Research Paper
The Role of Personality Traits, Personality Functioning, Traumatic Life Events, and Emotion-Regulation Difficulties in Predicting Polysubstance Use

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ABSTRACT

Objective: Polysubstance use as a severity index in individuals with substance abuse disorder is associated with various psychological, social, cultural, and genetic factors. This research aims to examine the predictive role of personality traits, personality functions, traumatic life events, and emotion-regulation difficulties in polysubstance use and the severity of dependence.

Methods: A total of 300 subjects (75.2% male) with the mean age of 40.07 years and standard deviation of 12.26 were chosen via the available sampling method. The subjects included individuals abusing one substance (30.6%), a group abusing multiple substances (37.5%), and a nonclinical group (31.7%). The participants completed the questionnaires of short-form personality inventory based on The Diagnostic and Statistical Manual of Mental Disorders, fifth edition, levels of personality functioning scale, dysfunctional emotion regulation scale, and life events checklist.

Results: The results of ranked regression and structural equation modeling indicated that the variables of personality traits (2.69), emotional regulation strategies (2.04), personality functioning (1.17), and stressful factors (1.65) had a significant role in predicting drug abuse.

Conclusion: Personality affects all life dimensions. Emotion regulation strategies, by affecting maladaptive traits, especially negative affectivity and antagonism, as well as personality functions can predispose the person to polysubstance use.

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Highlights

- Personality traits are associated with polysubstance use.

- Personality functioning is associated with polysubstance use.

- Traumatic Life Events vulnerable individual to polysubstance use.

Plain Language Summary

Polysubstance is referred to a state in which a person uses more than one substance per time and personality. The essence of this article, consist of the characteristic sets of behaviors, cognitions, and emotional patterns that are formed through childhood and continues to adulthood. As you can see, personality and polysubstance use are sophisticated subjects and this article investigate the role of personality traits and functioning, Traumatic Life Events as a significant factor and emotion-regulation difficulties as a cognitive pillar in predicting polysubstance use. In a nutshell, based on this article's findings in predicting polysubstance use personality functioning and personality traits are important respectively. Considering Traumatic Life Events and emotion regulations they make person more vulnerable for polysubstance use.

1. Introduction

Polysubstance use refers to a state in which a person abuses more than one substance. The severity of the dependence is higher in individuals who consume multiple substances compared to subjects dependent on only one substance. These individuals experience more distress and psychological symptoms and are more at risk of physical diseases, infectious diseases, mania, and psychosis symptoms (Connor, 2014). Although research on the etiology of polysubstance use is sparse, studies have indicated that subjects with polysubstance use have a worse and more complex psychological status compared to other individuals that are dependent on one drug (Bailey, et al., 2019). According to novel psychological pathology, the most important reason and common point of many psychological disorders are the presence of underlying personality and emotional background in such disorders (Bailey et al., 2019; Crummy, 2020).

A personality disorder is characterized by pervasive maladaptive cognitive, emotional, behavioral, and communication patterns in an individual. These personality patterns emerge in a wide range of personal, familial, academic, occupational, and social situations of the person, causing impairments in the person's life (American Psychiatric Association, 2013). In the alternative model of personality disorders in The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), two main criteria, i.e., levels of personality functioning (criterion A) and personality traits (criterion B), have

been propounded to evaluate personality disorders (American Psychiatric Association, 2013). Personality functions (criterion A) refer to intrapsychic and interpersonal abilities, such as empathy, self-directness, identity, and intimacy. Impairment in personality functioning predicts the existence of a personality disorder as well as its severity (Bach, et al., 2016).

Criterion B refers to maladaptive personality traits (criterion A), namely negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Krueger, 2019). In a study by Cavicchioli et al. (2020), drug abusers reported higher levels of antagonism, disinhibition, and psychoticism compared to the control group (Cavicchioli et al., 2020). Some studies have noted personality traits as one of the most important reasons for inclination toward drug abuse and lack of responsiveness to the treatment among drug abusers (Ball, 2005; Creswell, et al., 2016). However, more research is required about the relationship between different types of maladaptive personality traits and polysubstance abuse as well as the severity of dependence.

Etiologically, the experience of traumatic events throughout an individual's life and especially during childhood has always been considered an important risk factor in the etiology and persistence of many psychological problems, including drug abuse and personality disorders (Bleidorn, Hopwood, & Lucas, 2018; Paykel, 2003). Subjects suffering from polysubstance use have experienced more traumatic events, such as sexual abuse in childhood, natural disasters, or household violence compared to others (Compton, 2021). Numerous studies have indicated that individuals who

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were subject to traumatic events in childhood are 7 times more likely to develop alcoholic dependency (Bleidorn et al., 2018), adopt cigarette smoking, and follow drug abuse earlier than others (Cohen, 2019). Although different studies have shown a relationship between traumatic events and a high probability of substance use disorder, not all individuals who experience such events adopt polysubstance use (Connor, 2014). Thus, other factors are involved in this regard.

Another important factor in the initiation, persistence, cessation, and use of substances, especially polysubstance use, is problems in emotion regulation. People use emotion-regulation strategies for the incidence, aggravation, and expression of a wide range of emotions (McRae, 2020). Emotion regulation or dysregulation plays a key role in the initiation and persistence of emotional disorders. Individuals who have a problem expressing and experiencing their emotions use maladaptive strategies for emotion regulation, including suppression, avoidance, concealment, or ignorance. These maladaptive strategies are associated with negative outcomes (Tugade, 2007).

Excessive efforts to control emotional experiences lead to an increase in emotions in the person who tries to regulate them. This pattern may put the person in a vicious cycle of emotional reactivity, leading to further unsuccessful suppression and avoidance attempts. These attempts affect the adversity of psychological distress and reduce psychological well-being and quality of life (Amini,et al., 2020). In recent years, many attempts have been made to unveil the relationship between the tendency to apply emotion-regulation strategies and various types of psychological disorders, such as depression, generalized anxiety disorder, post-traumatic stress disorder, and social anxiety disorder (Benoit et al., 2010; Cisler, 2012; Garnefski, 2006). However, substance dependence, especially polysubstance use, has remained understudied.

Considering the numerous factors associated with the persistence and severity of drug-use disorders, further studies are still required in this regard. These studies can contribute to developing the knowledge of the pathology of drug use by comparing various underlying factors. Also, once the role of each underlying factor is clarified, more effective preventive and therapeutic programs can be devised. Accordingly, the present study first aims to examine the relationship between personality traits and functions, traumatic life events, and emotion dysregulation with polysubstance use, along with the severity of the addiction. Secondly, this study investigates the predictive role of each of these factors in polysubstance use.

2. Participants and Methods

The final research sample consisted of 290 subjects (218 men and 72 women), who were classified into three groups: 1) individuals with polysubstance use disorder (n=109); 2) individuals with dependence on one substance (n=89); and 3) nonclinical sample (n=92). The sampling method was available and no dropout or faulty questionnaire was reported. The inclusion criteria for individuals with drug use disorder were 1) dependence on substances according to the participant's report, 2) no severe psychological disorder according to the assessor's report, 3) minimum literacy for completing the required questionnaires, and 4), the announcement of full consent to participate in the research. The nonclinical sample was also chosen through available sampling. They were students studying at the universities of Tehran City, Iran. The inclusion criteria for this group were similar to participants with drug use disorder, provided that the students' sample must have not been drug users.

Data collection instruments

Personality Inventory of The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Short Form. The short form of the personality inventory of The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (PID-5, short form) questionnaire has been adapted from the long version of PID-5, developed by Connor et al. in 2012 according to DSM-5. This questionnaire examines 25 personality traits in 5 areas of the alternative model in DSM-5 (Krueger, et al., 2012). The responses are based on a 4-point Likert scale from 0 (often wrong, somehow wrong) to 3 (often wrong, very wrong). Higher scores indicate having more pathological traits. The obtained Cronbach α coefficient ranged from 0.87 to 0.96 for this tool. Most studies on PID-5 have mentioned its sufficient reliability, desired reliability coefficient, and excellent 5 structure (Amini, et al., 2018).

Levels of Personality Functioning Scale

The Levels of Personality Functioning Scale (LPFS-2.1) is a short form of a 12-item scale that assesses 4 functions, namely identity, self-directness, intimacy, and empathy. This scale determines the degree of impairment in each of the functions based on the third section in DMS-5 (Hutsebaut, 2016). This scale determines impairment based on a 5-point Likert scale from 0 to 4. Higher scores indicate greater impairment of personality functions. For this scale, the internal consistency was reported via the Cronbach α coefficient at 0.69. This

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scale was translated into Persian in collaboration with its developer (Hutsebaut) and based on the standard method for translation and adaptation of questionnaires. LPFS-2.1 was changed into a semi-structured interview by Amini et al., and its psychometric properties were investigated. In this study, the inter-assessor internal consistency was obtained in the range of 0.80 to 0.94, which is in the acceptable range of internal consistency. Also, regarding the criterion validity, the correlation of levels with symptoms of two personality disorders, namely anti-social and borderline, was obtained in the range of 0.19 to 0.69 (Amini, et al., 2018).

Difficulties of Emotion Regulation Scale

The Difficulties of Emotion Regulation Scale (DERS) was developed by Gratz and Rumer (2004) for measuring different aspects of emotional regulation and its defects. It has 18 items and 6 subscales (Gratz, 2004). The subscales include 1) nonacceptance of emotional responses, 2) difficulty engaging in goal-directed behavior, 3) impulse control difficulties, 4) lack of emotional awareness, 5) limited access to emotion-regulation strategies, and 6) absence of emotional clarity. In this questionnaire, the subjects' responses are within a range of 1 to 5, that is almost never, sometimes, half of the time, most of the time, and almost always, respectively. Higher scores indicate greater difficulties in emotional regulation. Also, the retest validity for the Iranian version after 1 month (n=32) showed a correlation of 0.67 for reassessment and 0.64 for suppression (Mazaheri, 2015).

Life Events Checklist – Revised

The Life Events Checklist – Revised (LEC-R) is a 17-item scale that assesses traumatic events in life. In this scale, traumatic events are determined on a Likert scale from 0 (does not apply to me) to 5 (it applies to me) (Gray et al., 2004). The researchers employed this questionnaire after translation and adaptation. After preparing the translation, two colleague psychologists examined the questionnaire in terms of content and adapted it against the original text. The internal consistency coefficient of the questionnaire (Cronbach α) in the present questionnaire was obtained at 0.91.

Method of implementation

After receiving the approval of the Research Ethics Committee of the Iran University of Medical Sciences and in collaboration with some healthcare centers in addition to cessation camps, the sampling was initiated. After gaining information about the status of subjects with

dependence and studying their files, the intended sample was chosen based on the inclusion criteria, and individuals who consented to participate in the research were enrolled. To observe the ethical considerations in research and respect the human rights of the subjects, at the beginning of the research, after explaining the significance of the research, methodology, the duration of evaluation, and the confidentiality of the information to the subjects, their consent to participate in the research was obtained. Next, for the data analysis phase, descriptive statistical methods (Mean±SD), as well as inferential statistics (correlation coefficient and internal consistency coefficient), were employed using the SPSS software, version 26, and structural equations modeling.

3. Results

Table 1 shows demographic information on drug use, poly drug and no drug use. Table 2 give descriptive information upon no drug, uni drug or poly drug use. Table 3 give bivariate associations among all study tools. Table 4 give information upon ordered logistic regression.

4. Discussion

This research investigated the relationship and the role of personality traits, personality functions, traumatic life events, and emotion dysregulation in predicting polysubstance use disorder and the severity of substance dependence. The results indicated that each of the above factors had a significant relationship with polysubstance use and the severity of dependence. Considering the role of each of these factors in polysubstance use, the personality traits showed significant differences compared to other factors. Furthermore, considering the personality functions, significance was found when comparing polysubstance and single-substance use. In terms of the traumatic life events, when comparing polysubstance and single substance use, a significance level of 0.05 was observed; however, through combining other factors, the role of these events becomes intensified. Finally, considering emotion-regulation strategies, similar to personality traits and the levels of personality functioning, a significant difference was observed in individuals with polysubstance use and single substance use. Each of these factors is further explained in detail.

Based on the underlying logic of the DSM-5 personality disorders alternative model, criterion A (personality functions) and criterion B (maladaptive traits) are essential in diagnosing personality disorders in the DSM-5 dimensional model. At the beginning of introducing the alternative model, it was assumed that LPFS could well

Table 1. Demographic information on drug use categories

Demographic Information		No. (%)/Mean±SD (Range)		
		No Drug	Uni Drug	Poly Drug
Gender	Female	36 (70)	6(11)	9(18)
	Male	56(23)	83(35)	102(42)
Marital status	Single	43(54)	17(21)	20(25)
	Married	49(29)	57(34)	62(37)
	Other	---	9(32)	19(68)
Education level	Bachelor	39(78)	6(12)	5(10)
	Masters	15(75)	2(10)	3(15)
	PhD	9(100)	---	---
	Below bachelor's level	30(15)	79(39)	94(46)
Age (y)		31.83±8.26 (18-53)	44.26±11.46 (23-68)	43.96±12.52 (20-70)

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predict the level of personality function impairment. This issue has also been examined in different studies (Bach, & Hutsebaut, 2018; Bach & Tracy, 2021; Morey, et al., 2022). This may be related to the importance of personality functions as a basis for mentioning identity cohesion and its reflection in interpersonal relationships (Pincus, 2020). The reason is that individuals with an impairment in personality functions have a major sense of dissatisfaction with their lives. These functions have a developmental origin, and subjects who were exposed to stress and traumas during childhood, experience more damage (Morey, et al., 2022; Timoney, 2017). In this study, in the univariate investigation between personality functions and drug use, the degree of relationship

was also observed. However, considering the prediction, LPFS in combination with pathological traits showed greater predictive power.

The relationship between maladaptive personality traits and drug use disorder has been clearly shown in previous studies (Ball, 2005; Haro, 2007). This relationship suggests the significance of traits in the initiation and persistence of drug use. Cavicchioli et al. (2020) reported that pathological personality traits, especially negative affectivity, antagonism, and disinhibition may increase the probability of suicide in individuals suffering from drug use disorder (Cavicchioli et al., 2020). In this study, it was also found that in the 5 domains of personal-

Table 2. Descriptive information on drug use

Variables	Mean±SD			Cronbach α
	No Drug	Uni Drug	Poly Drug	
PID-5	0.94±0.46	1.81±0.67	1.68±0.48	0.93
LPFS	0.89±0.56	1.81±0.87	1.68±0.68	0.93
LEC-R	2.87±0.64	2.34±0.86	2.65±0.88	0.91
DERS	2.23±0.63	2.92±0.62	2.88±0.57	0.85

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SD: standard deviation; PID-5: Personality Inventory of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition, short form; LPFS: Levels of Personality Functioning Scale; LEC-R: Life Events Checklist–Revised; DERS: Difficulties of Emotion Regulation Scale

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Table 3. Bivariate associations among study variables

Domains and Facets	NE	DE	AN	DI	PS	PID-5	SF	IF	LPFS	LEC	DERS
NE	1										
DE	0.64**	1									
AN	0.67**	0.69**	1								
DI	0.67**	0.69**	0.78**	1							
PS	0.64**	0.71**	0.76**	0.75**	1						
PID-5	0.82**	0.85**	0.90**	0.89**	0.89**	1					
SF	0.62**	0.60**	0.67**	0.63**	0.66**	0.73**	1				
IF	0.59**	0.61**	0.68**	0.59**	0.65**	0.72**	0.86**	1			
LPFS	0.63**	0.63**	0.70**	0.63**	0.68**	0.75**	0.96**	0.96**	1		
LEC	-0.33**	-0.34**	-0.40**	-0.30**	-0.38**	-0.40**	-0.47**	-0.50**	-0.51**	1	
DERS	0.52**	0.50**	0.56**	0.55**	0.54**	0.61**	0.71**	0.70**	0.73**	-0.42**	1

NE, negative affectivity; DE, detachment; AN, antagonism; DI, disinhibition; PS, psychoticism; PID-5, Personality Inventory of The Diagnostic and Statistical Manual of Mental Disorders, fifth edition, short form 5; SF, self-functioning; IF, interpersonal functioning; LPFS, Level of Personality Functioning Scale; LEC, Life Events Checklist; DERS, Difficulties of Emotion Regulation Scale; **$P<0.01$

ity, antagonism, disinhibition, and psychoticism had a greater predictive role in interpreting polysubstance use and the severity of dependence on substances. Those who obtained higher scores in the traits of psychoticism and negative affectivity showed more physiological and emotional reactions to emotional stimuli (Bakhshaie, 2019; Cuomo, et al., 2008; McHugh, 2019). These individuals, when compared to others, consider such stimuli threatening to a higher level. The existence of such traits

would increase vulnerability and special susceptibility to high-risk behaviors, such as drug use (Manning, 2018).

In addition, the results of this study about the existence of the direct relationship between traumatic events and polysubstance use concurred with other studies (Bach, & Fjeldsted, 2017; Bleidorn et al., 2018; Connor, 2014). Most studies agree that the experience of traumatic events can make people more vulnerable to polysubstance use.

Table 4. Ordered logistic regression

Domains	Odds Ratio	SE	Z Statistics	P	%95 Confidence Interval	
					LB	UB
PID-5	2.69	0.70	3.79	<0.001	1.61	4.49
LPFS	1.17	0.30	0.61	0.54	0.70	1.96
LEC	1.65	0.28	2.96	0.003	1.18	2.30
DERS	2.04	0.54	2.71	0.007	1.22	3.43

SE: standard error; LB, lower band; UB: upper band; PID-5: Personality Inventory of The Diagnostic and Statistical Manual of Mental Disorders, fifth edition, short form; LPFS: Levels of Personality Functioning Scale; LEC-R: Life Events Checklist – Revised; DERS: Difficulties of Emotion Regulation Scale.

PID-5, LPFS, LEC, and DERS are the independent variables and drug use is the dependent variable.

In a study by Enoch, drug users reported higher scores in traumatic events during childhood and had psychoticism, impulsivity, and suicidal ideation (Enoch, 2011). As an interpretation, individuals who have been exposed to more traumatic events may choose to abuse drugs to liberate themselves from the damages resulting from these events. This emphasizes the importance of addressing previous traumatic events in subjects with polysubstance use disorder. The traumatic events that a person experiences in life are sometimes so serious that the individual cannot integrate these experiences at a symbolic level. Those who have had bad experiences in the past always cope with negative affect and anger. The distress resulting from this negative emotion may direct people toward novelty-seeking and high-risk behaviors, including addiction (Hodson, 2006). Traumatic events, especially the events that occur in the early stages of life, can lead to damage to identity and self-esteem. This damage affects the thought patterns, emotions, behaviors, and personality of the person throughout their entire life. Indeed, the present study indicated that when traumatic events are combined with other factors, including personality traits and personality functions, they would be aggravated with the predictability of polysubstance use.

Emotion regulation was also examined as an important factor associated with drug use disorder. The findings indicated the relationship between emotion regulation issues and the severity of drug use. A significant relationship was also observed between emotion regulation problems and traumatic events as well as personality factors. These findings suggest the causal nature between emotion regulation and psychological issues and disorders. This is because emotion regulation dysfunctions can emerge as a result of disastrous and unpleasant experiences in a person's life (Amini, et al., 2020; Flouri, 2013). Such problems can also predispose the person to symptoms and even some special personality traits. In some studies, the relationship between emotion regulation and the tendency to addiction, unhealthy behaviors, and psychological health has been well interpreted, and it has been mentioned as an influential factor (Dingle, 2018; Wills, 2017). In this study, emotion relation strategies were also interpreted as an important predictive factor for polysubstance use in combination with personality functions and traits. After PID-5, emotion regulation strategies have been the most influential factor in predicting polysubstance use. Intolerance of undesirable emotional states and lacking skills for regulating emotions are influential factors in the tendency toward drug use. Research has shown that these relationships may differ depending on the special type of emotional experience. For example, in the study by Stellern et al., it was found that those with drug use disorder had more problems in emotion regulation strategies compared to normal people (Stellern, 2022), which was also confirmed in the present study.

5. Conclusion

In conclusion, in this study, some evidence was obtained about the importance of alternative model of personality disorders, emotion relation strategies, and traumatic life events about polysubstance use. It was also found that in interpreting the severity of polysubstance use disorder, the presence of both criterion A and criterion B is important. The presence of these criteria can predict the severity of substance use disorder in those who have also had a history of traumatic events. In this respect, it can be claimed that the alternative model of personality disorders in DSM-5, along with emotion regulation strategies and childhood traumatic events have good potential in interpreting and predicting polysubstance use disorder.

Study limitations and suggestions

As with other studies, this research faced some limitations and also presents some suggestions for improving future studies. Since this study was performed through questionnaires, when collecting information, we could not differentiate between the traumatic events that have occurred and those reported as traumatic by the participants. Clinical interviews and reports by peers, parents, and relatives will be helpful in this regard, and we could not collect such reports. It is also suggested to replicate this research by controlling other variables as well as with other personality models, such as the eleventh revision of The International Classification of Diseases (ICD-11) and the HEXACO personality inventory along with different types of coping strategies or larger sample sizes.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles were considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declare no conflict of interest.

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