Journal Website

Article history:
Received 01 February 2025
Revised 11 April 2025
Accepted 04 May 2025
Published online 11 June 2025

Iranian Journal of Neurodevelopmental Disorders

Volume 3, Issue 2, pp 12-19

Journal of Neurodevelopmental Disorder

E-ISSN: 2980-9681

Prediction of Substance Use Tendency Based on Cognitive Avoidance and Distress Tolerance in University Students

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Javidi, S., Karami, A. (2025). Prediction of Substance Use Tendency Based on Cognitive Avoidance and Distress Tolerance in University Students. *Iranian Journal of Neurodevelopmental Disorders*, *4*(2), 17-24.
https://doi.org/10.61838/kman.jndd.4.2.3

A B S T R A C T

Purpose: This study aimed to predict substance use tendency among university students based on levels of cognitive avoidance and distress tolerance.

Methods and Materials: A descriptive-correlational design was employed with a sample of 370 students from the Islamic Azad University, West Tehran Branch, selected through convenience sampling. Participants completed three standardized instruments: the Substance Use Tendency Questionnaire (Weed & Butcher, 1992), the Distress Tolerance Scale (Simons & Gaher, 2005), and the Cognitive Avoidance Questionnaire (Sexton & Dugas, 2008). Descriptive statistics, Pearson correlation, and multiple regression analyses were conducted using SPSS software.

Findings: The results showed that distress tolerance was negatively correlated with substance use tendency, while cognitive avoidance was positively correlated. Multiple regression analysis revealed that both distress tolerance ($\beta = -0.364$, $p < 0.001$) and cognitive avoidance ($\beta = 0.285$, $p < 0.001$) significantly predicted substance use tendency.

Conclusion: The findings suggest that students with lower distress tolerance and higher cognitive avoidance are more likely to exhibit a tendency toward substance use. These results underscore the importance of integrating emotional regulation and cognitive flexibility training in university-based prevention programs. Interventions targeting distress tolerance and avoidance coping could be effective in reducing the risk of substance misuse in student populations.

Keywords: *Substance use tendency, distress tolerance, cognitive avoidance, university students, emotion regulation, maladaptive coping strategies.*

1. Introduction

Substance use among university students remains a pressing concern worldwide due to its association with various psychological, academic, and social difficulties. The transitional nature of emerging adulthood, marked by emotional instability, identity exploration, and heightened stress, renders this population particularly vulnerable to maladaptive coping strategies such as substance use. Researchers have increasingly emphasized the importance of identifying underlying psychological mechanisms that predispose individuals to substance use tendencies, particularly those related to affect regulation and cognitive processing (Felton et al., 2019; Muradian et al., 2025; O'Loughlin et al., 2023).

One such mechanism, distress tolerance, has gained empirical attention as a significant predictor of substance-related behaviors. Distress tolerance refers to an individual's perceived or actual ability to withstand emotional discomfort and aversive states (Ali et al., 2017; Anderson et al., 2024). Evidence suggests that individuals with low distress tolerance are more likely to resort to immediate relief strategies, including substance use, to escape or avoid negative affective states (Baker et al., 2023; Shorey et al., 2017). A longitudinal study by Kechter et al. (2021) demonstrated that adolescents with poor distress tolerance exhibited a higher trajectory of substance use throughout high school (Kechter et al., 2021). Similarly, Ghanbari et al. (2020) showed that therapeutic interventions aimed at increasing distress tolerance significantly reduced self-destructive behaviors and substance use in clinical populations (Ghanbari et al., 2020).

In addition to affect regulation, cognitive avoidance represents another salient psychological factor implicated in substance use tendencies. Cognitive avoidance involves a set of strategies aimed at preventing the activation of distressing thoughts or emotions, including thought suppression, distraction, and avoidance of triggering situations (Veilleux, 2022). These strategies may offer short-term relief but are generally maladaptive over time, potentially exacerbating emotional distress and increasing vulnerability to externalizing behaviors such as drug or alcohol use (Hayes et al., 2023; Langdon et al., 2020). Research by Zapolski et al. (2018) underscores the moderating role of distress tolerance in the relationship between perceived discrimination and substance use, highlighting that cognitive and affective regulation processes do not operate in isolation but rather interact in complex ways (Zapolski et al., 2018).

The link between experiential avoidance, of which cognitive avoidance is a subset, and substance use is also well-documented. For instance, individuals who habitually avoid negative internal experiences are more likely to engage in substance use as a coping strategy (Shorey et al., 2017; Wolitzky-Taylor et al., 2016). Moreover, Yıldız and Büyükfırat (2024) found that psychological flexibility—a construct inversely related to cognitive avoidance—mediates the relationship between distress and substance use, further supporting the role of avoidance mechanisms in addictive behaviors (Yıldız & Büyükfırat, 2024).

Distress tolerance and cognitive avoidance may not only influence the onset of substance use but also affect treatment outcomes and long-term recovery trajectories. Reese et al. (2019) found that individuals who showed improvements in distress tolerance following treatment also reported better retention and outcomes in substance use programs (Reese et al., 2019). Similarly, Sease et al. (2024) reported that individuals with comorbid post-traumatic stress and high avoidance tendencies exhibited poorer outcomes in substance use treatment, emphasizing the need for integrative therapeutic approaches targeting both cognitive and affective dysregulation (Sease et al., 2024).

There is also mounting evidence that these mechanisms operate across cultural and geographical contexts. Anderson et al. (2024) demonstrated that distress tolerance significantly predicted substance use motivations across young adults in diverse international samples, suggesting a cross-cultural robustness of this psychological construct (Anderson et al., 2024). Furthermore, Anderson et al. (2023) reported similar patterns in a multi-continental survey, reinforcing the universal importance of distress regulation in understanding substance-related behaviors (Anderson et al., 2023).

The interplay between distress tolerance and cognitive avoidance also aligns with theoretical frameworks emphasizing emotion regulation deficits as a core transdiagnostic vulnerability for both internalizing and externalizing disorders (Veilleux, 2022). As Batchelder et al. (2017) highlight, individuals with trauma histories often develop avoidant and low-distress tolerance patterns that, in turn, predict high-risk behaviors such as substance use (Batchelder et al., 2017). Similarly, Henschel et al. (2021) showed that alexithymia—a construct associated with impaired emotional awareness and tolerance—contributes to maladaptive substance use motivations, particularly in the context of prescription opioid misuse (Henschel et al., 2021).

E-ISSN: 2980-9681

The relevance of these constructs is particularly pronounced in university student populations, where psychological stressors such as academic pressures, identity conflicts, and social changes are at their peak. University students often lack mature emotion regulation capacities, making them more susceptible to using avoidance and low-tolerance strategies that escalate into problematic substance use (Chaleshtori et al., 2022). O'Loughlin et al. (2023) further emphasize the role of peer dynamics and perceived social distress in predicting substance use behaviors in this demographic, illustrating the socio-emotional complexity of addiction risk factors in young adulthood (O'Loughlin et al., 2023).

Despite the established roles of distress tolerance and cognitive avoidance in substance use, few studies have concurrently examined their predictive power within a single framework, particularly in non-clinical student populations. The current study addresses this gap by investigating the extent to which distress tolerance and cognitive avoidance predict the tendency toward substance use among university students. Drawing on evidence from both clinical and community samples (Ali et al., 2017; Felton et al., 2019; Reese et al., 2019), the study hypothesizes that low levels of distress tolerance and high levels of cognitive avoidance will significantly predict higher substance use tendencies.

Furthermore, the study aligns with recommendations from recent literature emphasizing preventive intervention design rooted in emotion and cognition-based models. As noted by Hayes et al. (2023), enhancing distress tolerance and reducing avoidance tendencies could form the basis of scalable psychological interventions aimed at reducing substance misuse among high-risk groups (Hayes et al., 2023). Langdon et al. (2020) similarly advocate for integrated digital and behavioral interventions that target emotional regulation capacities in youth affected by opioid use, underscoring the policy and clinical relevance of such findings (Langdon et al., 2020).

In conclusion, the present research is situated at the intersection of affective science, cognitive psychology, and addiction studies, aiming to extend our understanding of how distress tolerance and cognitive avoidance interact to influence substance use tendencies in university students.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive-correlational research design. The statistical population consisted of all students enrolled at the Islamic Azad University, West Tehran Branch, during the second semester of the 2024–2025 academic year. The sampling method was convenience sampling. Based on Cochran's formula, a sample size of 370 students was determined as appropriate for the study. The inclusion criteria included being a currently enrolled student and providing informed consent. Exclusion criteria involved incomplete responses or unwillingness to continue participation during the data collection phase.

2.2. Measures

To assess the tendency toward substance use, the study utilized the Substance Use Tendency Questionnaire developed by Weed and Butcher in 1992, which was standardized for the Iranian context by Zargar and colleagues in 2017. This instrument comprises 36 main items and 5 lie-detection items, measuring four subscales: self-satisfaction, pessimism, impulsivity, and risk-taking. Each item is rated on a 4-point Likert scale ranging from 0 (completely disagree) to 3 (completely agree), with reverse scoring applied to items 6, 12, 15, and 21. Items 12, 13, 15, 21, and 33 form the lie scale and are excluded from the total score, which ranges from 0 to 123. Higher scores indicate a stronger inclination toward substance use. In the present study, the questionnaire demonstrated satisfactory internal consistency, with a Cronbach's alpha coefficient of 0.74.

To assess distress tolerance, the Distress Tolerance Scale (DTS) by Simons and Gaher (2005) was used. This self-report measure includes 15 items across four subscales: tolerance (emotional distress endurance), absorption (being overwhelmed by negative emotions), appraisal (subjective assessment of distress), and regulation (efforts to alleviate distress). Items are scored on a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree), with item 6 scored in reverse. Higher total scores reflect greater emotional distress tolerance. The total scale and subscales were scored by summing the relevant items. In the current study, the DTS yielded a Cronbach's alpha of 0.75, indicating good internal consistency.

Cognitive avoidance was measured using the Cognitive Avoidance Questionnaire (CAQ) developed by Sexton and Dugas in 2008. This 25-item instrument evaluates five cognitive avoidance strategies: thought suppression (items 1, 2, 5, 14), thought substitution with positive alternatives (items 4, 11, 17, 20, 25), distraction through attentional redirection (items 8, 10, 12, 13, 21), avoidance of worry-inducing situations (items 7, 9, 16, 18, 24), and

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transformation of mental imagery into verbal thoughts (items 3, 15, 19, 23, 24). Responses are given on a 5-point Likert scale from 1 (completely false) to 5 (completely true). Internal consistency for this scale was verified in the present study using Cronbach's alpha, which was calculated at 0.70, consistent with the range reported in earlier validation studies.

2.3. Data Analysis

Data analysis was conducted in two main stages. In the descriptive statistics section, frequency, percentage, mean, standard deviation, minimum, and maximum scores were calculated to describe the demographic variables and main constructs under study. In the inferential statistics section, Pearson's correlation coefficient was employed to examine the relationships between variables, while multiple regression analysis using the simultaneous entry method was used to investigate the predictive power of cognitive avoidance and distress tolerance on substance use tendency. All statistical analyses were conducted using SPSS software. The significance level for all tests was set at $p < 0.05$.

3. Findings and Results

The demographic profile of the participants in this study indicated that the majority were female students, comprising 62.2% of the sample, while male students accounted for 37.8%. In terms of age distribution, the largest group (47.6%) was between 18 and 23 years old, followed by 25.1% between 23 and 28 years, 17.3% between 28 and 33 years, and 10% between 33 and 38 years. Regarding educational level, most students (64.6%) were pursuing a bachelor's degree, 33.2% were master's students, and only 2.2% were enrolled in doctoral programs. As for academic disciplines, the highest proportion of students (35.4%) were studying psychology and educational sciences, followed by 15.4% in the arts, 14.1% in management-related fields, 11.6% in foreign languages, 10% in law, 9.2% in engineering disciplines, and 4.3% in other academic fields.

Table 1

Descriptive Statistics of the Main Variables

Variable	Subscale	Min	Max	Mean	SD	Skewness	Kurtosis
Substance Use Tendency	Self-Satisfaction	12	28	20.13	2.77	0.154	0.009
	Pessimism	8	24	15.88	2.71	0.159	0.005
	Impulsivity	8	22	15.10	2.55	0.028	-0.025
	Risk-Taking	6	14	9.97	1.53	0.091	-0.256
	Total Substance Use Tendency	35	86	61.03	8.11	-0.024	0.334
Distress Tolerance	Tolerance	4	15	8.91	1.94	0.443	1.224
	Absorption	4	15	9.77	1.81	0.092	0.759
	Appraisal	8	30	17.54	3.05	0.194	1.097
	Regulation	3	14	7.88	1.72	0.279	0.571
	Total Distress Tolerance	25	70	44.11	6.78	0.165	0.988
Cognitive Avoidance	Thought Suppression	10	22	15.26	2.05	0.332	0.543
	Thought Substitution	9	23	16.12	2.21	0.032	0.746
	Distraction	7	21	14.22	2.09	0.450	1.228
	Avoidance of Worry-Activating Situations	9	23	16.17	2.27	0.079	0.291
	Transformation of Imagery to Verbal Thoughts	10	24	15.35	2.36	0.622	1.128
	Total Cognitive Avoidance	51	106	77.12	8.16	0.243	1.314

The descriptive analysis of the study variables revealed that the mean score for total substance use tendency among participants was 61.03 (SD = 8.11), with the highest subscale mean observed in self-satisfaction (M = 20.13) and the lowest in risk-taking (M = 9.97). The total distress tolerance score had a mean of 44.11 (SD = 6.78), with the highest subscale mean in appraisal (M = 17.54) and the lowest in regulation (M = 7.88). For cognitive avoidance, the total score had a mean of 77.12 (SD = 8.16), with the highest subscale mean in thought substitution (M = 16.12) and the lowest in distraction (M = 14.22). The distribution of scores for all main variables was approximately normal, with skewness and kurtosis values falling within acceptable ranges, suggesting no serious deviation from normality in the data.

Before conducting the inferential statistical analyses, all relevant assumptions were examined to ensure the validity of the results. The normality of the data distribution was assessed through skewness and kurtosis values, all of which fell within the acceptable range of ±2, indicating that the

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assumption of normality was met. Linearity and homoscedasticity were visually inspected through scatterplots and found to be satisfactory. Additionally, multicollinearity was assessed using tolerance and variance inflation factor (VIF) values, which confirmed that there were no significant multicollinearity issues among the predictor variables. Overall, the data met the key assumptions required for conducting Pearson correlation and multiple regression analyses.

Table 2

Correlation Matrix Between Study Variables

Variables	Substance Use Tendency	Distress Tolerance	Cognitive Avoidance
Substance Use Tendency	1		
Distress Tolerance	-0.643**	1	
Cognitive Avoidance	0.603**	-0.411**	1

**p<0.01

The correlation analysis demonstrated statistically significant relationships among the main variables of the study. A strong negative correlation was observed between distress tolerance and substance use tendency ($r = -0.643$, $p < 0.01$), indicating that students with higher emotional distress tolerance were less likely to exhibit a tendency toward substance use. Conversely, a significant positive correlation was found between cognitive avoidance and substance use tendency ($r = 0.603$, $p < 0.01$), suggesting that individuals with higher levels of cognitive avoidance were more prone to substance use behaviors. Additionally, distress tolerance was negatively correlated with cognitive avoidance ($r = -0.411$, $p < 0.01$), showing that greater emotional resilience was associated with lower tendencies toward cognitive avoidance. These findings collectively support the hypothesized associations among the constructs and provide a basis for further predictive analysis.

Table 3

Regression Coefficients for Predicting Substance Use Tendency Based on Cognitive Avoidance and Distress Tolerance

Predictor Variable	B	Std. Error	Standardized Beta (β)	t-value	p-value
Distress Tolerance	-0.440	0.042	-0.364	-10.462	0.001
Cognitive Avoidance	0.283	0.035	0.285	8.114	0.001

The results of the multiple regression analysis indicated that both distress tolerance and cognitive avoidance were significant predictors of substance use tendency among university students. Specifically, distress tolerance had a negative and statistically significant effect ($B = -0.440$, $\beta = -0.364$, $p < 0.001$), suggesting that as students' ability to tolerate emotional distress increased, their tendency toward substance use decreased. Conversely, cognitive avoidance was found to be a positive and significant predictor ($B = 0.283$, $\beta = 0.285$, $p < 0.001$), indicating that higher levels of cognitive avoidance were associated with a greater likelihood of substance use tendency. These findings confirm that both variables play important but opposing roles in influencing students' susceptibility to substance use.

4. Discussion and Conclusion

The purpose of this study was to examine the predictive roles of cognitive avoidance and distress tolerance in relation to substance use tendency among university students. The results of the regression analysis indicated that both variables significantly predicted substance use tendency, with cognitive avoidance showing a positive association and distress tolerance a negative one. These findings align with a growing body of literature indicating that lower levels of distress tolerance and higher levels of avoidance-oriented cognitive strategies are critical psychological risk factors for substance use behaviors.

The significant negative relationship between distress tolerance and substance use tendency supports prior research emphasizing the protective role of distress tolerance against maladaptive coping mechanisms. Specifically, students who

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reported higher tolerance for emotional discomfort were less likely to report a tendency toward substance use. This aligns with the findings of Anderson et al. (2024) and Anderson et al. (2023), who demonstrated that distress tolerance is inversely related to substance use motivations and problems in diverse youth populations (Anderson et al., 2023, 2024). Similarly, Reese et al. (2019) and Ali et al. (2017) have shown that low distress tolerance predicts poor retention and higher relapse in substance abuse treatment programs (Ali et al., 2017; Reese et al., 2019). These findings underscore the transdiagnostic significance of distress tolerance as a buffer against both initiation and continuation of substance use. Moreover, the results reinforce the theoretical proposition that distress tolerance influences the choice between adaptive and maladaptive coping strategies in the face of internal distress (Veilleux, 2022).

The positive relationship between cognitive avoidance and substance use tendency also supports earlier findings indicating that avoidant cognitive styles contribute to increased substance use risk. This study confirms that students who reported higher use of strategies such as thought suppression, distraction, or avoidance of triggering situations were more likely to exhibit a tendency toward substance use. These findings are consistent with the work of Shorey et al. (2017), who found experiential avoidance to be a significant predictor of substance cravings in adults undergoing treatment (Shorey et al., 2017). Similarly, Zapolski et al. (2018) demonstrated that cognitive avoidance moderated the effect of perceived discrimination on adolescent substance use, suggesting that avoidant strategies increase vulnerability under social or emotional stress (Zapolski et al., 2018). The observed relationship is also theoretically consistent with the broader emotion regulation literature, which indicates that avoidance-based cognitive strategies are less effective in reducing distress over time and often result in a cycle of emotional suppression and externalizing behaviors such as drug use (Hayes et al., 2023; Kechter et al., 2021).

Furthermore, the inverse relationship observed between distress tolerance and cognitive avoidance in the correlation analysis reflects the mutually reinforcing dynamics between emotional regulation and cognitive processing. This supports the findings of Yıldız and Büyükfirat (2024), who identified distress tolerance as a mediating factor in the relationship between psychological flexibility and substance use in individuals with addiction disorders (Yıldız & Büyükfırat, 2024). As distress tolerance decreases, individuals may increasingly rely on cognitive avoidance, which in turn amplifies maladaptive coping patterns. This cycle has been observed in clinical populations by Chaleshtori et al. (2022) and Ghanbari et al. (2020), both of whom found that interventions targeting distress tolerance reduced avoidance behaviors and substance-related outcomes (Chaleshtori et al., 2022; Ghanbari et al., 2020).

Additionally, this study's findings are consistent with the broader body of evidence suggesting that young adults in academic environments are particularly vulnerable to affective and cognitive dysregulation due to high levels of psychological stress and evolving identity challenges (Langdon et al., 2020; O'Loughlin et al., 2023). Given that the sample consisted of university students, these findings highlight the need for campus-based prevention and early intervention strategies that address both emotional and cognitive dimensions of substance use risk. The predictive value of both variables in the current study also confirms their utility as potential screening indicators in prevention programs. Moreover, the results resonate with the call for transdiagnostic approaches that address common mechanisms underlying various forms of psychopathology and maladaptive behaviors (Veilleux, 2022).

Despite the strengths of the current study, including a sufficiently large sample size and the use of validated psychometric instruments, several limitations should be acknowledged. First, the cross-sectional design limits the ability to draw causal inferences between cognitive avoidance, distress tolerance, and substance use tendency. Longitudinal studies are needed to establish temporal and potentially reciprocal relationships among these variables. Second, self-report measures are susceptible to social desirability and recall biases, particularly in assessing sensitive behaviors such as substance use. Third, the convenience sampling from a single university may limit the generalizability of the findings to broader populations of university students or youth in other sociocultural contexts.

Future studies could explore the mediating and moderating mechanisms that explain how and when distress tolerance and cognitive avoidance influence substance use behaviors. For example, affective lability, perceived social support, or trauma history could serve as moderators or mediators of these relationships. Additionally, future research should examine the role of gender, academic stress, and mental health comorbidities in shaping these associations. Mixed-methods or longitudinal designs could also provide richer, more nuanced insights into how these psychological constructs evolve and interact over time.

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In practical terms, universities and mental health professionals should consider implementing intervention programs that specifically aim to enhance distress tolerance and reduce maladaptive cognitive avoidance strategies. Training in mindfulness, emotion regulation, and acceptance-based strategies may be particularly effective for students at risk. Screening tools incorporating measures of cognitive avoidance and distress tolerance could help identify high-risk individuals early, allowing for timely and targeted intervention to prevent the escalation of substance use behaviors.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all individuals for participating and cooperating us in this study.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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