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The relationship between personality traits and drug type among Substance Abuse

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Abstract

Substance abuse is a serious global problem that is affected by multiple psychosocial factors, and personality traits play a central role in its occurrence. The present study aims to investigate the relationship between the five factors of personality (extraversion, agreeableness, openness to experience, conscientiousness, and neuroticism) and five categories of drugs (sedatives, opiates, stimulants, hallucinogens, and marijuana) among self-introduced addicts. The statistical population of the study was self-introduced addicts attending addiction treatment centers in Khorram Abad. The participants of the study included 100 addicts with drug abuse disorder who were selected by the classified sampling method underlining five classes of drugs (20 participants in each class) as the sampling strata. Data were gathered using the structured clinical interview of Diagnostic and Statistical Manual of Psychiatric Disorders, NEO five-factor inventory-revised, and the structured demographic questionnaire. The results showed that high levels of neuroticism distinguish users of sedatives from those of other drugs. participants with high levels of openness to experience and low agreeableness and conscientiousness are consistently associated with the use of marijuana, hallucinogens, and stimulants. The results also demonstrated that addicts with high levels of extraversion and low levels of agreeableness and conscientiousness are consistently associated with the use of stimulants. The results of this research indicate that personality traits contain valuable information about the nature of personality traits affecting drug type in addicts. These findings are useful in drug abuse treatment and preventing drug abuse recurrence.

Keywords: Drug abuse, Drug type, Personality traits

Introduction

Drug abuse is one of the greatest medical, social, economic, and cultural problems [1]. Despite drug abuse being socially frowned upon, different classes of people are seriously involved with it [2], in a way that drug abuse not only threatens individual health, but also compromises family and public health, causing psychological and moral decline [1]. In Iran, in spite of the adopted policies which have involved huge personal and financial expenses, desirable achievements in addiction control have not been gained. Thus, it seems more effort should be made for the scientific identification of this phenomenon. The experiences of treatment centers as well as reliable, scientific sources suggest that the addition recurrence rate within one year after detoxification is over 90% [3]. Since the precedence of prevention over treatment is among primary hygienic principles, initial

prevention is also of particular importance regarding the topic of addiction emphasizing protective factors against risk factors. Today, the first stage of rehabilitation is known to be prevention. In fact, prevention is considered to be a part of treatment and rehabilitation because as the number of those who suffering addiction decreases, society rehabilitation and enablement are realized [2,3].

Addiction and drug abuse stem from social, familial, and personality factors [3]. Children's educational underachievement, increased divorce rate, and domestic violence are among the consequences of addiction [4]. Among the personal risk factors, genetic background, personality traits, positive outlook on drugs, and the pleasant influence of drugs on some people are considerable. Genetic background and personality traits are of special importance for identifying high-risk individuals [3,5]. According to a belief held by many researchers, personality is the most important underlying factor for addiction. It is believed that drug abusers have personality weaknesses, making them vulnerable to drug abuse and becoming addicted [1,2]. Numerous studies have been conducted on the relationship between drug abuse and personality structure. For instance, Thull and Sher [5] realized that people susceptible to drug abuse have low extraversion. Contrary to this finding, however, subsequent studies showed that there is a relationship between high levels of extraversion and alcohol abuse [6] as well as drug abuse [7]. With regard to agreeableness, some studies demonstrated that people with low levels of agreeableness have a greater tendency toward drug abuse [6,8]. With respect to conscientiousness, low levels of conscientiousness tend more toward high-risk behaviors and drug abuse [6,7]. In connection with neuroticism, people with high levels of neuroticism make less effort for health-related behaviors [3]. These people take on behaviors such as alcohol abuse [1] and drug abuse [2,3]. Regarding openness to experience, some research demonstrated that high levels of openness are related to drug abuse [6,9]. The results of the research by Frank et al. indicated that the personality trait of openness to experience makes people susceptible to drug abuse [8]. In another longitudinal study, the relationship between personality and drug abuse in British adolescents was investigated. It was revealed that there is a direct, positive relationship between drug abuse and sensation seeking (excitement seeking) and its effects on turning to addiction has predominantly been a result of situational anxiety and depressed temper [10]. The studies carried out by Mendez showed that agreeableness and conscientiousness have an inverse relationship with drug abuse and openness to experience has a positive relationship with hallucinogens. The results of the research conducted by Terracciano et al. [11] on a sample of 1102 drug abusers suggested that users of cocaine and opiates have high scores in neuroticism and low scores in conscientiousness, while marijuana users have high scores in openness to experience and low scores in agreeableness and conscientiousness. Miller [12] stated that there is a surprising combination of high neuroticism and low conscientiousness among drug abusers. In a research [13] carried out by Kilbey et al. [14], it was concluded that people addicted to marijuana have low scores in conscientiousness and people addicted to cocaine have high scores in neuroticism. The studies were indicative of the fact that people addicted to heroin have high scores in extraversion [12,13,15]. Considering all of the above, it becomes obvious that drug abuse behavior has a clear relationship with personality traits and factors. Since no comprehensive research, identifying all personality traits and factors in relation to different drugs used by addicts, has been conducted and because cultural, ethnic, and national circumstances as well as wrong beliefs and specific geographical location have prepared a suitable situation for the youth of the country verged to addiction [16], this issue should necessarily be investigated in order to identify the factors making individuals susceptible to addiction. In this regard, the present study was conducted to

examine the relationship between personality traits and drug abuse and addiction, in a group of addicts in Khorram Abad, Iran, assuming that by identifying the personality structure, it is possible to take primary prevention proceedings. The assumptions of the research are as follows:

1- There is a positive relationship between neuroticism and drug type (sedatives and opiates).

2- There is a positive relationship between extraversion and stimulant drugs (cocaine, amphetamine, and methamphetamine).

3- There is a positive relationship between openness to experience and marijuana and hallucinogens.

The relationship between the two other factors, i.e. agreeableness and conscientiousness, and drug type was investigated as the following questions:

1- Is there a relationship between agreeableness and drug type?

2- Is there a relationship between conscientiousness and drug type?

Method

The present study is an analytical study. All of the self-introduced addicts attending drug rehabilitation centers in Khorram Abad constituted the statistical population. A sample of 100 individuals was selected from the population for participation in the research. At first, 3 out of 12 drug rehabilitation centers of Khorram Abad were randomly selected and sample members were chosen from the participants attending these three centers for drug rehabilitation. Then, underlining five classes of drugs as the sampling strata, the classified sampling method was used. To each class of drugs (sedatives, opiates, stimulants, hallucinogens, and marijuana), 20 participants were assigned making up a total of 100 participants. The inclusion criteria for the research were as follows: literacy, participant consent, and the individual being categorized as a drug abuser based on the diagnostic and statistical manual of mental disorders. Another criterion was that the drug type and the predominant method of drug use should be known within the past six months. The exclusion criteria were as follows: upon examination by specialists, the individual exhibits main clinical signs of a hangover (running nose, muscular-skeletal pains, shivering of the hand, nausea) and the number of days elapsed from the last use.

At first, an interview was held to gain the trust and cooperation of the participants so that they would be ensured that their information would remain perfectly confidential. This research was implemented at two preliminary and principal stages. At the preliminary stage, to evaluate drug abuse disorders (including drug addiction and drug abuse), the structured clinical interview of the diagnostic and statistical manual of mental disorders (SCID) was initially adopted. SCID is widely employed by trained clinical experts for axis I diagnoses according to DSM-IV. In Iran, the Persian version was investigated by Sharifi et al. and later reported as desirable for the Iranian population [32]. Drug abuse and addiction during the whole lifetime as well as the 12 past months were determined using this tool. To each class of drugs (sedatives, opiates, stimulants, hallucinogens, and marijuana), 20 participants were assigned making up a total of 100 participants. After the above stages, NEO PI-R five-factor inventory was presented. A questionnaire that existed in the files of the cases attending these centers was also used for gathering demographic information. This questionnaire comprised information regarding age, job, marital status, education, first time of use, etc. filled out by a clinical psychologist. The researcher, at first, introduced himself to the patients and explained the purpose of the study. Then, in case the patients wished to take part in the research, a clinical interview was performed by the center's psychiatrists. To analyze the data, multivariate analysis of variance (MANOVA) and post hoc Tukey test were utilized.

In this research tools included: To evaluate drug abuse disorders (including drug addiction

and drug abuse), the structured clinical interview of the diagnostic and statistical manual of mental disorders (SCID) was used. SCID is widely employed by trained clinical experts for axis I diagnoses according to DSM-IV. Studies have shown that SCID yields reliable diagnoses for the majority of psychiatric disorders. In Iran, the Farsi version was investigated by Sharifi et al. and later reported as desirable for the Iranian population [17].

NEO Personality Inventory: This inventory is a 60-item version that measures the big five personality traits, namely neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness [18]. The internal consistency of this inventory is reported to be from 0.68 (the agreeableness subscale) to 0.86 (the neuroticism subscale). The test-retest coefficients were also reported to be from 0.65 to 0.86 and from 0.79 to 0.87 [19] in Iranian samples. The convergent validity coefficient of the test was also reported to be from 0.56 to 0.62 [18]. The findings confirm the discriminant validity of the test (McKerry, 1991, quoted by Mehrabizadeh Honarmand [20]). In his research, Bullock [21] pointed out to the high correlation between this form and long form subscales. For N, E, O, A, and C they are respectively 0.92, 0.90, 0.91, 0.77, and 0.87.

Results

The statistical population comprised 100 members (92 men and 8 women). The marital status of the sample was as follows: 43 married, 49 single, and 8 divorced persons.

Table 1 *Demographic characteristic of participants*

Variable	Group and index	Frequency
Gender	Male	92
	Female	8
Marital status	Married	43
	Single	49
	Divorced	8
Education	Illiterate	2
	Elementary school	9
	Middle school	29
	Diploma	34
	Associates Degree	11
	Undergraduate	7
	Postgraduate	5

Before performing the variance analysis test, the variances of the groups were assumed to be equal for the five dependent variables. The results of the Levene's test for neuroticism (95 and df=4 and F=1.64), extraversion (95 and df=4 and F=0.81), openness to experience (95 and df=4 and F=0.74), agreeableness (95 and df=4 and F=1.04), and conscientiousness (95 and df=4 and F=0.54) were not significant at $p<0.05$ level. Hence, the assumption of homogeneity of variance holds and the results of multivariate analysis of variance test can be reported.

At first, multivariate tests were conducted for investigating the effects of the addicts' drug type on the combination of dependent variables. The results of Wilks' lambda test demonstrated that the effect of drug type on personality traits is significant (Wilks, $F(676,2)=0.417$, $p\leq0.001$) Highlighting the significance in Wilks' lambda test, the effect of drug type on personality is considered to be significant and the F-test results of the variables are put forward in the next table to examine which of the dependent variables is the reason behind the aforementioned significance.

Table 2 *Mean and standard deviation of personality traits in drug type among individuals with drug abuse disorder*

Personality Traits	Drug	Mean	Standard deviation
Neuroticism	Sedatives	53.35	4.451
	Opiates	46	9.84
	Marijuana	27.85	10.52
	Hallucinogens	22.20	10.65
	Stimulants	19.60	5.67
Extrovertism	Stimulants	55.15	3.95
	Marijuana	29.65	9.67
	Hallucinogens	26.10	7.01
	Opiates	20	6.80
	Sedatives	18.70	6.78
Open to Experience	Marijuana	54	5.76
	Hallucinogens	39.05	7.69
	Stimulants	27.20	5.44
	Opiates	21.25	5.63
	Sedatives	17.45	3.85
Agreement	Sedatives	31.30	6.83
	Marijuana	25.50	6.27
	Hallucinogens	21.85	5.04
	Opiates	17.80	4.02
	Stimulants	13.85	4.13
Conscientious	Opiates	34.95	4.68
	Sedatives	30.35	4.78
	Marijuana	24.30	4.19
	Stimulants	20.55	4.23
	Hallucinogens	17.80	4.09

Table 3 *Univariate F tests to assess the effect of drug Type on personality among Individuals with drug abuse disorder*

Sources changes	Dependent variables	Sum of Squares	df	Mean Square	F	Sig	Power
Drug Abuse	Neuroticism	18052.900	4	4513.225	60.481	0.000	0.718
	Extrovertism	17510.260	4	4377.565	87.311	0.000	0.786
	Open to Experience	17675.740	4	4419.935	63.311	0.000	0.846
	Agreement	4908.940	4	1227.235	45.515	0.000	0.657
	Conscientious	3960.340	4	990.085	50.957	0.000	0.682
Error	Neuroticism	7089.100	95	74.622			
	Extrovertism	4763.100	95	50.138			
	Open to Experience	3206.850	95	33.756			
	Agreement	2561.500	95	36.963			
	Conscientious	1845.850	95	19.430			
Total	Neuroticism	139386.000	100				
	Extrovertism	111794.0	100				
	Open to Experience	121943.0	100				
	Agreement	58818.0	100				
	Conscientious	71291.0	100				

As can be seen in Table 3, there is a significant difference in personality aspects in terms of neuroticism (F=60.48 and p<0.001), extraversion (F=87.31 and p<0.001), openness to experience (F=63.31 and p<0.001), agreeableness (F=45.51 and p<0.001), and conscientiousness (F=60.48 and p<0.001) among the individuals addicted to opiates.

Table 4 *Tukey test results and comparing each pair of adjusted mean*

Personality aspects	Drug	Adjusted mean	Standard error	p
Neuroticism	Sedatives	23.12	0.648	≤0.001
	Opiates	18	0.676	≤0.001
	Marijuana	1.41	0.648	0.212
	Hallucinogens	2.40	0.681	0.091
	Stimulants	2.67	0.676	0.101
Extrovertism	Sedatives	0.53	0.681	0.413
	Opiates	1.78	0.703	0.209
	Mmarijuana	2.61	0.703	0.081
	Hallucinogens	-1.7	0.690	0.131
	Stimulants	27.88	0.709	≤0.001
Open to Experience	Sedatives	1.05	0.542	0.186
	Opiates	0.88	0.705	0.356
	Marijuana	21.74	0.578	≤0.001
	Hallucinogens	14.63	0.701	≤0.001
	Stimulants	0.25	0.651	0.784
Agreement	Sedatives	-2.12	0.705	0.218
	Opiates	-1.03	0.489	0.452
	Marijuana	-8.87	0.705	≤0.001
	Hallucinogens	-6.54	0.703	≤0.001
	Stimulants	-13.42	0.758	≤0.001
Conscientious	Sedatives	0.12	0.703	0.862
	Opiates	1.02	0.705	0.394
	Marijuana	-7.96	0.743	≤0.001
	Hallucinogens	-7.60	0.725	≤0.001
	Stimulants	-9.72	0.728	≤0.001

Moreover, to clarify this point as to how the difference between the means of personality components in the addicts' drug classes is significant, post hoc Tukey test was adopted. The results of Tukey test show that the mean scores of neurotic participants are significantly higher in drug abusers using sedatives and opiates, extrovert participants in drug abusers using stimulants, and open to experience participants in drug abusers using marijuana and hallucinogens (p<0.001). In addition, the means of agreeableness and conscientiousness scores were significantly lower in drug abusers using stimulants, marijuana, and hallucinogens (p<0.001).

Discussion

This research was conducted to investigate the role of personality traits (agreeableness, conscientiousness, neuroticism, extraversion, and openness to experience) in the drug type used by addicts. Research findings showed that there is a significant relationship between personality and drug type. Individuals addicted to sedatives and opiates gained high scores in the neuroticism scale. This result is in agreement with the findings of studies conducted by Wills et al. [22], Cooper et al. [23], Vallila [24], Comeo et al. [25], Loben et al. [26], and Circaldi et al. [27]. To explain this finding, it can be said that neuroticism (the negative pole of emotional stability) is indicative of personal differences in the ability to confront negative emotions [28] and has a negative relationship with internalization problems such as emotional inhibition, as well as affectional and anxiety disorders [27,29]. Furthermore, neuroticism has been mentioned to be the factor making participants susceptible to performing high-risk behaviors [30]. participants with scores in neuroticism have more illogical affections and less ability in controlling impulsive behaviors as well as a weakness

in coping with problems, anger and hostility, depression, shyness, and vulnerability. On the contrary, individuals with low scores in this personality trait enjoy affectional stability, are calm, moderate, and relaxed, and can deal with stressful situations without distress or anxiety [31]. The relationship between this personality aspect and the health level of individuals being low in all aspects would make sense. Hence, people who are vulnerable regarding these personality traits resort to drug abuse to reduce psychological pain and suffering, high levels of anxiety and depression, and overall negative emotions as well as to get rid of the low temperament resulting from these factors [28]. Dourand [29] considers drug abuse to be a self-treatment method in response to signs of depression. The depression level in individuals using Apr sedation and hypnotic drugs (such as opium and heroin) is more than that in those addicted to stimulants (such as LSD, cocaine, and marijuana) [28]. Additionally, neuroticism is one of the personality aspects which involves emotional reactions and can bring about the frequent experiencing of negative, stressful events in life. High scores in neuroticism make people susceptible to anxiety. Also as Costa and McKerry [18] believe, these people use ineffective coping methods such as wishful thinking and self-blame for stress control. Neurotic people are anxious, worried, and depressed with fluctuating moods. They probably have sleep problems and suffer a great deal of psychosomatic disorders. They are very emotional and react intensely to environmental stimuli [18]. They exhibit negative emotions when coping with minor stressful factors [31]. In general, it can be concluded that higher scores in neuroticism are correlated with high-risk behaviors including drug abuse as a way of fighting negative temperamental states [29]. Clinical experiences on treating individuals addicted to heroin (Apr sedation drug)with Methadone indicates that many of them seek help in the drugs to get rid of anxiety and depression [31]. Welsh and Strain [32] observed that opiates can have anti-depression and anti-anxiety effects. It may thus be stated that neurotic people use drugs and pain-relieving medication (painkillers and hypnotics), which cause excessive sleep, weakness and lethargy, lack of concentration, increased psychological calmness, and decreased mental stress, to reduce depression, anxiety, and psychological pain.

The findings demonstrated that individuals that use stimulants (cocaine, amphetamine, and methamphetamine) gain high scores in extraversion and low scores in agreeableness and conscientiousness compared to those using sedatives and opiates. This finding is in agreement with the results obtained by Mendez and Welsh [33] and Vallila [24]. To explain this finding, it may be said that extrovert individuals are sociable, positive, energetic, and active and it seems that these people are curious, eager, and courageous to have new, exciting experiences that even involve levels of social and physical risk [34]. Extroverts require intense external stimulations to get excited and they try to reach high levels of stimulation. Through recurrent, various social activities, they strive to reach optimal levels of stimulation [31]. They do not exhibit much sensitivity to low-level stimulations and have higher pain thresholds (Larsson and Katlar, quoted by Irani, [35]). Therefore, for emotional excitation, extrovert individuals resort to stimulants that generate feelings of stimulation, joy, power, as well as increased consciousness and energy.

The findings also revealed that the individuals addicted to marijuana and hallucinogens (LSD and Mescaline) gain high scores in openness to experience and low scores in agreeableness and conscientiousness. This is in accordance with the results obtained by Mendez and Welsh [33], Ball et al. [36], Vallila [24], Terracciano et al. [11], Seize [13], and Cilbey [14]. To explain this finding, it may be stated that one of the very important personality traits making people vulnerable to high-risk experiences, such as the tendency toward drug abuse, is excitement seeking. Among the characteristics of this personality trait is to seek new, various, and complicated

experiences as well as desire to get involved in physical, social, and financial risks for the sake of such experiences [37]. Excitement seeking and experience seeking aspects respectively indicate the individual's desire for taking part in high-risk activities and inhibited activities. Sensitivity to monotony suggests being fed up with repetitive, monotonous, and tiring activities. People with high scores in openness to experience tend to use drugs such as marijuana and hallucinogens to satisfy their sense of curiosity. These drugs bring about mild feelings of joy and liveliness, involve rapid temperamental changes and extreme emotions, open doors to new experiences, pose no inhibition to high-risk behaviors, and constitute a means to get rid of monotony and impatience. In general, the individuals who prefer marijuana are frequently seeking new, unknown experiences.

The findings indicated that the addicted individuals using stimulants, marijuana, and hallucinogens have lower scores in agreeableness and conscientiousness than those using sedatives and opiates. This finding is in agreement with the results obtained by Mendez and Welsh [33], Vallila [24], Ball et al. [36], Terracciano et al. [11], Seize [13], and Cibley [14]. The mechanism of such a relationship can display itself as low agreeableness with an accompaniment of such traits as suspicion, quarrelling, deceit, lack of concord [37], and externalization problems such as conduct disorder, attention deficiency, aggression, and taking risks [38]. Hence, it seems that people with low agreeableness are incompatible with accepted social norms and tend toward criminal behaviors and drug addiction.

To explain the relationship between conscientiousness and stimulant, marijuana, and hallucinogen drugs, it may be stated that people with low scores in conscientiousness are lenient and negligent; that is, they lack any enthusiasm for making purposeful efforts. These individuals are impulsive and fun-oriented [39]. In Zukerman's sensation seeking theory, it is underlined that the searching for the unknowns along with low harm avoidance constitute the core of impulsive behavior and that impulsiveness is highly correlated with drug abuse and anti-social personality. In the five-factor pattern, impulsiveness takes on a negative, significant sense under the conscientiousness subscale. In other words, low scores in conscientiousness are characterized by impulsive, careless behavior. People with low sense of responsibility tend more toward drug abuse [6-9,30]. Thus, strategies that can flourish or enhance conscientiousness in children and adolescents are considered to be a strong barrier against drug abuse. Responsible people have higher job satisfaction and security as well as more committed and positive social relationships with others (Longford, 2003; quoted by Larsson and Boss, [40]). People with a strong sense of responsibility do not usually procrastinate and work hard for progress (Lund et al., 2006; quoted by Larsson and Boss, [40]). In general, people with high scores in conscientiousness seldom disobey laws, rarely tend to drug abuse, and enjoy secure, stable romantic relationships [39]. People who have a sense of responsibility toward their own destiny, family, and society, those who seek progress and advancement, and those who accept the consequences of their actions less frequently try high-risk behaviors and addiction. In religious teachings, there has also been great emphasis on people's sense of responsibility toward themselves, others, their actions and the consequences, etc. Hence, getting high scores in the personality trait of conscientiousness reduces the probability of tending to drug abuse [40].

It should of course be mentioned that having a certain personality trait does not, on its own, cause addiction. A number of traits along with other factors usually prepare the circumstances for drug abuse. For example, Miller et al. (quoted by Larsson and Boss, [40]), found out that high levels of extraversion, as well as low levels of conscientiousness and agreeableness predict high-risk sexual behavior in the best way. Therefore, all factors affecting the tendency toward drugs should be taken into consideration.

Among the limitations of this research were the small size of the research sample, the intensity of the denial defense mechanism in addicts, and convenience and volunteer sampling methods. Moreover, this is a cross-sectional, causal-comparative study limited by causal conclusion. Another limitation of this research was the selection of addicts who volunteered to quit using drug. Thus, care should be taken upon generalizing the results to other addicts.

Conclusion

The present study demonstrated that addicts have particular capacities and personality traits while confirming a huge spectrum of the existing findings regarding the characteristics of drug abusers. These traits cause their response to environmental events to be different from that of non-addicted persons. During the treatment process of this group of patients, paying attention to the traumatic personality background can increase the accuracy of treatment interventions and prevent drug abuse recurrence.

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Contributions

Study design: MH, MB
Data collection and analysis: MB, SS
Manuscript preparation: RZ, EM

Conflict of Interest

"The authors declare that they have no competing interests."

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