Psychoticism</b>	-.05 .13		.34**	-.39**	.55**	.56**	.34**	.26*	.04
<b>Neuroticism</b>	.03 .08	.38** .30**		-.17**	.86**	.92**	.66**	.70**	.34**
<b>Social desirability</b>	.02 -.20**	-.30** -.43**	-.22* -.08		-.46**	-.29**	-.07	-.00	-.02
<b>Addiction</b>	-.05 -.15	.58** .53**	.82** .85**	-.57** -.37**		.93**	.72**	.70**	.20**
<b>Criminality</b>	.09 .04	.58** .54**	.93** .90**	-.30** -.24**	.88** .92**		.71**	.72**	.24**
<b>Depression</b>	-.03 -.01	.40** .32**	.52** .67**	-.10 .08	.50** .78**	.47** .76**		.69**	.31**
<b>Anxiety</b>	.29 .05	.26 .23	.84** .63**	-.10 .07	.77** .69**	.83** .69**	.56** .77**		.45**
<b>Sex</b>	.15 .05	.03 .02	.29** .34**	-.05 .07	.13 .20**	.22* .23**	.13 .37**	.59** .37**	

\*p < 0.05; \*\*p < 0.01.

## REFERENCES

1. Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. *Monitoring the Future national survey results on drug use, 1975-2004. Volume I. Secondary school students* Bethesda, MD: National Institute on Drug Abuse, 680; 2005. (NIH Publication No. 05-5727).
2. Grilo CM, Becker DF, Walker ML, Levy KN, Edell WS, McGlashan TH. Psychiatric co-morbidity in adolescent in patients with substance use disorders. *J Am Acad Child Adolescent Psychiatry* 1995;34:1085-91.
3. Lewinsohn PM, Rohde P, Seeley JR, Klein DN, Gotlib IH. Natural course of adolescent major depressive disorder in a community sample: Predictors of recurrence in young adults. *Am J Psychiatry* 2000;157:1584-91. DOI: 10.1176/appi.ajp.157.10.1584
4. Tapert SF, Baratta MV, Abrantes AM, Brown SA. Attention dysfunction predicts substance involvement in community youths. *J Am Acad Child Adolescent Psychiatry* 2002;41:680-6. DOI: 10.1097/00004583-200206000-00007
5. Subramaniam G, Harrell P, Huntley E, Tracy M. Beck Depression Inventory for depression screening in substance abuse adolescents. *J Substance Abuse Treat* 2009;37:25-31. DOI: 10.1016/j.jsat.2008.09.008.
6. Hasin D, Nunes E, Meydan, J. Co-morbidity of alcohol, drug and psychiatric disorders: Epidemiology. In: Kranzler HR, Tinsley JA (Eds.). *Dual diagnosis and psychiatric treatment: Substance abuse and comorbid disorders*. Vol. 1, pp. 1-34. New York: Marcle Dekker, Inc.; 2004.
7. Bukstein OG, Glancy LJ, Kaminer Y. Patterns of affective co-morbidity in a clinical population of dually diagnosed adolescent substance abusers. *J Am Acad Child Adolescent Psychiatry* 1992; 31:1041-5. DOI: 10.1097/00004583-199211000-00007
8. Deykin EY, Buka SL, Zeena TH. Depressive illness among chemically dependent adolescents. *Am J Psychiatry* 1992;149:1341-7.
9. Clark DB, Pollock N, Bukstein OG, Mezzich AC, Bromberger JT, Donovan JE. Gender and comorbid psychopathology in adolescents with alcohol dependence. *J Am Acad Child Adolescent Psychiatry* 1997;36:1195-203. DOI: 10.1097/00004583-199709000-00011
10. Riggs PD, Baker S, Mikulich SK, Young SE, Crowley TJ. Depression in substance-dependent delinquents. *J Am Acad Child Adolescent Psychiatry* 1995;34:764-71. DOI: 10.1097/00004583-199506000-00017
11. Goodman A. Neurobiology of addiction. An integrative review. *Biochem Neuropharmacol* 2008;75:266-322. DOI: 10.1016/j.bcp.2007.07.030
12. Couwenbergh C, van den Brink W, Zwart K, Vreugdenhil C, van Wijngaarden-Cremers P, van der Gaag RJ. Comorbid psychopathology in adolescents and young adults treated for substance use disorders. *Europ Child Adolescent Psychiatry* 2006;15:319-28. DOI: 10.1007/s00787-006-0535-6
13. Merikangas KR, Mehta RL, Molnar BE, Walters EE, Swendsen JD, Aguilar-Gaziola, S, et al. Co-morbidity of substance use disorders with mood and anxiety disorders: results of the International Consortium in Psychiatric Epidemiology. *Addict Behav* 1998;23:893-907. DOI: 10.1016/S0306-4603(98)00076-8
14. Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, et al. Co-morbidity of mental disorders with alcohol and other drug abuse: results from the epidemiological catchment area (ECA) study. *J Am Med Assoc* 1990;264:2511-8.
15. Kessler RC, Wang PS. The descriptive epidemiology of commonly occurring mental disorders in the United States. *Ann Rev Pub Health* 2008;29:115-29. DOI: 10.1146/annurev.publhealth.29.020907.090847
16. Merikangas KR, Kalaydjian A. Magnitude and impact of co-morbidity of mental disorders from epidemiologic surveys. *Curr Opinion Psychiatry* 2007;20:353-8. DOI: 10.1097/YCO.0b013e3281c61dc5
17. Hall W, Degenhardt L, Teesson M. Understanding comorbidity between substance use, anxiety and affective disorders. Broadening the research base. *Addict Behav* 2009;34(6-7):526-530.
18. Eysenck HJ, Eysenck SBG. *Priručnik za Eysenckove skale ličnosti: EPS-odrasli* [Eysenck Personality Scales Manual: EPS-adults. In Croatian] Jastrebarsko: Naklada Slap; 1991.
19. Abu-Arab M, Hashem E. Some personality correlates in a group of drug addicts. *Personality Individual Differences* 1995;19(5):649-53. DOI: 10.1016/0191-8869(95)00115-M
20. Doherty O, Matthews G. *Personality characteristics of opiate addicts. Division of applied psychology*. Birmingham: University of Aston, Aston Triangle; 1986. DOI: 10.1016/0191-8869(88)90043-8
21. Eysenck HJ. Drugs and personality. In: Eysenck HJ (Ed.). *The dynamics of anxiety and hysteria*. pp. 223-49. London: Routledge & Kegan Paul; 1964.
22. Feldman J, Eysenck SBG. Addictive personality traits in bulimic patients. *Personality Individual Differences* 1986;7(6):923-6. DOI: 10.1016/0191-8869(86)90097-8
23. Francis LJ. The relationship between Eysenck's personality factors and attitude towards substance use among 13-15-year-olds. *Personality Individual Differences* 1996;21(5):633-40. DOI: 10.1016/0191-8869(96)00125-0
24. Blaszczynski AP, Buhrich N, McConaghy N. Pathological gamblers, heroin addicts and controls compared on the E.P.Q. "Addiction Scale". *Addiction* 1985;80(3):315-9. DOI: 10.1111/j.1360-0443.1985.tb02545.x
25. Gossop MR, Eysenck SBG. A further investigation into the personality of drug addicts in treatment. *Br J Addict* 1980;75:305-11. DOI: 10.1111/j.1360-0443.1980.tb01384.x
26. Pani PP, Maremmani I, Trogu E, Gessa GL, Ruiz P, Akiskal HS. Delineating the psychic structure of substance abuse and addictions. Should anxiety, mood and impulse-control dysregulation be included? *J Affect Disord* 2010;122:185-97. DOI: 10.1016/j.jad.2009.06.012
27. Ruch W. Die revidierte Fassung des Eysenck Personality Questionnaire und die Konstruktion des deutschen EPQ-R bzw EPQ-RK. *Zeitschrift für Differentielle und Diagnostische Psychologie* 1999;20:1-24. DOI: 10.1024//0170-1789.20.1.1
28. Ruch W. *Persönlichkeit und Sucht: Eine Validierung zum EPQ-R* (Poster presented at the 5th Arbeitstagung der Fachgruppe Differentielle Psychologie, Persönlichkeitspsychologie und Psychologische Diagnostik, Wuppertal; 7-8 October).
29. de Silva X, Eysenck SBG. Personality and addictiveness in anorexic and bulimic patients. *Personality Individual Differences* 1987;8:749-51. DOI: 10.1016/0191-8869(87)90077-8
30. American Psychiatric Association. *Diagnostics and statistical manual of mental disorders*. IV edition. Washington DC: American Psychiatric Association; 1994.