Mediating Role of Emotional Regulation in Relationship between Attachment Styles and Defense Mechanisms among Clients with Substance Use Disorders

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Abstract

Background: Substance use disorders (SUDs) are complex conditions influenced by a myriad of factors, including psychological, social, and biological elements. While previous research has delved into the connection between substance use and attachment types, as well as the role of defense mechanisms in addiction, a comprehensive understanding of the underlying mechanisms remains elusive. By examining the intricate connections between attachment, emotional regulation, and defense mechanisms, this study seeks to advance the field of SUDs research and inform the development of more effective treatment modalities. **Aim:** This study investigated the mediating role of emotional regulation in the relationship between attachment styles and defensive coping among clients with substance use disorder (SUD). **Subjects and Method**: **Design:** The research design used for this study was a descriptive correlational one. **Subjects:** A convenience sample of 230 clients with SUDs in the outpatient units of El-Maamora Hospital for Psychiatric Medicine was followed. **Tools:** Four instruments utilized to collect the data (socio-demographic data, Revised Adult Attachment Scale (RAAS), Defense Style Questionnaire (DSQ), and Emotion Regulation Questionnaire (ERQ). **Results:** Current findings indicate that defensive styles are strongly correlated with attachment style and emotional regulation in clients with substance use disorders. Clients with secure attachment tend to have better emotional regulation, which in turn contributes to lower levels of immature defense styles. **Conclusion and Recommendation:** Interventions targeting attachment insecurity, promoting the development of mature defenses, and enhancing emotional regulation skills may be beneficial in treating SUDs. Psychiatric mental health nurses should develop psychoeducational programs for parents and teachers to enhance emotional regulation and child attachment security as prevention strategies.

Keywords*:* Attachment Styles, Emotional Regulation, Defense Mechanisms, Substance Use Disorders.

Introduction:

One of the major global public health issues is substance use disorder (SUD). It is a recurrent, chronic brain condition marked by compulsive drug seeking and abuse despite the harmful effects of these substances **(Hamdi et al., 2013)**. Substance use disorder is the fourth most common crisis. It can have a detrimental effect on a person's life in many areas and cause difficulties like violence, social disengagement, joblessness, educational failure, criminality, and declining physical and mental health (**Strathearn et al., 2019)**.

The psychological traits linked to SUDs have been the subject of numerous studies, with attachment style emerging as a particularly important predictor **(Fonagy, 2018; Kamrani M et al., 2023)**. Attachment style broadly includes two main categories: the first is secure attachment, which is characterized by positive internalized self-perceptions and increased interpersonal engagement **(Read et al., 2018)**. The second category is insecure attachment, which is typically classified into two dimensions, anxious and avoidant attachment. Anxious attachment is associated with a need for intimacy from significant others but also a fear of rejection and abandonment **(Pietromonaco & Beck, 2019)**. Avoidant attachment, on the other side, causes people to be afraid proximity and distrust others. They also believe that their discomfort or distress will go unnoticed, which makes them rely on self-soothing **(Wearden et al., 2003)**.

Adult attachment styles and substance use disorders have been found to be significantly correlated in previous research, with insecure attachment styles triggering substance use problems due to inadequate distress regulation **(Ciftci & Fırat, 2023; Fonagy, 2018)**. Higher anxiety attachment tendencies make people more likely to overreact and maintain high levels of negative emotion (**Mikulincer et al., 2003)**. Avoidant attachment includes denying basic anxieties, suppressing unpleasant thoughts and memories, failing to recognize bad feelings, projecting negative aspects of oneself onto other people, and being cognitively unable of recognizing negative self-representations. Accordingly, emotional regulation is adversely affected by both aspects of insecure attachment.

According to (**Thompson et al., (2008)**, emotional regulation pertains to how an individual organizes their actions in response to emotionally charged stimuli, as well as the processes involved in monitoring and adjusting their emotional states. Self-regulation, a crucial component of emotional regulation, involves modifying one's arousal level to mitigate the impact of emotional experiences **(Koole et al., 2016)**. Patients with SUDs exhibit deficiencies in emotion regulation, characterized by low emotion management skills and insufficient regulation strategies **(Berking et al., 2010; Fucito et al., 2011)**. According to self-medication theory, SUDs serve as coping mechanisms for unmanageable negative affective states. Individuals with poor negative emotion regulation are predisposed to developing SUDs. Negative emotions strongly precede drug craving, consumption, and relapse **(Sinha & Li, 2007)**.

Extensive empirical evidence supports a correlation between emotion regulation strategies and defense mechanisms. Emotion regulation and defense mechanisms contribute to affect regulation abilities, allowing individuals to adjust positive and negative emotional experiences **(Abolghasemi et al., 2015; Pierro et al., 2015; Sala et al., 2023).**

Defense mechanisms are unconscious psychological processes that alter conscious experiences of thoughts, feelings, and emotions. They function as protective measures against negative emotions or excessive anxiety stemming from these experiences **(Cummings, 2023)**. Defense mechanisms are typically classified as immature or mature. Immature defenses distort reality and are linked to less adaptive functioning, while mature defenses mitigate distressing reality and facilitate adaptive functioning **(Vaillant, 1994)**.

Researches on the relationship between defense mechanisms and SUDs have shown mixed results. Some studies found that SUD patients use immature defense styles, suggesting maladaptive mechanisms like denial, projection, suppression, and rationalization, while others found both immature and mature defense mechanisms associated with addiction severity **(Evren et al., 2012; Pierro et al., 2015)**. Hence, Psychiatric nurses should deepen their understanding of how insecure attachment negatively impacts emotion regulation and how emotion regulation difficulties may predispose individuals to employ less mature defense mechanisms as coping strategies for negative affect. Consequently, this increased reliance on maladaptive defenses may elevate the probability of substance use as a means of alleviating emotional distress. Besides, understanding such relationships is crucial for designing effective treatment interventions and may also be beneficial in the development and implementation of numerous therapeutic strategies. Psychiatric nurses, as part of the mental health care team, play a critical role in collaborating with individuals to develop personalized treatment plans that address insecure attachment styles and immature defense mechanisms and enhance positive emotional regulation.

Despite the previous findings, few studies have been carried out regarding, the relationship between attachment styles, and emotional regulation and defense mechanisms among clients with SUDs. Therefore, the present study aimed to examine the indirect relationship between insecure attachment and substance use disorders (SUDs) mediated by emotion regulation. Additionally, the research sought to identify specific dimensions of emotion regulation deficits associated with SUDs and whether this association might be explained by the use of defense mechanisms.

Aim of the study

This study aims to investigate the association between attachment styles, emotional regulation and defense mechanisms among clients with substance use disorders. Additionally, this research aims to investigate the mediating role of emotional regulation in the relationship between attachment styles and defensive coping among clients with substance use disorder (SUD).

Research Questions:

What is the nature of the association between attachment style, emotional regulation, and defense mechanisms among with (SUDs)?

To what extent does emotional regulation mediate the relationship between attachment styles and defensive coping among clients with (SUDs)?

Subjects and Method

Research design:

A descriptive correlational research design was utilized for this study.

Setting:

The study was conducted in the outpatient units of El-Maamora Hospital for Psychiatric

Medicine in Alexandria, under the jurisdiction of the Ministry of Health and Population. Male clients were scheduled for outpatient appointments on Mondays and Tuesdays between 9:00 AM and 12:00 PM., while female substance users are seen on Sundays during the same hours. Approximately 28 male clients visit the clinic daily, totaling up to 224 males monthly. On average, six female substance users attend the clinic weekly, totaling up to 24 females monthly. Additionally, the hospital provides a hotline service for male clients with substance use disorders daily from 1:00 to 3:00 pm, and for female clients only on Sundays.

Participants: sample size calculation and sampling technique

The researchers conducted the study using a convenience sample of 230 male clients with substance use disorders (SUDs) to minimize confounding factors due to sex differences. Exclusion criteria for the study were: (1) active psychotic symptoms, (2) active suicidal ideation, and (3) autism spectrum disorder (ASD). Sample size was calculated using Epi Info with a population of 564, an expected frequency of 50%, a margin of error of 5%, and a 95% confidence level. The software determined a minimum sample size of 229 participants. A total of 230 participants were recruited for the study.

Tools

To gather the required data, a total of four instruments were employed.

Tool I: Socio-demographic data

The researchers developed a tool to gather socio-demographic data. Information gathered included age, place of residence, marital status, employment status, educational level, income sufficiency, and living conditions.

Tool II: Revised Adult Attachment Scale (RAAS)

The Revised Adult Attachment Scale (RAA) was created by Collins (1996) through modification of the previous iteration **(Collins & Reid, 1990)**. Research regularly uses RAAS because of its great validity and reliability **(Ravitz et al., 2010).** RAAS composed of eighteen items. This scale evaluates three attachment styles: secure, avoidant, and anxious attachment style, each of them has six items. Secure attachment is measured by items 1, 6, 8,12, 13, and 17. Its higher score indicates increased comfort levels with intimacy and closeness. While avoidant attachment is measured by items 2, 5, 7, 14, 16, and 18, anxious attachment is measured by items 3, 4, 9, 10, 11, and 15, in which greater anxiety about rejection or being unloved is indicated by the higher score. Some items have reverse score. Each attachment style has six items and the total score ranges from 6 to 30. Each item has a five-point Likert scale, from one representing "not at all characteristic of me" to five representing "very characteristic of me." The original reliability coefficients of this scale are 0.95 and 0.87 using the retest and Cronbach's alpha methods, respectively. In the current study, the average Cronbach's alpha value was 0.85.

Tool III : Defense Style Questionnaire (DSQ)

Defense Style Questionnaire (DSQ) is a self-report measure assessing defense styles based on Vaillant's hierarchical model of defense mechanisms within a psychodynamic framework (Vaillant, 1994). The original 40-item English version, developed by Andrews et al., (1993), evaluates three distinct defense style clusters: mature, which includes four defenses (sublimation, humor, anticipation, and suppression); immature, which includes 12

defenses (acting out, autistic fantasy, denial, isolation, passive aggression, rationalization, splitting, somatization, displacement, projection, devaluation, and dissociation); and neurotic (idealization, reaction formation, pseudo-altruism, and undoing). Each defense mechanism is represented by two items. Participants responded to item statements on a 10-point Likert scale ranging from strongly disagree (1) to strongly agree (10). Defensive styles scoring are formed by averaging the ratings for relevant items. Higer scores indicate greater usage of that particular defensive style. The reliability coefficient of the Defense Style Questionnaire (DSQ) in the current study was 0.91.

Tool IV : Emotion Regulation Questionnaire (ERQ)

Emotion Regulation Questionnaire (ERQ) was developed by Gross and John (2003). It is a widely recognized 10-item self-report tool designed to evaluate strategies for managing emotions. ERQ assesses two cores of emotion regulation strategies: cognitive reappraisal and expressive suppression. Expressive suppression is evaluated through four items, exemplified by the statement "I control my emotions by not expressing them." Cognitive reappraisal is measured using six items, such as "I control my emotions by altering my perception of the situation." Participants rate the frequency with which they alter their thoughts or behaviors to regulate their emotions in various situations. Responses were recorded on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7), with a neutral midpoint at 4.

The total score for the cognitive reappraisal subscale ranges from 6-42, with higher scores indicating greater emotional regulation. When respondents total scores range from 6 to 18, they are considered to have a low level of cognitive reappraisal, scores from 19 to 30 indicate a moderate level; and scores from 31 to 42 reflect a high level of cognitive reappraisal.

The total score for expressive suppression subscale ranges from 4 to 28; scores ranging from 4 to 12 indicate low suppression; scores ranging from 13 to 20 denote moderate suppression; and scores ranging from 21 to 28 reflect high suppression. Total ERQ scores were calculated by summing the scores of the two subscales. The original reliability of the scale was established at 0.95 through test-retest reliability and 0.87 through Cronbach's alpha. In the present study, Cronbach's alpha for the ERQ was 0.82.

Ethical consideration

Ethical approval for the study was granted by the Ethical Committee of the Faculty of Nursing, Damanhour University, with registration code 98. Permission to conduct the research was obtained from the director of El-Maamora Hospital for Psychiatric Medicine. Participants provided voluntary informed consent following a detailed explanation of the study's purpose. They were informed of their right to decline participation or withdraw from the study at any point prior to completion. Anonymity and data confidentiality were strictly maintained.

Procedure:

A panel of five experts in psychiatric nursing and psychology evaluated the face validity of the Arabic translations of the RAAS, DSQ, and ERQ instruments. A pilot study with 25 substance abuse clients confirmed the feasibility and clarity of the measures, indicating no need for adjustments. Cronbach's alpha was employed to assess the internal consistency of the study instruments. Structured individual

interviews were conducted in private rooms at outpatient clinics to discuss research objectives and build trust, and avoid embarrassment from others while responding to study tools. Each interview lasted about 15 to 30 minutes. Data collection lasted about three months (from the beginning of April 2023 to the end of June 2023).

Results

Table (1): Presents the sociodemographic characteristics of the study participants. Regarding the age, around half of participants (50.9%) fall within the 30–40-year-old range, with a mean age of 32.59 ± 7.35 years. It's interesting to note that within this age group, a larger portion (44.3%) are single compared to those who are married (35.7%). So, a significant portion of them (47.4%) still live with family. In relation to the education level, more than one third of the participants (33.9) have secondary education. Most clients (70.4%) work in free businesses, suggesting self-employment, which could be a risk factor for substance abuse. Regarding income, the vast majority (82.2%) report insufficient income. Concerning residence, a significant portion (78.7%) resides in urban areas.

Table (2): Describes a descriptive distribution of attachment styles among a sample of clients with SUDs. They exhibited predominantly moderate levels of overall attachment (74.3%), as well as in the specific dimensions of secure (74.3%) and avoidant attachment (76.5%). However, a distinct pattern emerged in anxious attachment, with a substantial proportion of participants (61.3%) displaying elevated levels, and only a small group (2.6%) scoring low on anxious attachment. This finding suggests that anxiety-related attachment styles may be a prominent characteristic among this population.

Table (3): Reveals levels of emotional regulation among study sample, the revealed that the majority of participants (59.6%) demonstrated moderate levels of overall emotional regulation, suggesting a general capacity to manage emotional experiences. However, two substantial portions experience mild and severe difficulties (24.8%,15.7% respectively). The mean overall emotional regulation score was 38.49 ± 10.89, further supporting the notion of a moderately regulated sample.

Regarding cognitive appraisal subscale of emotional regulation, the participants demonstrated a mixed profile. While nearly half showed moderate level of skills with a mean of (22.58, SD = 7.03), 35.7% of sample revealed low level of cognitive appraisal abilities, indicating difficulties in interpreting and making sense of emotional experiences.

In the same line nearly half of participants (48.3%) displayed moderate levels of expressive emotional suppression with mean score of (15.74 ± 5.27). Conversely, a substantial group (22.2%) demonstrated high levels of expressive suppression.

Table (4): Showed that participants exhibited a notably high mean overall defense style score (a mean of 246.31, SD = 33.05), suggesting prevalent defensive functioning. A closer examination of specific defense mechanisms revealed a marked discrepancy. The mean score on the mature subscale is (46.84 ± 9.70), which suggests a relatively low level of mature defense mechanisms in the sample. However, immature defenses were significantly elevated (mean of 152.23 ± 21.81). This pattern indicates a strong reliance on maladaptive coping strategies among the sample. Neurotic defenses, although

present with a mean of (47.24 ± 9.15), appeared less prominent compared to immature defenses.

Table (5): Presents correlation coefficients (r) and corresponding p-values examining the interrelationships among attachment style, emotional regulation, and defensive coping mechanisms in the study sample. Findings indicate a significant positive correlation between secure attachment style and overall emotional regulation ($r = 0.237$, $p < .001$), extending to positive associations with cognitive appraisal ($r = 0.354$, $p < .001$) and expressive suppression ($r = 0.212$, $p < .001$). Conversely, anxious attachment style is negatively correlated with overall emotional regulation ($r = -0.138$, $p < .05$), with similar patterns observed for cognitive appraisal ($r = -0.170$, $p < .05$) and expressive suppression ($r = -0.156$, $p < .05$). These results suggest that individuals with an anxious attachment style exhibit poorer emotional regulation capacities.

With respect to attachment style and defensive coping, secure attachment positively correlates with mature defenses ($r = 0.279$, $p < .001$) while negatively associating with immature ($r = -0.191$*, $p < .001$), neurotic ($r = -0.321$*, $p < .001$), and overall defensive styles ($r = -0.266$*, $p < .001$). Conversely, anxious attachment is positively correlated with neurotic defenses ($r = 0.303$*, $p < .001$). Both avoidant and anxious attachment styles demonstrate negative correlations with mature defenses ($r = -0.245$*, -0.331, respectively, $p < .001$). These findings suggest a link between attachment insecurity and maladaptive coping mechanisms.

Regarding the relationship between defensive coping and emotional regulation, mature defenses positively correlate with overall emotional regulation ($r = 0.413$, $p < .001$), including its components of cognitive appraisal ($r = 0.471$, $p < .001$) and expressive suppression ($r = 0.206$, $p < .002$). In contrast, both immature and neurotic defenses are negatively associated with overall emotional regulation ($r= -0.500$*, -0.546* respectively, $p < .001$). Indicating that maladaptive coping strategies hinder effective emotion management.

Table (6): Presents linear regression models examined the relationship between attachment styles (secure, avoidant, and anxious) and emotional regulation (cognitive appraisal, expressive suppression) on defensive styles (mature, immature, neurotic) in individuals with substance use disorders. For mature defensive style, higher anxiety in attachment was negatively associated with this style ($\beta = -0.452$, $p < .001$), while higher cognitive appraisal positively predicted it ($\beta = 0.635$, $p < .001$). The model accounted for 31% of the variance in mature defensive style ($R^2 = .310$, adjusted $R^2 = .295$).

Immature defensive style was positively predicted by avoidant style of attachment ($\beta = .742$, $p < .05$). This suggests that individuals with a stronger avoidant style are more likely to exhibit immature defenses, while negatively associated with cognitive appraisal ($\beta = -.910$, $p < 0.001$) and expressive suppression ($\beta = -1.126$, $p < 0.001$). This model explained 26.7% of variance in immature defense style ($R^2 = .267$, adjusted $R^2 = .251$).

Neurotic defensive style was positively correlated with anxiety style ($\beta = .378$, $p < .05$), and negatively correlated with cognitive appraisal ($\beta = -.403$, $p < .001$) and expressive suppression ($\beta = -.353$, $p < .005$). This model accounted for 33.8% of variance of Neurotic defensive style ($R^2 = .338$, adjusted $R^2 = .323$). All models demonstrated significant predictive power ($p < .001$).

Table (7), and figure (1): The mediation analysis examining the indirect effects of attachment styles (secure, avoidant, and anxious) on defensive styles (mature, immature, and neurotic) through emotional regulation (cognitive appraisal, expressive suppression). Results indicate significant direct effects between secure attachment and both cognitive appraisal and expressive suppression (β = .648, .353, respectively, p < .001). Cognitive appraisal was positively associated with mature defensive style (β = .635, p < .001) and negatively associated with immature and neurotic styles (β = -.914, -.403, respectively, p < .001). Expressive suppression was negatively associated with immature (β = -1.126, p < .001) and neurotic (β = -.353, p < .005) defensive styles.

Furthermore, indirect effects were observed. Cognitive appraisal and expressive suppression mediated the negative relationship between anxiety style and mature defensive style (C.R. = -3.421, p < .001). Additionally, both cognitive appraisal and expressive suppression mediated the positive relationship between anxiety style and neurotic defensive style (C.R. = 3.093, -3.062, respectively, p < .002).

Table 1: Sociodemographic characteristics of study participants (n=230)

Sociodemographic characteristics of study participants		No	%
Age	< 30	82	35.7
	30 – 40	117	50.9
	> 40	31	13.5
	Range	16 – 65	
	Mean ± SD	32.59 ± 7.35	
Residence	Rural	49	21.3
	Urban	181	78.7
Marital status	Single	102	44.3
	Married	82	35.7
	Divorced	43	18.7
	Widow	3	1.3
Employment	Governorate	3	1.3
	Private	25	10.9
	Free business	162	70.4
	No work	37	16.1
	Student	3	1.3
Education level	Illiterate	28	12.2
	Read and write	36	15.7
	Basic education	42	18.3
	Secondary school	78	33.9
	University education	30	13
	High education	16	7
Income	Enough	41	17.8
	Not enough	189	82.2
Living condition	Alone	39	17
	Wife & children	69	30
	Father, mother & brothers	109	47.4
	Others	13	5.7

Table (2): Distribution of the studied clients regarding their attachment style

Adult Attachment Scale		No	%
Total	Low	11	4.8
	Moderate	171	74.3
	High	48	20.9
	Range	34 – 74	
	Mean ± SD	55.0 ± 7.21	
Secure attachment style	Low	52	22.6
	Moderate	171	74.3
	High	5	2.2
	Range	7 – 27	
	Mean ± SD	17.71 ± 3.59	
	Mean percent score	32.0±4.52	
avoidant attachment style	low	16	7
	Moderate	176	76.5
	High	36	15.7
	Range	9 – 28	
	Mean ± SD	16.44 ± 3.81	
	Mean percent score	29.7±5.33	
Anxious attachment style	Low	6	2.6
	Moderate	81	35.2
	High	141	61.3
	Range	8 – 29	
	Mean ± SD	21.13 ± 4.52	
	Mean percent score	38.2±8.21	

Table (3): Distribution of the studied clients regarding their Emotion regulation

Emotional regulation scale		No	%
Overall Emotional regulation	low	57	24.8
	Moderate	137	59.6
	High	36	15.7
	Range	12.0 – 60.0	
	Mean ± SD	38.49±10.89	
	Mean percent score	47.49±18.14	
Cognitive appraisal	Low	82	35.7
	Moderate	113	49.1
	High	35	15.2
	Range	6.0 – 36.0	
	Mean ± SD	22.58±7.03	
	Mean percent score	46.05±19.54	
Expressive suppression	Low	68	29.6
	Moderate	111	48.3
	High	51	22.2
	Range	4.0 – 25.0	
	Mean ± SD	15.74 ± 5.27	
	Mean percent score	48.91±21.97	

Table (4): Distribution of the studied clients regarding their defense style questionnaire

Defense Style Questionnaire	Range	Mean ± SD	Mean percent score
Overall Defense Style	**107 – 324**	**246.31 ± 33.05**	**57.31±9.18**
Mature	**17 – 66**	**46.84 ± 9.70**	**19.0±3.04**
Immature	**46 – 202**	**152.23 ± 21.81**	**61.8±3.88**
Neurotic	**20 – 70**	**47.24 ± 9.15**	**19.2±2.93**

Table 5: Correlations among attachment styles, emotion regulation strategies, and defense styles in substance use disorder participants (n=230)

ttachment styles, emotion regulation and defense styles	Secure attachment style	Avoidant attachment style	Anxious ttachment style	Overall Adult Attachment Scale	Cognitive appraisal	Expressive suppression	verall Emotional regulation scale	Mature defense	Immature defense	Neurotic defense
Secure attachment										
Avoidant attachment	-0.123 0.062									
Anxious attachment	-0.238* 0.000*	0.404* 0.000*								
OVerall Adult Attachment Scale	-0.260* 0.000*	0.488* 0.000*	0.558* 0.000*							
Cognitive appraisal	0.354* 0.000*	-0.131* 0.048*	-0.170* 0.010*	-0.263* 0.000						
Expressive suppression	0.212* 0.001*	-0.105 0.113	-0.156* 0.018*	-0.208* 0.002*	0.520* 0.000*					
Overall Emotional regulation scale	0.237* 0.000*	-0.107 0.107	-0.138* 0.036*	-0.165* 0.012*	0.756* 0.000*	0.661* 0.000*				
Mature	0.279* 0.000*	-0.245* 0.000*	-0.331* 0.000*	-0.318* 0.000*	0.471* 0.000*	0.206* 0.002*	0.413* 0.000*			
Immature	-0.191* 0.004*	-0.022 0.745	0.124 0.061	0.177* 0.007*	-0.451* 0.000*	-0.403* 0.000*	-0.500* 0.000*	-0.296* 0.000*		
Neurotic	-0.321* 0.000*	0.160* 0.015*	0.303* 0.000*	0.253 0.000*	-0.499* 0.000*	-0.394* 0.000*	-0.546* 0.000*	-0.502* 0.000*	0.464* 0.000	
Overall Defense Style	-0.266* 0.000*	0.047 0.480	0.137* 0.038*	0.229* 0.000*	-0.345* 0.000*	-0.187* 0.004*	-0.336* 0.000	-0.248* 0.000	0.506* 0.000	0.392* 0.000

Table (6): Linear regression analysis showing factors affect defense style among client with SUDs

Factors affect defense style	Defensive styles																	
	Mature						Immature						Neurotic					
	B	Beta	T	P	95% CI LL	95% CI UL	B	Beta	t	P	95% CI LL	95% CI UL	B	Beta	T	P	95% CI LL	95% CI UL
Adult Attachment Scale																		
Secure Style	0.228	0.085	1.395	0.164	-0.094	0.551	-0.068	0.379	-0.178	0.859	-0.815	0.680	-0.284	0.151	-1.878	0.062	-0.582	0.014
Avoidant Style	-0.270	-0.106	-1.743	0.083	-0.576	0.035	0.742	0.359	2.065*	0.040*	0.034	1.450	0.006	0.143	0.042	0.966	-0.276	0.288
Anxious Style	-0.452	-0.211	-3.384*	0.001*	-0.715	-0.189	0.362	0.310	1.169	0.244	-0.248	0.972	0.378	0.123	3.059*	0.002*	0.134	0.621
Emotional regulation scale																		
Cognitive appraisal	0.635	0.460	6.550*	0.001*	0.444	0.825	-0.914	0.225	-4.069*	<0.001*	-1.356	-0.471	-0.403	0.090	-4.506*	<0.001*	-0.580	-0.227
pressive suppression	0.219	0.119	1.736	0.084	0.030	0.467	-1.126	0.292	-3.856*	<0.001*	-1.702	-0.551	-0.353	0.116	-3.029*	0.003*	-0.582	-0.123
R^2=0.310, adjusted R^2= 0.295, F= 20.125*, p<0.001*							**R^2=0.267, adjusted R^2=0.251, F= 16.332*, p<0.001***						**R^2=0.338, adjusted R^2= 0.323, F= 22.881*, p<0.001***					

F,p: F-statistic and associated probability value for the overall model fit.

R^2: Coefficient of determination

B: Unstandardized regression Coefficients

Beta: Standardized regression Coefficients

t: t-test of significance

LL: Lower confidence interval limit.

UL: Upper confidence interval limit.

*: Statistically significant at $p \leq 0.05$

Table 7: Direct and indirect effects between study variables

Variable 1		Variable 2	Direct effect	Indirect effect	C.R	p-value
Cognitive Appraisal	←	Secure Style	0.648		5.231*	<0.001*
Expressive Suppression	←	Secure Style	0.353		3.712*	<0.001*
Cognitive Appraisal	←	Avoidant Style	-0.117		-0.941	0.347
Expressive Suppression	←	Avoidant Style	-0.101		-1.054	0.292
Cognitive Appraisal	←	Anxious Style	-0.102		-0.956	0.339
Expressive Suppression	←	Anxious Style	-0.106		-1.29	0.197
Mature	←	Secure Style	0.228	0.334	1.411	0.158
Immature	←	Secure Style	-0.068	-0.990	-0.18	0.857
Neurotic	←	Secure Style	-0.284	-0.386	-1.899	0.058
Mature	←	Anxious Style	-0.452	-0.042	-3.421*	<0.001*
Immature	←	Anxious Style	0.362	0.213	1.182	0.237
Neurotic	←	Anxious Style	0.378	0.079	3.093*	0.002*
Mature	←	Avoidant Style	-0.27	-0.052	-1.762	0.078
Immature	←	Avoidant Style	0.742	0.220	2.088*	0.037*
Neurotic	←	Avoidant Style	0.006	0.083	0.043	0.966
Mature	←	Cognitive Appraisal	0.635		6.623*	<0.001*
Immature	←	Cognitive Appraisal	-0.914		-4.114*	<0.001*
Neurotic	←	Cognitive Appraisal	-0.403		-4.556*	<0.001*
Mature	←	Expressive Suppression	0.219		1.755	0.079
Immature	←	Expressive Suppression	-1.126		-3.899*	<0.001*
Neurotic	←	Expressive Suppression	-0.353		-3.062*	0.002*

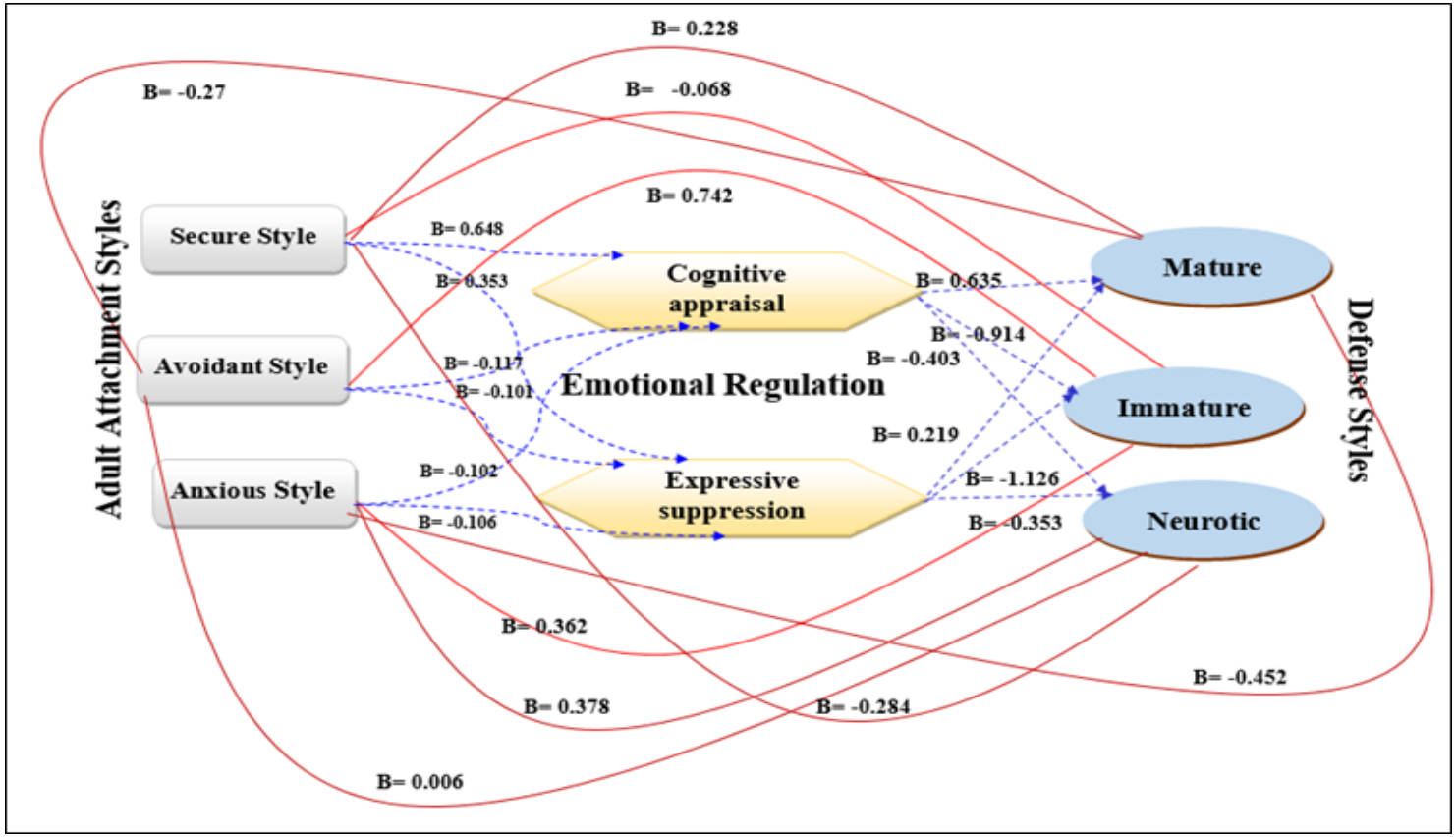

Figure 1: Path model illustrating the direct and indirect effects of adult attachment on defense styles mediated by emotion regulation

Model fit indices showed acceptable fit, with Comparative Fit Index (CFI) and Incremental Fit Index (IFI) both equaling 1.000, and Root Mean Square Error of Approximation (RMSEA) at .108. The chi-square statistic was significant ($\chi^2 = 17.098$, $p < .001$).

Discussion

The capacity to establish secure attachments with others is a fundamental human developmental milestone typically initiated early in life. Early interactions between infants and primary caregivers shape an adult's attachment style and have a significant impact on psychosocial functioning throughout the lifespan **(Bowlby, 1982)**. Insecure (avoidant or anxious) attachment styles adversely affect emotion regulation. Individuals with deficits in emotion regulation and limited coping strategies may utilize immature defense mechanisms to manage negative affect, potentially increasing the likelihood of substance use disorders **(Thorberg & Lyvers, 2010)**. Accordingly, this study sought to examine the relationship between attachment style, emotion regulation, and defense mechanisms in clients with (SUDs).

Results from the current study indicated a predominant prevalence of insecure attachment patterns among the studied sample of clients with SUD within insecure attachment, nearly three-quarters of participants showed moderate avoidant attachment, while over half displayed high anxious attachment. Conversely, approximately three-quarters exhibited moderate secure attachment, with nearly one-quarter showing low secure attachment. These findings align with previous studies showing the majority of patients with SUD exhibit an insecure attachment style **(Gidhagen et al., 2023; Maedeh Kamrani et al., 2018; Schindler, 2019)**.

Such findings align with existing literature suggesting that disruptions in early attachment patterns, often stemming from unresolved trauma or loss of primary caregivers, may underlie the prevalence of insecure attachment among individuals with substance use disorders. Adverse childhood experiences (ACEs) like parental separation, neglect, or abuse interfere with secure attachment formation, leading to maladaptive internal working models of self and others **(Castilho et al., 2017)**. These early experiences not only serve as templates for future relationships but also increase vulnerability to psychological maladjustment **(Maka, 2009)**.

Undeniably, individuals with insecure attachments often experience emotional distress and interpersonal difficulties. Individuals with avoidant attachment styles have a fear of closeness, mistrust others, and withdraw from relationships to avoid rejection. This can hinder recovery efforts and prevent healthy relationships **(Coffman & Swank, 2020; Schindler, 2019)**. Anxious attachment is marked by a strong desire for closeness and a fear of abandonment, leading to clingy and dependent behaviors in relationships. In the context of substance abuse, these individuals may use drugs or alcohol as a maladaptive coping mechanism to manage their intense emotions and attachment-related anxiety **(Fuchshuber et al., 2024)**. The desire to meet unmet attachment needs through substance use can increase vulnerability to addiction (**Kamenderi, 2022)**.

Worthwhile, those with a sense of attachment security may not experience such emotional distress due to effective stress management strategies, support-seeking, positive expectations about relationships, positive self-views, and engagement in exploration and affiliation activities **(Fuchshuber et al., 2024)**.

So, insecure attachment styles may serve as catalysts for a confluence of biological, environmental, and psychosocial risk factors, collectively contributing to maladaptive

behaviors, including addiction (**Kvrgic et al., 2012)**. Conversely, a previous study reported a predominance of fearful attachment styles among individuals with substance use disorders (SUDs), with avoidant attachment representing a smaller proportion and anxious attachment being relatively infrequent **(Schindler et al., 2005)**. It is noteworthy that this study employed the Bartholomew Interview Coding System for attachment assessment, which may account for discrepancies in findings compared to the present study.

Regarding emotional regulation, approximately half of the participants exhibited moderate cognitive appraisal skills, while roughly one-third demonstrated low levels of this ability. Existing literature indicates that individuals with substance use disorders often exhibit deficiencies in emotion regulation strategies, especially cognitive reappraisal that leading to poor psychological well-being, increased anxiety, stress, and maladaptive coping strategies, including substance abuse, as suggested by **Kamboj et al., (2023); Khalid et al., (2018)**.

Cognitive reappraisal is a critical component of emotion regulation, as it can mitigate the impact of drug-related cues, which are often associated with relapse in substance use disorders. By modifying attentional biases towards these stimuli, individuals may be able to reduce compulsive drug-seeking behaviors **(John-Henderson et al., 2023)**.

Results from the present study indicate a greater prevalence of expressive suppression as an emotion regulation strategy among individuals with substance use disorders. Less than half of participants exhibited moderate levels of expressive suppression, and approximately one-quarter demonstrated high levels of this strategy. These findings suggest impairments in both emotional interpretation and expression, aligning with previous research (**Ghorbani et al., 2017; Kamboj et al., 2023; Khosravani et al., 2017)**.

Expressive suppression, a reactive strategy used by patients with substance use disorders (SUDs), involves concealing or inhibiting ongoing emotions, putting strain on an individual's resources **(Cutuli, 2014; Gross & Levenson, 1993; Gross & John, 2003)**. This reactive coping style often leads to emotional suppression and limited expression in stressful or emotionally demanding circumstances. In the context of substance use disorders (SUDs), individuals who heavily rely on expressive suppression may experience challenges in effectively regulating negative emotions **(Naragon-Gainey et al., 2017)**. These difficulties in emotion regulation can amplify affective and cognitive responses, potentially increasing the likelihood of substance use as a coping mechanism for negative emotional states. Patients utilizing expressive suppression may experience reduced coping skills, life satisfaction, self-esteem, optimism, and intimate social connections, increasing the likelihood of illicit drug use **(Linehan, 2018)**.

The study found a significant discrepancy in defense mechanisms, with a low level of mature ones and a strong reliance on immature ones, and neurotic defenses appearing less prominent. These results are in line with previous studies by **Evren et al., (2012); Iwanicka et al., (2017)** who suggest that immature defenses, characterized by rigid and excessive distortion of reality, often preclude conscious awareness of distressing material. As a consequence, individuals may resort to substance use as a

chemical means of coping with these unacknowledged psychological stressors.

The study findings revealed that anxious attachment style is negatively correlated with cognitive appraisal and expressive suppression, which suggests that individuals with higher anxious attachment style exhibit poorer emotional regulation capacities. Individuals with anxious attachment styles often exhibit reduced positive affect, heightened emotional distress, and impaired self-regulation of anxiety, depression, and other negative emotions **(Mikulincer & Shaver, 2019)**. Individuals with insecure attachment styles exhibit elevated levels of trait anxiety and tend to employ cognitive avoidance as a coping mechanism for stressful thoughts, potentially increasing the likelihood of substance use as a means of emotional regulation (**Wedekind, 2013)**. Emotion dysregulation has been identified as a mediating factor in the relationship between anxious attachment and alcohol-related symptoms, marijuana, and texting addiction **(Bruce, 2020)**.

Consistent with this, insecure attachment styles, including both avoidant and anxious patterns, have been linked to a range of maladaptive affect regulation strategies (**Mikulincer & Shaver, 2007)**. Difficulties in managing negative affect within interpersonal contexts may lead individuals to rely on substance use as a means of tension reduction and emotional relief, ultimately contributing to problematic substance use. Higher levels of anxious and avoidant attachment may be associated with poorer psychological health among substance users, and emotion regulation may serve as a mediating factor between attachment style and psychological well-being, ultimately influencing the development of substance abuse **(Maka, 2009)**.The findings of the present study revealed that cognitive appraisal positively predicts mature defense mechanisms and negatively predicts both immature and neurotic defense styles among clients with substance use disorder. **(Di Pierro et al., (2015)** found that limited access to emotion regulation strategies in substance use disorder (SUD) patients is linked to a higher likelihood of SUD, a lower use of mature defense mechanisms, and lack of emotional coping skills. Effective cognitive appraisal allows individuals to assess and interpret stressors realistically, facilitating adaptive responses and the use of mature defenses like sublimation and humor. Conversely, those with maladaptive cognitive appraisals may resort to immature defenses, such as denial and projection, as they struggle to manage their emotions and stressors effectively **(Horay, 2006; Wedekind et al., 2013).**

Moreover, the present study's results revealed that secure attachment positively correlates with mature defenses, while insecure attachment styles (avoidant and anxious) are negatively associated with it. These findings underscore a correlation between insecure attachment and maladaptive coping strategies. Insecure attachment styles may contribute to the development and maintenance of addictive behaviors and disorders. Such attachment patterns can impair individuals' capacity to regulate and identify emotions (**Ghinassi et al., 2023)**. Substance use may serve as a substitute for deficient coping skills, facilitating avoidance and detachment strategies among individuals with substance use disorders **(Schindler et al., 2009)**.

Anxious attachment negatively predicts mature defense mechanisms, which may be due to the hyperactivation of emotional responses and

maladaptive coping strategies associated with this attachment style. Individuals with anxious attachment often rely on immature defenses, such as splitting and projective identification, to manage their heightened emotional states and fears of abandonment. This reliance on less adaptive defenses can hinder their ability to engage in mature defenses, which promote healthier emotional regulation and interpersonal relationships (**Perry, 2014; Richardson et al., 2022)**.

Cognitive appraisal and expression suppression can mediate the relationship between anxiety styles of attachment and neurotic defensive styles in clients with substance use disorders. Individuals with anxious attachment often exhibit heightened emotional responses and may use expressive suppression to manage their anxiety, impacting their cognitive appraisals negatively (**Girme et al., 2020; Mikulincer & Shaver, 2016)**. This suppression can lead to maladaptive coping strategies, reinforcing neurotic defenses and exacerbating substance use issues (**Girme et al., 2020; Sheinbaum et al., 2015)**. This lends credence to the study of how emotional regulation mediates the relationship between defensive styles and attachment styles among patients with substance use disorders (**Taurino et al., 2021**).

Conclusion

Findings of the present study suggest that attachment style, defensive styles, and emotional regulation are interconnected in individuals with substance use disorders. Also, revealed that emotional regulation is an important factor in defensive coping among clients with substance abuse. Clients with better emotional regulation skills tend to use mature defensive coping. Attachment style also plays a role, with anxiety attachment being associated with greater use of neurotic defensive coping mechanisms.

Recommendations

Based in the findings of the present study, the followings are the main recommendations:

-Interventions targeting anxiety in attachment relationships for clients with SUDs.

-Training program for psychiatric mental health nurses aimed at increase their awareness about the mediating role of emotional regulation in the link between attachment insecurities and unhealthy coping styles in clients with SUDs.

-Inform prevention programs aimed at enhancing emotional regulation skills.

-Psychiatric mental health nurses have important role to develop psychoeducational program for parent and teacher at community mental health centers to enhance child attachment security.

Recommendations for research:

- Further study to explore potential moderators of such as age, gender, type or severity of substance used in the relation between attachment styles and defensive coping among clients with SUDs.

- Further research with a more diverse sample to validate the findings in various contexts.

- Future studies could incorporate additional objective measures or observational data to strengthen the validity of the findings.

Limitations

The study focused on male patients with SUDs, which limits the generalizability of the findings to other sex. Additionally, the reliance on self-reported data necessitates caution due to potential social desirability bias and subjective interpretations. Incorporating objective measures or observational data in subsequent studies could strengthen the validity of the results.

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