DOI: 10.37990/medr.1734672 Med Records 2025;7(3):730-7

MEDICAL RECORDS-International Medical Journal

Research Article

Psychological Predictors of Addiction Severity in Substance Users: The Roles of Stress, Social Anxiety, and Anxiety Sensitivity

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Abstract

Aim: This study investigated the relationships between social anxiety, anxiety sensitivity, general distress, and addiction severity in individuals undergoing treatment for substance use disorders.

Material and Method: A total of 145 participants diagnosed with substance use disorder were recruited from the Alcohol and Drug Treatment Center (AMATEM) of Ankara Training and Research Hospital.

Results: When examining the results of the current study, anxiety sensitivity and general distress were found to be significantly and positively correlated with addiction severity, whereas social anxiety was not significantly associated. Hierarchical regression analyses revealed that anxiety sensitivity initially predicted addiction severity; however, this effect diminished once general distress was included in the model, underscoring general distress as the stronger and more robust predictor.

Conclusion: These findings suggest that broad emotional distress—encompassing symptoms of depression, anxiety, and stress—may be more influential in driving substance use severity than the specific fear of anxiety-related sensations. The study also discussed theoretical models explaining anxiety sensitivity's role in substance use through moderator and mediator mechanisms, but emphasized that general distress accounted for much of the variance related to addiction severity. Contrary to some previous literature, social anxiety did not contribute significantly, potentially due to the clinical nature of the sample and the treatment-seeking status of participants. The results highlight the importance of addressing transdiagnostic emotional vulnerabilities, particularly general distress, in substance use treatment. Interventions such as emotion regulation training, cognitive-behavioral therapy, and mindfulness-based approaches may be effective in reducing reliance on substances to cope with negative affective states. Overall, the study highlights the need for integrated treatment strategies targeting broad emotional difficulties to mitigate addiction severity.

Keywords: Anxiety sensitivity, social anxiety, distress, substance use disorders

INTRODUCTION

Substance use remains a pervasive global public health concern, inflicting significant detriments on individuals' physical and psychological well-being (1). Among the various psychiatric comorbidities observed in substance-using populations, anxiety disorders—particularly social anxiety disorder (SAD)—are disproportionately represented. Social anxiety, characterized by intense fear of negative evaluation and avoidance of social interactions, has been frequently identified as a catalyst for substance use initiation. Individuals experiencing social discomfort often turn to psychoactive substances, such as alcohol, cannabis, and benzodiazepines, which are perceived to facilitate relaxation and ease social interactions (2,3). These substances can temporarily attenuate social fears and enhance perceived social competence, thus reinforcing their use in social situations.

However, while substance use may provide short-term relief from social anxiety symptoms, this coping mechanism tends to produce adverse long-term consequences. Persistent reliance on substances to mitigate anxiety can disrupt natural social coping skills, exacerbate interpersonal difficulties, and ultimately lead to social isolation (4). Furthermore, repeated substance use may heighten baseline anxiety and sensitivity to stress, thereby perpetuating and potentially intensifying social anxiety symptoms over time (5). This cyclical relationship underscores the bidirectional and mutually reinforcing nature of social anxiety and substance use disorders.

CITATION

Sezer Katar K. Psychological Predictors of Addiction Severity in Substance Users: The Roles of Stress, Social Anxiety, and Anxiety Sensitivity. Med Records. 2025;7(3):730-7. DOI:1037990/medr.1734672

Received: 04.07.2025 **Accepted:** 25.07.2025 **Published:** 09.09.2025

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In addition to social anxiety, anxiety sensitivity (AS)—defined as the fear of anxiety-related sensations stemming from beliefs about their potential harmful consequences—has emerged as another salient vulnerability factor for substance misuse. Individuals high in anxiety sensitivity are more likely to interpret benign bodily sensations as threatening, which can result in maladaptive efforts to suppress or avoid such experiences (6). Substance use often serves as a readily accessible means to blunt these internal cues, positioning anxiety sensitivity as a potential contributor to both substance use initiation and increase in addiction severity. Prior research suggests that heightened anxiety sensitivity is associated with increased addiction severity and may potentiate the progression toward more entrenched patterns of misuse (7).

Despite growing interest in these psychological risk factors, few studies have simultaneously examined the interconnected roles of social anxiety, anxiety sensitivity, and addiction severity within substance-using populations (8). Moreover, the relative and combined contributions of social anxiety and anxiety sensitivity to addiction severity remain poorly understood (5). Clarifying these relationships is critical to inform the development of targeted interventions designed to address underlying psychological mechanisms that may sustain substance dependence.

Accordingly, the present study aims to investigate the interplay between social anxiety, anxiety sensitivity, and addiction severity among individuals who use substances. Specifically, this research seeks to determine whether elevated levels of social anxiety, anxiety sensitivity, and general distress are associated with increased addiction severity, and whether these factors interact to exacerbate substance use behaviors. By addressing these questions, this study endeavors to advance understanding of the psychological pathways supporting addiction and to inform the design of more effective prevention and intervention strategies.

Based on existing literature, we hypothesize that (H1) social anxiety will be positively associated with addiction severity, (H2) anxiety sensitivity will be positively associated with addiction severity, and (H3) general distress will be positively associated with addiction severity. Furthermore, we hypothesize that (H4) anxiety sensitivity, social anxiety, and general distress will significantly predict addiction severity.

MATERIAL AND METHOD

Study Sample

A total of 145 individuals diagnosed with substance use disorders were recruited for this study. All participants were receiving treatment at an Alcohol and Drug Treatment Center (ADTC-AMATEM). Inclusion criteria required participants to be aged 18 years or older and to meet the diagnostic criteria for substance use disorder according to standardized clinical assessments conducted at the center. Individuals with severe cognitive impairment or active psychotic symptoms that could interfere with the completion of self-report measures were excluded from participation.

Prior to data collection, all participants were provided with detailed information about the aims and procedures of the study and gave written informed consent in accordance with ethical guidelines. The study protocol was approved by the Ankara Training and Research Hospital ethics committee (decision date and number: 17.04.2025, E-25-479), ensuring compliance with the principles outlined in the Declaration of Helsinki. Data were collected through face-to-face interviews and self-administered questionnaires in a private setting within the treatment center to ensure confidentiality and minimize potential biases. Participation was entirely voluntary, and individuals were assured that their treatment would not be affected by their decision to participate or withdraw from the study.

Measures

In the present study, data were collected using one sociodemographic form and four self-report scales designed to assess psychological symptoms and substance use patterns. These instruments are detailed below.

Sociodemographic Data Form: A sociodemographic form, developed by the researchers, was administered to gather relevant personal and clinical information. This form included questions related to participants' age, gender, educational level, employment status, age at initiation of substance use, type of substance first used, and history of psychiatric and substance-related problems.

Depression Anxiety Stress Scales-21 (DASS-21): The DASS-21 is the short form of the original 42-item scale developed by Lovibond and Lovibond (1995) to assess symptoms of depression, anxiety, and stress (9). The Turkish adaptation and validation of the scale were performed by Yılmaz et al. (2017) (10). The DASS-21 consists of 21 items divided equally into three subscales: depression (items 3, 5, 10, 13, 16, 17, 21), anxiety (items 2, 4, 7, 9, 15, 19, 20), and stress (items 1, 6, 8, 11, 12, 14, 18). Items are rated on a 4-point Likert scale, with higher scores reflecting greater symptom severity. The internal consistency (Cronbach's alpha) was found to be .67 for depression, .86 for anxiety, .67 for stress, and .87 for the total scale, indicating satisfactory reliability.

Anxiety Sensitivity Index (ASI): The Anxiety Sensitivity Index (ASI), originally developed by Reiss et al., is a widely used self-report instrument designed to assess the extent to which individuals fear anxiety-related sensations (11). The scale conceptualizes anxiety sensitivity as the tendency to interpret such sensations—such as palpitations, shortness of breath, and cognitive disruptions—as harmful or dangerous. The ASI consists of 16 items, each rated on a 5-point Likert scale ranging from 0 (very little) to 4 (very much). Higher scores reflect greater anxiety sensitivity, which is considered a risk factor for the development and maintenance of various anxiety disorders as well as substance use behaviors. The Turkish adaptation of the ASI was conducted by Ayvaşık (2000), demonstrating satisfactory psychometric properties (12).

Liebowitz Social Anxiety Scale (LSAS): The LSAS, developed by Liebowitz, is a widely used instrument designed to assess fear and avoidance in social and performance situations. This self-report scale consists of 48 items, divided equally between fear/anxiety and avoidance dimensions. Participants rate each item on a 4-point Likert scale. The Turkish adaptation and validation were conducted by Soykan et al., confirming the scale's validity and reliability in Turkish samples.

Drug Use Disorder Identification Test (DUDIT): The DUDIT is an 11-item screening tool that evaluates the frequency of substance use, substance-related problems, and dependence symptoms over the past year (13). It offers practical advantages, including brevity and multiple response options. Scores of 2 or higher for women and 6 or higher for men suggest problematic use, while scores of 25 or above indicate high-risk use. The Turkish version has been validated for use in various populations, including incarcerated individuals and those using heroin (14,15).

Statistical Analyses

Data Analysis Plan

Prior to conducting the primary analyses, several preliminary steps were taken to verify that the core assumptions of the study were satisfied. As part of this process, the internal consistency of the measurement tools was assessed using Cronbach's alpha coefficients, inter-variable correlations were analyzed, and the normality of the data distribution was examined through skewness and kurtosis statistics. To determine whether the data met the assumption of normality, the absolute values of these indicators were reviewed in light of the widely accepted threshold of ±2, which is regarded as an acceptable deviation range in the literature (16). Subsequently, Pearson correlation analysis was run to assess the associations between the main study variables.

In the final stage, the study's central hypothesis was tested through a hierarchical multiple regression analysis. Specifically, a stepwise approach was followed, in which the examination of the incremental predictive power of each set of variables starting from demographic variables toward social anxiety, anxiety sensitivity, and general distress was tested on addiction severity (The DASS-21 total score was considered a measure of general distress and served as a variable in the analyses). All these mentioned analyses were conducted by using SPSS version 27.

RESULTS

First, the results of frequency analyses are presented in Table 1.

Table 1. Frequency analysis results

Variable	Group	Frequency	% of Total	Cumulative %
Gender	Female	3	2.1	2.1
	Male	142	97.9	100
House income	"0-20k"	61	42.1	42.1
	"21k-50k"	66	45.5	87.6
	"51k-100k"	18	12.4	100
Marital status	Married	47	32.4	32.4
	Single	98	67.6	100
Employment status	Yes	116	80	80
	No	29	20	100
Housing status	Permanent	135	93.1	93.1
	Temporal	10	6.9	100
Medication use by substance type	Met use	4	2.8	2.8
	Heroin use	136	93.8	96.6
	Other	5	3.4	100
Current substance use	Yes	12	8.3	8.3
	No	133	91.7	100
Current type of substance in usage	None	132	91	91
	Heroin	8	5.5	96.6
	Met	4	2.8	99.3
	Pregabaline	1	0.7	100
Iv substance use	No	120	82.8	82.8
	Yes	25	17.2	100
History of iv substance use	Yes	7	4.8	4.8
	No	138	95.2	100
Type of first substance used	Marijuana	98	67.6	67.6
	SC	2	1.4	69
	Ecstasy	2	1.4	70.3
	Heroin	42	29	99.3
	Pregabaline	1	0.7	100

Note: IV: intravenous; met: methamphetamine; SC: Synthetic cannabinoids

Table 1. Frequency analysis results				
Variable	**Group**	**Frequency**	**% of Total**	**Cumulative %**
Way of first substance used	**Aspiration**	131	90.3	90.3
	Eat	5	3.4	93.7
	Swallow/Pill	4	2.8	96.6
	IV Injection	5	3.4	100
Polydrug use	**Yes**	47	32.4	32.4
	No	98	67.6	100
Family history of substance use	**Yes**	5	3.4	3.4
	No	140	96.6	100
History of suicide	**Yes**	17	11.7	11.7
	No	126	86.9	98.6
	Unknown	2	1.4	100

Note: IV: intravenous; met: methamphetamine; SC: Synthetic cannabinoids

Preliminary Analyses

Prior to testing the primary hypotheses, preliminary analyses were conducted on the study variables, including data screening, descriptive statistics, evaluation of internal consistency, assessment of normality, and examination of intervariable correlations. The dataset was checked for outliers and missing values; only one missing value was found for the social anxiety total score, which was not considered problematic. Skewness values ranged from .162 to 1.267 and kurtosis values from -.642 to 1.757, indicating an approximately normal distribution. Cronbach's alpha coefficients ranged from .89 to .96, demonstrating high internal consistency. Descriptive results are presented in Table 2.

Table 2. Descriptive statistics						
Variables	**N**	**Mean**	**SD**	**Skewness**	**Kurtosis**	**α**
Age	145	33.93	6.63			
Education (years)	145	10.48	2.67			
Anxiety sensitivity	145	25.12	12.93	.162	-.804	.89
Social anxiety	144	48.36	16.56	.941	1.757	.96
General distress	145	19.89	15.72	.485	-.642	.96
Addiction severity	145	8.86	9.91	1.267	1.189	.90

Following the descriptive statistics, Pearson correlation analysis was conducted to see the correlations between the main study variables. Considering the results, addiction severity was significantly and positively correlated with both anxiety sensitivity (r=.33, p<.001) and general distress (r=.47, p<.001), but not with social anxiety (p>.05). Additionally, a moderate significant association was captured between anxiety sensitivity and general distress (r=.53, p<.001). Finally, social anxiety was only significantly associated with general distress (r=.29, p<.001), but not with the remaining variables (p> .05). All these correlational findings were displayed under Table 3 below.

Table 3. Correlations among the study variables				
	1	**2**	**3**	**4**
1. Anxiety sensitivity	–			
2. Social anxiety	.13	–		
3. General distress	.53*	.29*	–	
4. Addiction severity	.33*	.05	.47*	–

*p<.001

Hierarchical Regression Analysis

To investigate the predictors of addiction severity, a hierarchical regression analysis was conducted. In the first step, basic demographic variables of age, gender, marital status, income, and years of education were entered into the model. In the second step, social anxiety was added. In the third and fourth steps, anxiety sensitivity and general distress were entered sequentially. This stepwise approach allowed for the examination of the incremental predictive power of each set of variables, progressing from basic demographics to more specific psychological factors.

Before proceeding with the analysis, the assumptions required for regression analysis—namely normality, linearity, multicollinearity, and homoscedasticity (equal variance)—were examined. For normality, in addition to the histogram plot, the skewness and kurtosis values reported above were within acceptable limits (i.e., <|2|), and thus the assumption of normality was considered to be met. Multicollinearity was assessed by examining correlations between variables as well as Tolerance and Variance Inflation Factor (VIF) values. Since all values were below the cutoff value of 2 (ranging from .649 to 1.541), no multicollinearity issues were observed. The assumption of homoscedasticity was evaluated through the inspection of the scatterplot of residuals, which did not indicate any violation of this assumption. Lastly, to determine whether there were any influential outliers in the dataset, Cook's Distance values were calculated; since all values were below 1, no violations were detected in this regard either. Based on these findings, multiple regression analysis was conducted as all assumptions were met.

Moving to the results, in Step 1, the model itself was not significant, F(5, 143)=.199, p=.962, accounted for less than 1% of variance in addiction severity, R^2=.007. In the Step 2, the addition of social anxiety also did not make a significant difference in addiction severity, F(6, 143)=.226, p=.548, explaining 1% of variance in addiction severity, R^2=.01.

In the third step, the addition of anxiety sensitivity made the model statistically significant, F(7, 143)=2.445, p=.000, resulting in 11% of variance explained in addiction severity, R^2=.11. Anxiety sensitivity (β=.33, p=.000) was a significant predictor, whereas social anxiety (β=.02, p=.412) was not along with demographic variables (p>.05).

In Step 4, the addition of general distress led to a further improvement in model fit, F(8, 143)=5.69, p<.001, with the model explaining 25% of the variance in addiction severity (R^2=.25). At this stage, only general distress significantly predicted addiction severity (β=.47, p<.001), while the previously significant effect of anxiety sensitivity was no longer statistically significant. This suggests that general distress accounted for much of the variance initially explained by anxiety sensitivity. The results were displayed under Table 4.

Table 4. Hierarchical regression analysis results

	B	β	t	p	R2
Model 1					.007
Age	-.07	-.05	-.585	.559	
Gender	.61	.01	.102	.919	
Marital status	-.98	-.05	-.526	.600	
Income	-.65	-.04	-.507	.613	
Year of education	-.09	-.02	-.284	.777	
Model 2					.010
Age	-.08	-.06	-.643	.521	
Gender	.18	.00	.030	.976	
Marital status	-.71	-.03	-.368	.713	
Income	-.72	-.05	-.560	.577	
Year of education	-.07	-.02	-.213	.831	
Social anxiety	.03	.05	.602	.548	
Model 3					.112
Age	-.05	-.03	-.397	.692	
Gender	1.03	.02	.182	.856	
Marital status	-1.12	-.05	-.643	.521	
Income	-.18	-.01	-.149	.882	
Year of education	.06	.02	.200	.842	
Social anxiety	.00	.00	.025	.980	
Anxiety sensitivity	.25	.33	3.952	.000	
Model 4					.252
Age	-.10	-.07	-.877	.382	
Gender	-1.832	-.03	-.346	.730	
Marital status	-1.474	-.07	-.876	.382	
Income	.488	.03	.424	.672	
Year of education	-.01	.00	-.014	.989	
Social anxiety	-.06	-.10	-1.161	.248	
Anxiety sensitivity	.07	.10	1.064	.289	
General distress	.30	.47	5.033	.000	

DISCUSSION

The present study aimed to explore the associations between social anxiety, anxiety sensitivity, and addiction severity in a clinical sample of individuals diagnosed with substance use disorders. The results revealed that while both anxiety sensitivity and general distress were significantly correlated with addiction severity, social anxiety did not show a significant association. Furthermore, in the hierarchical regression analysis, anxiety sensitivity initially emerged as a significant predictor of addiction severity; however, this effect was no longer significant when general distress was added to the model. Ultimately, only general distress significantly predicted addiction severity, accounting for the largest proportion of explained variance.

These findings contribute to the growing body of literature emphasizing the critical role of transdiagnostic emotional vulnerability factors—such as general distress and anxiety sensitivity—in the development and maintenance of substance use disorders. Consistent with previous research, heightened anxiety sensitivity was associated with greater addiction severity, suggesting

that individuals who interpret anxiety-related sensations as dangerous may be more likely to engage in substance use as a maladaptive coping strategy (5).

Several theoretical models have been proposed to explain the relationship between anxiety sensitivity (AS) and addiction severity, with particular emphasis on moderator and mediator frameworks (17). In moderator models, AS is thought to influence the strength or direction of the association between anxiety and substance use. For instance, individuals with high AS may exhibit greater avoidance motivation in response to anxiety or anxiety-related expectancies, leading them to use substances such as alcohol or drugs more readily as a coping mechanism. Conversely, mediator models suggest that AS plays a more mechanistic role, explaining how individuals come to use substances to manage anxiety. Specifically, those with elevated AS may be more likely to perceive anxiety-related sensations as intolerable or dangerous, which increases their motivation to reduce these sensations through substance use. This negative reinforcement process, in turn, may contribute to higher addiction severity over time. These conceptual models have been supported by empirical findings (18-20), emphasizing the relevance of AS in understanding individual differences in substance use behaviors and the development of addiction. In our study, the predictive role of anxiety sensitivity was diminished once general distress was accounted for, indicating that the broader experience of negative affect may be a more salient factor in substance use severity than the specific fear of anxiety-related sensations. General distress may influence substance use through multiple pathways. A five-year longitudinal study found that individuals with above-average levels of psychological distress were more likely to engage in substance use over time (21). In another study, total scores on the DASS-21 were found to mediate the relationship between emotion dysregulation and drug craving (22).

Contrary to expectations, social anxiety was not significantly associated with addiction severity in either the correlation or regression analyses. This finding diverges from some prior studies that have linked social anxiety symptoms to problematic substance use. A systematic review found that shyness and social anxiety in adolescents are associated with decreased use of tobacco, alcohol, and cannabis/substances, whereas social anxiety disorder is linked to increased substance use (23). One possible explanation for this discrepancy lies in the clinical characteristics of the present sample. The participants were already engaged in treatment for substance use disorders, and their current substance use patterns may be more strongly influenced by generalized psychological distress than by social-specific fears. Additionally, social anxiety may exert more influence in the early stages of substance use initiation rather than in the maintenance phase captured in this treatment-seeking sample.

The hierarchical structure of the regression analysis provided further insight into the relative contribution of psychological factors. The finding that general distress accounted for a substantial portion of the variance in addiction severity underscores its central role as a broad transdiagnostic factor. General distress, which encompasses symptoms of depression, anxiety, and stress, likely represents a cumulative emotional burden that drives individuals toward substance use as a form of emotional regulation. These results align with affect regulation models of addiction, which posit that substances are frequently used to manage aversive emotional states (24).

From a clinical perspective, these findings underscore the importance of assessing and addressing general emotional distress in substance use treatment programs. Interventions such as emotion regulation training, cognitive-behavioral therapy, and mindfulness-based approaches may be particularly beneficial in reducing the reliance on substances to cope with negative affective states (25,26). Furthermore, while anxiety sensitivity may not independently predict addiction severity beyond general distress, its inclusion in screening tools could still be valuable for identifying individuals who may be more vulnerable to escalating use in response to internal distress cues.

Despite its contributions, this study is not without limitations. First, the cross-sectional design precludes causal interpretations regarding the directionality of relationships among the study variables. Longitudinal studies are needed to elucidate whether anxiety sensitivity or general distress temporally precedes increases in substance use severity. Second, all data were self-reported, which may introduce response biases or inaccuracies. Third, the generalizability of the findings may be limited to treatment-seeking individuals, and the role of social anxiety in non-clinical or early-stage substance users warrants further investigation. Additionally, the homogeneity of the treatment-seeking sample may limit variability, potentially affecting the detection of certain associations. Furthermore, the absence of data on psychiatric comorbidities restricts the ability to examine how these factors might moderate or mediate the observed relationships. Addressing these confounders in future research could provide a more nuanced understanding of the mechanisms underlying addiction severity.

Future research should consider incorporating behavioral or physiological measures of emotional reactivity and regulation to complement self-report data. Additionally, examining potential mediating or moderating variables—such as coping styles, trauma history, or impulsivity—may provide a more nuanced understanding of how anxiety-related constructs influence substance use trajectories. Specifically, future studies could investigate whether specific emotion regulation difficulties or trauma

history serve as mediators between general distress and addiction severity. It would also be valuable to explore whether similar patterns are observed in non-treatment-seeking or adolescent populations. Moreover, research could examine if interventions specifically targeting anxiety sensitivity produce indirect effects on distress levels and substance use outcomes over time.

CONCLUSION

In conclusion, the present study highlights the differential roles of anxiety sensitivity and general distress in predicting addiction severity among individuals with substance use disorders. While social anxiety did not emerge as a significant factor, the strong association between general distress and substance use severity underscores the need for integrated treatment approaches that target broad emotional vulnerabilities. By refining our understanding of the psychological mechanisms underlying substance dependence, such efforts may ultimately enhance the effectiveness of intervention strategies.

Financial disclosures: *The authors declared that this study has received no financial support.*

Conflict of interest: *The authors have no conflicts of interest to declare.*

Ethical approval: *The study protocol was approved by the Ankara Training and Research Hospital ethics committee (decision date and number: 17.04.2025, E-25-479), ensuring compliance with the principles outlined in the Declaration of Helsinki.*

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