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Association between Personality Traits and Cognitive Emotional Regulation among Individuals with Substance Use Disorder Undergoing Rehabilitation

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ABSTRACT

Background: Substance use disorders and personality disorders are linked. However, emotion regulation is a significant factor correlated with substance use disorder. It remains critical to obtain deeper insight of the emotions mechanism and effect of personality traits on substance use specifically for those individuals who are going through rehabilitation. **Objective:** To determine the association between personality traits and cognitive emotional regulation among individuals with substance use disorder. **Study Design:** In this research, cross sectional research design was used. **Settings:** The sample for this study was taken from Rehab Home, Faisalabad Pakistan. **Duration:** January 2023 to August 2023. **Methods:** This study sample was comprised of individuals with substance use disorder undergoing rehabilitation N=110. The participants' age range was between 18 to 50 years. Employed n=74 (67.27%) and unemployed n=36 (32.72%) both were assessed. Big Five Inventory, Urdu version and The Cognitive Emotion Regulation Questionnaire, Urdu translated version were used to collect the data. Descriptive, Pearson correlation matrix analysis, and one-way multivariate analysis of variance were performed using Statistical Package for the Social Sciences (SPSS-IBM version 26.0) to analyze the data. **Results:** Results revealed that a significant correlation was found among study variables. Conscientious personality traits have a significant negative correlation with the maladaptive cognitive emotion regulation domain. Neurotic individuals have a positive association with negative cognitive emotion regulation. Individuals with substance use disorder score high on neuroticism and openness to experience as compared to extraversion, conscientiousness, and agreeableness. **Conclusion:** The research findings demonstrate that patients with SUD having neuroticism, Openness to Experience and Extroversion personalities have difficulty regulating their emotions as compared to patients with conscientiousness or agreeableness.

Keywords: Cognitive emotional regulation, Personality traits, Substance use disorder, Correlation.

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INTRODUCTION

Substance use disorder (SUD) refers to a mental health disorder that is prevailing very rapidly worldwide as per United Nations report 35 million people suffer it.¹ In Pakistan 6.7 million individuals with the age range of 15-64 is indulged in SUD.² Substance use disorder (SUD) is a group of symptoms related to physiological, cognitive, and behavioral signs indicating that a person continues to use the drug in spite of serious drug-related issues.³ There are several factors which can influence substance use among individuals. Literature support that personality traits and emotional regulation are strongly correlated with substance use disorder.^{4,5} A study explored significant relationship among adolescents with substance use disorder between emotions regulation and addiction severity.⁶ The findings demonstrate strong facts that substance use disorders and personality disorders are linked.^{7,8} In the general population, the prevalence of each particular PD ranges

between 1 to 5.9%,⁹ while 18-69% in SUD patients.¹⁰ A study also revealed that the presence of these two disorders as comorbidity is associated with increased degree of treatment discontinuation,¹¹ greater severity of dependence¹² and poor life quality.¹³ However, emotional distress is the one of the major leading cause of substance abuse.¹⁴ As a result, it remains critical to obtain deeper insight of the emotions mechanism and effect of personality traits on substance use specifically for those individuals who are going through rehabilitation.

Pakistan is facing a massive increase in misuse of illicit drugs. As per estimates, there are 6.7 million drug abusers, 4.25 million of whom are drug dependent who require long-term residential treatment. Despite these frightening figures, there is a significant lack of preventative measures and drug-indictment regulations. As a consequence, the figure of drug addicts remains to increase at shocking step of 40,000 every year, which makes Pakistan a country that is among the most affected

countries in the world due to substance use. Most of the work in the field of drug use disorder, such as demand reduction, treatment planning, etiology, and so on, is done in western societies, but the cultural background in Pakistan is considerably different. In this regard there is a strong need to measure contributing psychological factors in drug use.

Emotion regulation has been characterized as the process by which a person can control both their internal and external emotional experiences.¹⁵ Persons uses maladaptive pattern of coping to deal with life stressors lead to negative outcomes such as substance abuse particularly among younger adults.¹⁶ The impact of drugs on emotions is very significant as these pharmacologically fluctuate individual's present state.¹⁷ Model of SUD (i.e., relapse prevention model, affective processing model, and the self-medication hypothesis) directly implicate negative strategies for cognitive emotion regulation as a major drive for ongoing drug use and relapse.⁴

A five-factor model take of personality further elaborates the association among substance abuse and patients with personality disorder. Studies^{18,20} explained personality functions as a base for identity cohesion and its effect on interpersonal relationships.¹⁹ The reason is people with an impairment in personality functions have issues with life satisfaction which further leads them to stress and traumas during childhood, and they experience more damage due to SUD²⁰. Cross sectional studies of adults' evidence that high neuroticism, low conscientiousness and agreeableness correlate with clinically significant SUD.²¹

Rational of the study

The most salient goal of the present study is to identify the association of personality traits and cognitive emotion regulation among individuals with substance use disorder. Although the literature supports the correlation between personality traits and cognitive emotional regulation, a little attention is given to the relationship among study variables in substance users undergoing rehabilitation. Therefore, the present study intends to decrease the gap in the currently reported literature.

This research is an important step in the direction of integrating the aforementioned variables into a significant theoretical framework relating to the Pakistani cultural perspective. These study variables are less recognized in combination, particularly with the reference of Pakistani individuals. This study is an effort to clarify the most prevailing cognitive emotional regulation strategy and personality type among substance use disorder patients. In this respect, the study's foremost objective was to find out the association of personality traits and cognitive emotion regulation among individuals with substance use disorder.

Hypotheses

1. Personality traits would significantly correlate with cognitive emotional regulation among individuals with substance use disorders.

2. Type of drug would significantly differ based on personality trait among individuals with substance use disorder.

Type of drug would significantly differ based on cognitive emotion regulation strategies among individuals with substance use disorder.

METHODS

The purposive sampling technique was utilized to select the research participant.

The young adult participants whose age range is between 19-50 with at least 12 months of drug use history were included. Individuals who have been taking treatment for at least 30 days and clear psychosis symptoms were included as a research participant. Individuals with previous psychiatry or medical history were excluded from the sample. Individuals who are in detoxification phase were excluded.

Demographics sheet. The demographic information sheet was used to collect information on various demographics (such as gender, education, monthly income, age, work experience and substance use history)

The Cognitive Emotion Regulation Questionnaire²² Urdu translated version²⁴ was used. The CERQ is comprised of thirty-six items composed of 9 subscales that are conceptually distinct with each other, each of which has four items: self-blame, ruminating, catastrophizing, positive reappraisal, other blame, positive refocusing, acceptance, planning, and putting into perspective. It measured using a 5-point Likert scale extending from 1 (almost never) to 5 (almost always). Person's subscale scores are calculated by adding the attained subscale scores (range from 4 to 20). The Cronbach alpha for the CERQ total (Cronbach alpha = .80) is adequate. Similarly, Cronbach alpha for subscales i.e., Self-blame, (Cronbach alpha = .76) acceptance (Cronbach alpha = .78), rumination (Cronbach alpha = .72), positive refocusing (Cronbach alpha = .79), focus on planning (Cronbach alpha = .89), positive reappraisal (Cronbach alpha = .81) putting into perspective (Cronbach alpha = .83) catastrophizing (Cronbach alpha = .73) other blame (Cronbach alpha = .70), test-retest reliability of the CERQ is (.89).

Big Five Inventory²⁶ Urdu version of Big Five Inventory²⁵ consists of 44-items that measure an individual on the Big Five Factors i.e., extraversion, agreeableness, conscientiousness, openness, neuroticism of personality. Each element is then subdivided into personality aspects. A five point Likert scale was used, variety from 1 (strongly disagree) to 5 (strongly agree). Test-retest reliability of big five inventory is between 0.79- 0.88.

After the acceptance of research proposal to conduct the study (No.48.ERC/FMU/2023-24/453), formal permissions from the principal authors of the scales, institutional authority and rehab incharge were taken for data collection. The suitability of scales was checked through psychological testing. Patients were assured to read the consent form if they really decide to be a part in the study, then they sign the consent form. Volunteers for the research were explained a complete instruction related to the objective of the study, it's benefits and terms of

confidentiality. The research sample size was determined via statistical analysis software (G-Power 3.1.9.2, 2014). According to its findings, at least 105 participants were required for the study to be statistically significant. So, the sample of the research is comprised of 110 participants.

Demographic data was collected via Demographic forms from the desired sample of study to fulfill necessary information according to the requirement of the research. The research was conducted by using a purposive sampling technique. The research did not involve any deception for participants.

SPSS version 26, was used to analyze the data. Data was scrutinized and scored according to the manual instructions. Descriptive statistical, correlation analysis and multivariate analysis of variance was used. During the process of research, we were adhering to four key ethical principles: competence, responsibility, and integrity respect for the person's rights and dignity.

RESULTS

Initially, the data were examined to identify any violations of normality or the presence of outliers. No outliers were detected, and there were no violations in the data. Missing data was addressed using series means. The distribution of the data was assessed using the values of skewness and kurtosis, which fell within the acceptable range of ± 2 .²⁶

Table 1: Demographic characteristics, Frequency, and percentage of participants (N = 110)

Demographic variables		f	%
Age	18-25	29	26.4
	25-30	39	35.5
	30-35	24	21.8
	35-40	10	9.1
	40+	8	7.3
Qualification	Under Matric	28	25.5
	Matric	23	20.9
	Intermediate	23	20.9
	Bachelor	25	22.7
	Master	11	10.0
Occupation	Private Job	43	39.1
	Government Job	11	10.1
	Businessman	20	18.2
	Unemployed	36	29.6
Marital status	Married	70	63.6
	Unmarried	30	27.3
	Divorce	10	9.1
Drug Type	Poly Drug	12	10.9
	Cannabinoids	24	21.8
	Methamphetamines	43	39.1
	Opioids	26	23.6
	Alcohol	5	4.5
	Tranquilizer	0	0.0
Average duration of drug use	1 year	9	8.1
	2-5	43	39.3
	5-10	39	35.5
	10-15	12	10.9
	15-20	1	0.9
	Less than 1	6	5.5
Substance use disorder		30	27.3
Drug Induced psychosis		80	72.7
Previous Relapse history		27	24.5

Table 2: Descriptive Statistics, Alpha Reliability Coefficient, and Univariate Normality of Scales in study (N= 110)

Variable	K	M	SD	α	Range		Skewness	Kurtosis
					Potential	Actual		
Extraversion	8	24.58	6.83	.79	5-40	9-38	-.57	-.54
Agreeableness	9	19.60	4.43	.63	5-45	11-34	.58	.55
Conscientiousness	9	21.24	7.97	.87	5-45	10-40	.53	.81
Openness	10	31.16	7.55	.75	5-50	11-44	.79	.43
Neuroticism	8	26.20	6.21	.80	5-40	10-36	.99	.25
Self-blame	4	12.62	3.69	.76	5-20	5-20	.21	-.79
Acceptance	4	10.14	3.48	.75	5-20	5-19	.61	-.18
Rumination	4	13.27	3.56	.68	5-20	5-20	-.38	-.68
Positive refocusing	4	11.50	3.78	.72	5-20	5-20	.45	-.57
Focus on planning	4	10.65	3.67	.72	5-20	5-20	.67	-.43
Positive reappraisal	4	11.44	4.03	.78	5-20	5-20	.36	-.74
Putting into perspective	4	10.43	3.49	.67	5-20	5-19	.34	-.53
Catastrophizing	4	13.43	3.84	.76	5-20	5-20	-.28	-.76
Blaming others	4	12.97	3.76	.75	5-20	5-19	-.69	-.15

Table 3: Correlation Matrix for all the variables used in the study (N=110)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
EXT	-															
AGR	.06	-														
CON	.10	.09	-													
OPN	.35**	.15	.05	-												
NRT	.14	-.07	.18	.33**	-											

SB	.26**	.00	-.31**	.35**	.62**	-												
ACC	-.10	-.08	-.34**	-.09	-.55**	-.42**	-											
RUM	.23*	.00	.05	.34**	.39**	.43**	-.29**	-										
PR	-.06	.04	.20*	-.18	-.44**	-.29**	.33**	-.35**	-									
FOP	-.04	-.00	.62	-.16	-.46**	-.38**	.56**	-.43**	.46**	-								
PR	.00	.02	.17	-.18	-.54**	-.41**	-.51**	-.39**	.37**	.63**	-							
PIP	-.08	-.07	.10	.03	-.25**	-.30**	.48**	-.24**	.26**	.46**	.50**	-						
CAT	.10	.00	-.16	.23*	.46**	.52**	-.38**	.46**	-.39**	-.50**	-.42**	-.18	-					
BO	.09	-.02	-.25**	.15	.57**	.55**	-.40**	.43**	-.35**	-.43**	-.49**	-.22*	.68	-				
PCER	-.07	-.02	.25**	-.16	-.60**	-.48**	.75**	-.46**	.65**	.82**	.81**	.71**	-.50	-.51**	-			
NCER	.21*	-.00	-.21*	.33**	.64**	.78**	-.47**	.72**	-.43**	-.55**	-.54**	-.30**	.84	.84**	-.61**	-		

Note. EXT = Extraversion; AGR Agreeableness; CON=Conscientiousness; OPN=Openness; NRT =Neuroticism; SB = Self-blame; ACC = Acceptance; RUM =Rumination; PR =Positive refocusing; FOP = Focus on planning; PR =Positive reappraisal; PIP =Putting into perspective; CAT = Catastrophizing; BO = Blaming others; PCER = Positive cognitive emotion regulation; NCER = Negative cognitive emotion regulation; * $p < .05$; ** $p < .01$

Table 4: Means, Standard deviation, and one-way multivariate analysis of variance in personality traits across different types of drugs (N=110)

Variables	Poly substance N=12		Cannabinoids N=24		Methamphetamines N=38		Opioids N=26		Alcohol N=10		F (4-105)	p	Post Hoc Mean Differences	95 % CI		η ²
	M	SD	M	SD	M	SD	M	SD	M	SD			I-J	LL	UL	
Extroversion	21.83	6.35	24.54	7.26	24.32	6.60	26.11	6.70	25.60	8.98	.85	.49				.03
Agreeableness	19.08	4.10	18.83	4.92	19.67	4.4	20.50	4.31	19.40	4.27	.48	.74				.01
Conscientiousness	19.50	5.68	22.12	7.17	21.11	8.54	20.61	8.56	25.60	9.01	.62	.64				.02
Openness	31.51	7.7	32.62	6.86	30.93	6.63	31.69	7.91	22.40	12.52	2.02	.09				.07
Neuroticism	26.66	7.16	26.87	5.9	25.53	5.41	26.84	5.93	15.80	5.97	4.10	.04	10.86	2.16	19.86	.13
													11.07	3.03	19.11	
													10.73	3.00	18.46	
													11.04	3.05	19.03	
													-11.04	-19.03	-3.05	

Table 5: Means, Standard deviation, and one-way multivariate analysis of variance in Cognitive Emotion Regulation across different types of drugs (N=110)

Variables	Poly substance N=12		Cannabis N=24		Methamphetamine N=38		Opioids N=26		Alcohol N=10		F (4-105)	p	Post hoc Mean differences	95% CI		η2
	M	SD	M	SD	M	SD	M	SD	M	SD			I-J	LL	UL	
Self-Blame	12.25	2.70	12.41	3.72	12.72	3.68	13.53	4.01	9.00	2.54	1.69	.15				.06
Acceptance	9.33	4.18	10.08	3.07	9.76	3.53	10.65	3.08	13.00	4.63	1.28	.28				.04
Rumination	13.91	4.33	13.00	2.81	13.93	3.34	12.92	3.85	9.20	3.34	2.29	.06				.08
Positive refocusing	12.08	3.44	10.79	3.55	10.65	3.49	12.57	3.93	15.20	4.86	2.70	.03	-4.40	-7.89	-0.82	.09
													-4.54	-98.76	-0.82	
													-1.92	-3.73	-0.11	
Focus planning	on 10.50	3.58	10.04	3.38	10.06	3.30	11.65	3.97	13.80	5.26	1.96	.11				.06
Positive reappraisal	10.50	4.12	10.58	3.10	10.93	3.61	12.30	4.62	17.80	2.38	4.52	.00	-7.30	-12.91	-1.68	.03
													-7.21	-12.40	-2.03	
													-6.86	-11.85	-1.88	
													-5.49	-10.64	-0.34	
Putting into perspective	10.16	3.53	10.08	2.65	10.37	3.51	10.80	4.03	11.40	4.87	.24	.91				.00
catastrophizing	13.33	3.70	13.37	3.85	14.04	3.76	13.15	3.97	10.20	3.76	1.20	.31				.04
Blaming others	12.75	3.81	12.75	3.360	13.65	3.47	13.46	3.62	6.20	2.94	5.22	.00	6.55			.16
													6.55			
													7.45			
													7.26			
Positive cognitive emotion regulation	52.25	15.46	51.58	10.20	51.79	13.04	58.00	14.65	71.20	18.28	3.15	.01	-18.61	4.46	32.76	.10
													-19.61	6.54	32.68	
													-19.40	6.84	31.97	
													-13.20	0.21	26.18	
Negative cognitive emotion regulations	52.25	10.74	51.54	11.30	54.34	10.72	53.07	12.71	34.60	11.45	3.42	.01	-17.65	-29.66	-5.63	.11
													-16.94	-28.03	-5.84	
													-19.74	-30.41	-9.08	
													-18.47	-29.50	-7.45	

DISCUSSION

The present research determines the correlation between personality traits and cognitive emotion regulation among individuals undergoing rehabilitation. SUD is one of a major health concern worldwide as well as it is extensively studied over the years. The Five Factor Model of personality traits and coping skills that a person uses to regulate emotions both are very significant domains which plays important role in the development and relapse of SUD.

In this research those participants were selected from rehabilitation centers who have clear their detoxification process and their symptoms of drug induced psychosis. Five dimensions of personality trait i.e., extraversion, agreeableness, conscientiousness, openness, neuroticism were assessed and the results of mean difference of personality traits among patients with substance use disorder undergoing rehabilitation revealed that individuals score high on openness and neuroticism ($M = 31.16$, $SD = 7.55$; $M = 26.20$, $SD = 6.21$) and score low on extroversion, agreeableness and consciousness ($M = 24.58$, $SD = 6.83$; $M = 19.60$, $SD = 4.43$; $M = 21.24$, $SD = 7.97$). These findings are in line with the⁵ who identified that sample of substance use disorder individuals had higher scores on Neuroticism and lower scores on Conscientiousness, Agreeableness, Extraversion, and Openness compared to the sample norm ($p < 0.01$). The descriptive statistics revealed the scales are psychometrically valid and reliable. Cronbach alpha value of big five personality trait and cognitive emotion regulation subscale shows high to good measure of internal consistency in this study. As shown by value of skewness and kurtosis data is perfectly normally distributed among sample.

The Correlation analysis of current study revealed that relationship between personality traits and cognitive emotion regulation among individuals with SUD is very interesting and complex which indicate that Extroversion is positively correlated with negative cognitive emotion regulation ($r = .21$; $p < .05$) this explains that individuals who have extraversion personality trait tend to have a negative cognitive approach to regulate their emotions while facing any stressful event in their life. Conscientiousness has significant positive relationship with positive domain of emotion regulation ($r = .25$; $p < .01$) and negatively correlated with negative cognitive emotion regulation ($r = -.21$; $p < .05$). These findings explain that individuals having agreeableness personality domain tend to have more adaptive and positive coping strategies to regulate emotion. The results of analysis demonstrate that openness is significantly positively correlated with negative domain to regulate emotion ($r = .33$; $p < .01$). Neuroticisms personality trait negatively correlate with positive cognitive emotion regulation strategies ($r = -.60$; $p < .01$) and on the other hand positively correlated with negative emotion regulation ($r = .64$; $p < .01$). Substance use disorder are nearly always complemented due to emotional problem and pain²⁷. So, these findings explain that emotion regulation should be addressed in substance use disorder treatment. Positive cognitive emotion regulation negatively correlated with negative emotion regulation domain ($r = -.61$; $p < .01$).

One-way multivariate analysis of variance among personality traits and cognitive emotion regulation strategies across different types of drugs indicate that individuals with neuroticism personality trait have significant mean difference among different types of drugs.

It is concluded that this study confirmed our hypothesis that adults with SUDs undergoing rehabilitation display a significant association between personality trait and cognitive emotion regulation. The research findings are in line with literature.^{28,29,6} Our findings demonstrate that individuals with SUDs have difficulty regulating their emotions. Neuroticism, Extraversion, and openness to experience personality traits have significant association with maladaptive cognitive regulation strategies while conscientiousness has positive association with adaptive cognitive functioning.

CONCLUSION

The results of the current research can be utilized in substance prevention seminars and workshops to promote the practice of positive cognitive emotion regulations. In rehabilitation set ups, suitable and adaptive strategies based on study finding can be designed. Our findings suggest that improving emotion management skills might enhance treatment outcomes. Emotion regulation should be assessed and treated as part of the therapy of drug use disorders.

LIMITATIONS

Sample size from different cities can be calculated for better representation of substance use disorder among Pakistan's cultural context. It is difficult to include female participants as per Pakistan's cultural context where there is a lot of variance in both genders ratio of substance use disorder.

SUGGESTIONS / RECOMMENDATIONS

In future a comparative study (SUD Sample compare with non-substance sample) can be designed to get more clarity among variables. In SUD populations, men are overrepresented^{30,31}. Because SUD is high frequent in women as compare to males, one could expect women with SUD to have a greater divergent personality than men with SUD. So, it is suggested to include female participant.

CONFLICT OF INTEREST / DISCLOSURE

The author declare no conflict of interest in the conduct of study. No financial or personal interest could have influenced the outcomes of the study.

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