Journal Website

Article history:
Received 06 June 2024
Accepted 15 Sept. 2024
Published online 01 Dec. 2024

International Journal of Education and Cognitive Sciences

Volume 5, Issue 5, pp 8-17

E-ISSN: 3041-8828

Development of a Structural Model for Drug Use Tendency Based on Perceived Social Support and Behavioral Inhibition/Activation Systems (BAS/BIS) with the Mediation of Perceived Stress

Morad Rostami[1], Parvin Kadivar[2]*, Gholamreza Sharifirad[3]

1. PhD Student, Department of Psychology, Qom Branch, Islamic Azad University, Qom, Iran.
2. Professor, Department of Educational Psychology, Kharazmi University, Tehran, Iran (Corresponding author).
3. Professor, Department of Health Education, Qom University of Medical Sciences, Qom, Iran.

*** Corresponding author email address**:kadivar220@yahoo.com

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Rostami M, Kadivar P, Sharifirad GH. (2024). Development of a Structural Model for Drug Use Tendency Based on Perceived Social Support and Behavioral Inhibition/Activation Systems (BAS/BIS) with the Mediation of Perceived Stress. *International Journal of Education and Cognitive Sciences*, *5*(5), 8-17.
https://doi.org/10.61838/kman.ijecs.5.5.2

A B S T R A C T

Purpose: The present study aimed to develop a structural model of drug use tendency based on perceived social support and behavioral inhibition/activation systems (BAS/BIS), mediated by perceived stress in adolescent girls in Tehran.

Methodology: In the current correlational-descriptive study, the statistical population of the study consisted of female adolescent students aged 14 to 18 from districts 5, 7, and 15 of Tehran, with an approximate number of 35,000 individuals selected during the second half of 2023. A multistage random sampling method was employed in this research. First, districts 5, 7, and 15 of Tehran were randomly selected, followed by the random selection of two high schools for girls from each district. Finally, based on the Krejcie and Morgan table and considering the population size, three classes were randomly selected from each high school, and 20 students were randomly chosen from each class, resulting in a total sample of 360 participants. Correlation tests, regression, and structural equation modeling were used for data analysis.

Findings: The results showed that perceived stress plays an indirect mediating role in the relationship between perceived social support and drug use tendency in adolescent girls in Tehran. Additionally, it was found that perceived stress indirectly mediates the relationship between behavioral inhibition/activation systems and drug use tendency in adolescent girls in Tehran. The goodness-of-fit test for the structural equation model indicated that the Gof value was 0.69, reflecting a strong overall fit for the model.

Conclusion: The findings of this study demonstrate that perceived stress significantly mediates the relationship between both perceived social support and Behavioral Inhibition/Activation Systems (BIS/BAS) and drug use tendency in adolescent girls.

Keywords: *drug use, social support, behavioral inhibition/activation systems, perceived stress*

1. Introduction

Substance abuse, particularly among adolescents, continues to be a significant global public health issue. Adolescence is a critical period marked by heightened vulnerability to various environmental and psychological stressors, which may lead to risky behaviors such as drug use (Leventhal et al., 2017). Numerous factors contribute to the tendency toward substance use, including perceived social support, individual stress responses, and behavioral inhibition and activation systems (BIS/BAS). Understanding the interplay of these factors is crucial for developing effective interventions to prevent substance abuse among vulnerable populations, such as adolescent girls (Alvarez-Perez et al., 2022).

Adolescence is a period of rapid physical, emotional, and social development. During this phase, adolescents are more prone to experiment with drugs, and their social environment, including peer pressure and social support, plays a crucial role in determining their susceptibility to substance abuse (Choo, 2012). Research has consistently demonstrated that adolescents with lower levels of social support are at greater risk of engaging in substance abuse (C. Yang et al., 2021; X. Yang et al., 2021). Moreover, the lack of perceived support from family and friends can exacerbate stress levels, making adolescents more likely to turn to drugs as a coping mechanism (Valdez et al., 2020). As a result, understanding the factors that contribute to substance use during adolescence is critical for preventing drug-related harm in this population.

In Tehran, the growing rates of substance use among adolescents have prompted researchers and policymakers to investigate the underlying causes. Several studies have highlighted the influence of perceived social support on adolescents' drug use tendencies, particularly among female students (Anisi et al., 2013; Jazayeri et al., 2003; Nateghi & Sohrabi, 2017; Salami et al., 2018). Female adolescents are especially vulnerable to social and emotional stressors, which may increase their likelihood of engaging in risky behaviors such as drug use (Abro et al., 2023). In light of these findings, this study focuses on the relationship between perceived social support, stress, and substance use tendency among adolescent girls.

Perceived social support refers to an individual's subjective evaluation of the availability of help and support from their social network, including family, friends, and significant others (Enayati Shabkolai et al., 2023; Mahdian et al., 2021; Öztop et al., 2024). Social support is a protective factor against stress and its related adverse outcomes, including substance abuse (Hutton et al., 2017). Research shows that perceived social support from family and friends can reduce the likelihood of drug use among adolescents by providing emotional stability and coping resources (Lei et al., 2021). For instance, studies have found that adolescents who feel supported by their family and peers are less likely to engage in substance use, as they are more likely to seek constructive ways to manage stress (Jagadeeswari et al., 2023; C. Yang et al., 2021).

In contrast, the absence of perceived social support has been associated with increased vulnerability to substance use. Adolescents who lack supportive relationships often experience higher levels of stress, which may lead them to use drugs as a means of coping (Baniya et al., 2021). This correlation has been observed in various studies, where the lack of perceived support from family and friends was linked to a higher risk of substance abuse among adolescents (Chavez et al., 2018). Moreover, the mediating role of perceived stress in the relationship between social support and drug use tendency has been well-documented, suggesting that stress may be a critical factor in understanding how social support influences substance use behaviors (Afshari et al., 2021).

Perceived stress refers to an individual's subjective evaluation of their stress levels and the extent to which they feel overwhelmed by life's demands. It is an essential psychological construct that has been extensively studied in relation to various health outcomes, including mental health and substance use (Lindholdt et al., 2021). High levels of perceived stress have been consistently associated with a higher likelihood of drug use, particularly among adolescents (Kumar, 2020). Adolescents often experience stress from academic pressures, family conflicts, and social relationships, which may drive them to seek maladaptive coping mechanisms, such as drug use, to alleviate their stress (Horiuchi et al., 2018; James et al., 2017).

Several studies have highlighted the connection between stress and substance use, noting that individuals who perceive higher levels of stress are more likely to engage in drug use to escape from their stressors (Daniulaityte & Carlson, 2011; Hutton et al., 2017). For instance, research on adolescents found that perceived stress played a significant role in predicting drug use tendencies, particularly when social support was lacking (Zhang & Wang, 2022). This relationship is crucial for understanding how stress mediates the effects of social support and other psychological factors on substance use behaviors.

E-ISSN: 3041-8828

In Tehran, studies have shown that perceived stress is a significant predictor of drug use among adolescents, particularly among girls who face higher levels of emotional and social stress (Afshari et al., 2021). Female adolescents may be more susceptible to stress due to gender-specific social expectations and pressures, which can contribute to an increased risk of drug use (Alwhaibi, 2023). Therefore, investigating the role of perceived stress in mediating the relationship between social support and drug use is critical for developing targeted interventions aimed at reducing substance abuse in this population.

The Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS) are psychological constructs that describe individual differences in sensitivity to punishment and reward. The BIS is associated with sensitivity to negative outcomes, leading to avoidance behaviors, while the BAS is linked to sensitivity to positive outcomes and approach behaviors (Lacour et al., 2021). These systems have been widely studied in relation to substance use, as individuals with heightened sensitivity to rewards may be more prone to seeking pleasurable experiences, including drug use (Radavelli-Bagatini et al., 2022).

Studies have shown that adolescents with an overactive BAS are more likely to engage in risky behaviors, including drug use, as they are more motivated by the potential rewards associated with these behaviors (Leventhal et al., 2017). Conversely, those with a hyperactive BIS may be more sensitive to stress and negative experiences, potentially leading to avoidance behaviors such as drug use as a coping mechanism (Jagadeeswari et al., 2023). This dual-system model provides a valuable framework for understanding the individual differences in drug use tendencies among adolescents (Vasunilashorn et al., 2013).

In the context of perceived stress, the interaction between BIS/BAS and social support becomes particularly important. Research suggests that individuals with high BAS sensitivity may be more vulnerable to stress and its effects on substance use, particularly when they lack adequate social support (Siddiqui et al., 2022). Similarly, those with high BIS sensitivity may be more prone to experiencing stress in the absence of social support, leading to increased drug use tendencies (Zareipour et al., 2016). Therefore, examining the role of BIS/BAS in relation to perceived stress and social support can provide deeper insights into the psychological mechanisms underlying substance use behaviors.

Perceived stress is often viewed as a mediator in the relationship between various psychological and social factors and substance use (Häfner et al., 2014). Numerous studies have demonstrated that stress mediates the relationship between social support and drug use, as adolescents who perceive lower levels of support are more likely to experience stress, which in turn increases their likelihood of engaging in substance use (Zhang et al., 2023). This mediating effect highlights the importance of addressing stress management in interventions aimed at reducing substance abuse among adolescents (Hutton et al., 2017). For instance, research by Yang et al. (2021) found that perceived stress fully mediated the relationship between social support and substance use among adolescents, indicating that stress reduction may be a key target for preventing drug use in this population (C. Yang et al., 2021). Similarly, studies on BIS/BAS have shown that perceived stress plays a mediating role in the relationship between behavioral systems and drug use tendencies, suggesting that individuals with heightened sensitivity to stress may be more likely to engage in substance use when their coping resources, such as social support, are inadequate (Lei et al., 2021). Therefore, this study aims to examine the relationship between perceived social support, behavioral systems, and drug use tendency, mediated by perceived stress in adolescent girls in Tehran.

2. Methods and Materials

2.1. Study Design and Participants

This study is classified as basic research in terms of its purpose and belongs to the category of descriptive correlational research (structural equations) in terms of data collection. The study population included female adolescent students aged 14 to 18 from districts 5, 7, and 15 of Tehran, with an approximate number of 35,000 individuals, selected during the second half of 2023. A multistage random sampling method was used. Initially, districts 5, 7, and 15 of Tehran were randomly selected, followed by the random selection of two girls' high schools from each district. Subsequently, three classes from each high school were randomly selected, and finally, 20 students were randomly selected from each class, resulting in a total sample of 360 participants, based on the Krejcie and Morgan table and considering the population size.

2.2. Measures

2.2.1. Addiction Tendency

This questionnaire, designed by Wade et al. (1992), consists of 41 items and four components: self-satisfaction

E-ISSN: 3041-8828

(items 24, 25, 26, 27, 28, 29, 31, 34, 36, 37, 38, 40, and 41), pessimism (items 2, 5, 6, 9, 12, 13, 14, 15, 21, 30, and 39), impulsivity (items 1, 3, 7, 8, 10, 11, 18, 22, 16, 17, and 19), and risk-taking (items 4, 20, 23, 32, 33, and 35). The questionnaire also includes 5 lie-scale items (12, 13, 15, 21, and 33). The scoring method is based on a three-point Likert scale (completely disagree = 0 to completely agree = 3), with reverse scoring applied for items 6, 12, 15, and 21. The total score ranges from 0 to 123, with higher scores indicating a greater readiness for addiction. The reliability of this questionnaire, calculated using Cronbach's alpha coefficient, was estimated at above 0.7 in the study by Zargar et al. (2012) (Salami et al., 2018).

2.2.2. *Perceived Social Support*

This questionnaire was developed by Zimet et al. (1988) and consists of 12 items. It is scored on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The questionnaire has three components: social support received from family, friends, and significant others. The Cronbach's alpha coefficients for family, friends, and significant others were reported as 0.89, 0.86, and 0.82, respectively (Babanejad et al., 2020).

2.2.3. *Behavioral Inhibition/Activation Systems*

This scale, developed by Carver and White (1994), assesses individual differences in sensitivity to the behavioral inhibition and activation systems. It includes 24 items, with the Behavioral Inhibition System (items 2, 8, 13, 16, 19, 22, and 24) assessed by the subscale of punishment sensitivity, and the Behavioral Activation System assessed through three subscales: reward responsiveness (items 4, 7, 14, 18, and 23), drive (items 3, 9, 12, and 21), and fun-seeking (items 5, 10, 15, and 20). Responses are given on a four-point Likert scale (completely true = 4, completely false = 1). Mohammadi (2006) standardized this scale and reported Cronbach's alpha coefficients of 0.74 for the inhibition system and 0.73, 0.76, and 0.66 for the activation subscales of reward, drive, and fun-seeking, respectively. The Cronbach's alpha for the entire questionnaire in the study by Majdi et al. (2019) was 0.73. Carver and White (1994) reported internal consistency of 0.74 for the Behavioral Inhibition System and 0.71 for the Behavioral Activation System (Nasiri et al., 2022).

2.2.4. *Perceived Stress*

The Perceived Stress Scale (PSS) was developed by Cohen et al. (1983) and contains 16 items. Responses are based on a five-point Likert scale (never, rarely, sometimes, often, and very often), with scores of 0, 1, 2, 3, and 4, respectively. The scale assesses two subscales: a) perceived negative stress (items 1, 2, 3, 4, 11, 12, and 14) and b) perceived positive stress (items 5, 6, 7, 8, 9, 10, and 13), with reverse scoring for the latter. This scale is used to assess how stressful individuals perceive their life situations. The internal consistency reliability coefficients for the scale ranged from 0.84 to 0.86 across two student groups and one group of smokers in a cessation program. In the study by Ahmadian (2012), the Cronbach's alpha reliability coefficients for positive and negative stress perception were reported as 0.71 and 0.75, respectively, and 0.84 for the entire scale. The correlation coefficients for positive stress perception ranged from 0.49 to 0.70, and for negative stress perception from 0.52 to 0.77. The overall stress perception scale correlation coefficients ranged from 0.51 to 0.78 (Jalali-Farahani et al., 2022).

2.3. *Data Analysis*

In the descriptive phase, frequency distribution tables and measures of central tendency and dispersion (mean and standard deviation) were used. In the inferential phase, structural equation modeling (SEM) was employed to test the research hypotheses. Additionally, SPSS-24 and AMOS-24 software were utilized in this study.

3. Findings and Results

Correlation analysis was used to ensure the presence of a significant relationship between the study variables. Table 1 shows the correlation test results between the study variables:

E-ISSN: 3041-8828

Table 1

Correlation Test

Variables	Index	Drug Use Tendency	Perceived Social Support	Behavioral Inhibition Systems	Behavioral Activation Systems	Perceived Stress
Drug Use Tendency	r	1				
	p	-				
Perceived Social Support	r	-0.004	1			
	p	0.963	-			
Behavioral Inhibition Systems	r	0.337	0.707	1		
	p	0.000	0.000	-		
Behavioral Activation Systems	r	0.415	0.679	0.920	1	
	p	0.000	0.000	0.000	-	
Perceived Stress	r	0.306	0.771	0.908	0.949	1
	p	0.000	0.000	0.000	0.000	-

As seen in Table 1, the correlation coefficient between drug use tendency and perceived social support is -0.004, and since the significance level is greater than 5% (0.963), there is no significant relationship between these variables. Thus, this relationship is not confirmed. Additionally, the correlation coefficient between drug use tendency and behavioral inhibition systems is 0.337, and since the significance level is less than 5% (0.000), a significant positive relationship is confirmed. Similarly, the correlation coefficient between drug use tendency and behavioral activation systems is 0.415, and the significance level is less than 5% (0.000), confirming a significant positive relationship.

To evaluate the model fit, several criteria are used, with the primary and most essential criterion being the z-statistics. A structural model fit based on t-values indicates that the t-values must exceed 1.96 to confirm significance at the 95% confidence level. At the 99% confidence level, the t-value must exceed 2.58.

Table 2

T-value Analysis

Path	t-value
Perceived Stress (mediator) in the relationship between perceived social support and drug use tendency in adolescents	10.45
Perceived Stress (mediator) in the relationship between behavioral inhibition/activation systems and drug use tendency in adolescents	13.79

This criterion determines the strength of the relationship between the model's constructs:

Table 3

Effect Size (f^2)

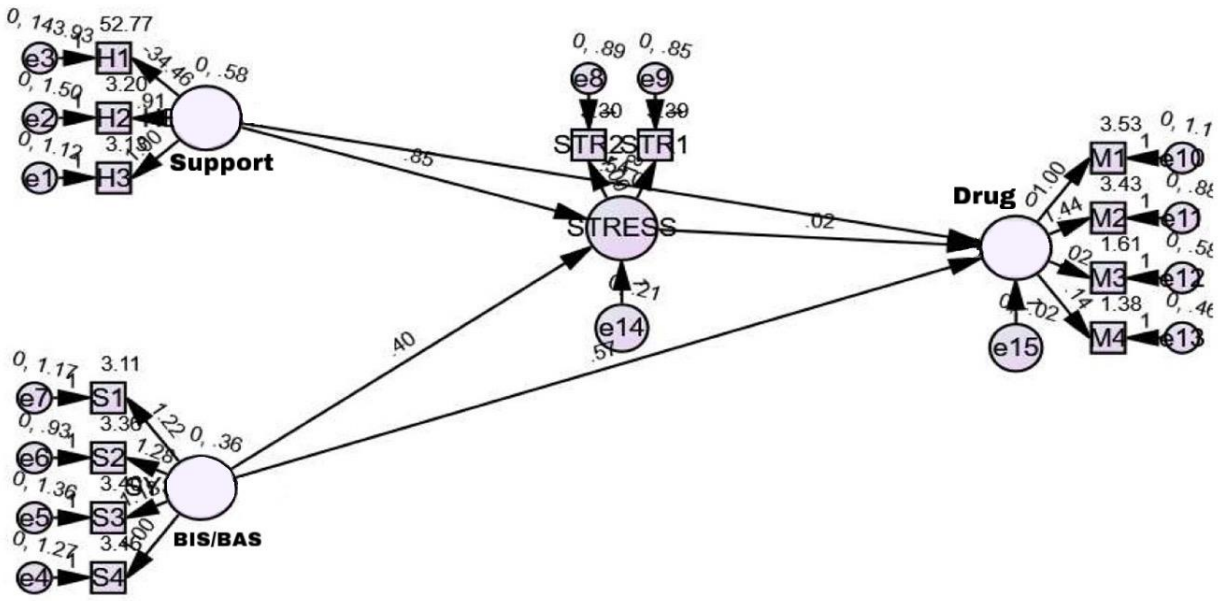
Path	f^2 Value
Perceived Stress (mediator) in the relationship between perceived social support and drug use tendency in adolescents	0.85
Perceived Stress (mediator) in the relationship between behavioral inhibition/activation systems and drug use tendency in adolescents	0.40

The Gof value was 0.69, indicating a strong overall model fit. The finalized model can be illustrated as follows:

E-ISSN: 3041-8828

Figure 1

Model with Beta Coefficients



4. Discussion and Conclusion

The present study aimed to develop a structural model of drug use tendency among adolescent girls in Tehran, with perceived social support and Behavioral Inhibition/Activation Systems (BIS/BAS) as predictors, and perceived stress serving as a mediator. The results demonstrated that perceived stress plays a significant indirect mediating role in the relationship between perceived social support and drug use tendency, as well as in the relationship between BIS/BAS and drug use tendency. These findings are consistent with previous research that underscores the importance of perceived stress as a key factor influencing the likelihood of substance use among adolescents, particularly in the presence of low social support and high sensitivity to behavioral activation (Abro et al., 2023; C. Yang et al., 2021; X. Yang et al., 2021).

One of the key findings of this study is the negative relationship between perceived social support and drug use tendency, mediated by perceived stress. Adolescents who reported higher levels of perceived social support from family, friends, and significant others were less likely to engage in substance use behaviors, especially when stress levels were lower. This aligns with existing literature suggesting that social support acts as a protective factor against the negative effects of stress and subsequent substance use (Jagadeeswari et al., 2023; Lei et al., 2021). For instance, Hutton et al. (2017) found that perceived social support from peers and family members was significantly associated with lower levels of stress and reduced substance use among adolescents (Hutton et al., 2017).

The mediating role of stress in this relationship highlights the importance of stress management and coping mechanisms in preventing drug use among adolescents. Prior studies have consistently reported that adolescents who perceive themselves as having strong social support systems are more resilient to stress and are therefore less likely to engage in risky behaviors, including drug use (Chavez et al., 2018). This is further supported by Valdez et al. (2020), who demonstrated that social environments with ample support systems reduce the probability of drug use among adolescents in vulnerable communities (Valdez et al., 2020). The findings from the present study, therefore, contribute to this body of evidence by confirming that social support significantly impacts drug use behaviors through its influence on stress levels.

E-ISSN: 3041-8828

The study also found a significant relationship between the Behavioral Inhibition and Activation Systems and drug use tendency, with perceived stress again serving as a mediator. Adolescents with a heightened Behavioral Activation System (BAS) were more likely to engage in substance use, especially when perceived stress was high. Conversely, those with a highly sensitive Behavioral Inhibition System (BIS) were more likely to avoid substance use in stressful situations. This supports the dual-system model of behavioral regulation, which posits that BAS sensitivity leads to risk-seeking behaviors, such as substance use, while BIS sensitivity leads to avoidance behaviors in response to stress (Zareipour et al., 2016; Zhang & Wang, 2022).

These findings are consistent with earlier research demonstrating that adolescents with heightened sensitivity to rewards (BAS) are more likely to engage in risky behaviors, including drug use, as a means of coping with stress (Leventhal et al., 2017; Radavelli-Bagatini et al., 2022). In contrast, individuals with heightened sensitivity to punishment (BIS) are more likely to avoid such behaviors. The mediation effect of stress further emphasizes that the experience of stress influences whether BIS or BAS drives behavior in substance use contexts. For example, Yang et al. (2021) found that adolescents with heightened BAS sensitivity were more prone to substance use when their stress levels were elevated, highlighting the importance of stress in understanding the behavioral regulation systems (C. Yang et al., 2021).

Perceived stress emerged as a significant mediator in the relationship between both perceived social support and BIS/BAS and drug use tendency. Adolescents who reported higher stress levels were more likely to engage in drug use, particularly when social support was low or BIS/BAS sensitivity was high. This finding is consistent with prior research that identified stress as a critical factor in the initiation and maintenance of substance use behaviors among adolescents (Daniulaityte & Carlson, 2011; Lindholdt et al., 2021). The present study adds to this growing body of evidence by demonstrating that stress serves as a mechanism through which both social support and individual differences in behavioral regulation influence substance use behaviors.

Previous studies have also highlighted the role of stress in mediating the effects of social support on drug use. For instance, Lei et al. (2021) found that stress mediated the relationship between social support and substance use, with lower social support leading to higher stress and a greater likelihood of drug use (Lei et al., 2021). Similarly, Zhang and Wang (2022) found that stress mediated the relationship between BIS/BAS and substance use, with adolescents who experienced higher stress being more likely to engage in drug use, particularly if they had heightened BAS sensitivity (Zhang & Wang, 2022). The present study's findings, therefore, support and extend these results by confirming the mediating role of stress in a sample of adolescent girls in Tehran.

Despite the valuable insights gained from this study, several limitations should be noted. First, the study utilized a cross-sectional design, which limits the ability to draw causal inferences. While the results suggest significant relationships between perceived social support, BIS/BAS, perceived stress, and drug use tendency, the directionality of these relationships cannot be definitively determined. Future research should employ longitudinal designs to examine how these variables interact over time and to establish causal pathways.

Second, the sample was limited to adolescent girls in three districts of Tehran, which may limit the generalizability of the findings to other populations. While this focus on adolescent girls provides valuable insights into a vulnerable population, the findings may not necessarily apply to boys or to adolescents in different cultural or geographic contexts. Future research should aim to include more diverse samples, including male adolescents and individuals from different regions, to enhance the generalizability of the findings.

Lastly, the study relied on self-report measures of perceived social support, stress, and drug use tendency, which may be subject to social desirability bias and recall bias. Participants may have underreported their drug use behaviors or overreported their levels of social support due to concerns about judgment or stigma. Future studies should incorporate objective measures of substance use, such as drug testing or collateral reports from peers or family members, to provide a more accurate assessment of drug use behaviors.

Building on the limitations of the current study, several avenues for future research are suggested. First, future studies should employ longitudinal designs to examine how perceived social support, BIS/BAS, and perceived stress interact over time to influence drug use behaviors. Such designs would allow for a better understanding of the temporal dynamics between these variables and could help identify critical periods during which adolescents are most vulnerable to substance use initiation.

E-ISSN: 3041-8828

Second, future research should explore the moderating role of gender in the relationships between social support, stress, and drug use. While the present study focused exclusively on adolescent girls, research suggests that boys and girls may experience stress and social support differently, which may influence their substance use behaviors in distinct ways (Leventhal et al., 2017). Investigating gender differences in these relationships could provide valuable insights into the development of gender-specific prevention and intervention programs.

Additionally, future research should investigate other potential mediators and moderators of the relationship between social support, BIS/BAS, and substance use. For example, individual factors such as emotional intelligence, resilience, or coping strategies may moderate the impact of stress on substance use behaviors (Cheema, 2022). Understanding these additional factors could provide a more nuanced understanding of the pathways to substance use among adolescents and inform the development of more targeted interventions.

The findings from this study have several practical implications for substance use prevention and intervention programs. First, given the significant role of perceived social support in reducing drug use tendency, programs aimed at strengthening family and peer relationships should be prioritized. Family-based interventions that improve communication and support within families have been shown to be effective in reducing adolescent substance use (C. Yang et al., 2021; X. Yang et al., 2021). Schools and community organizations can also play a role by fostering supportive peer networks and providing opportunities for adolescents to develop meaningful social connections.

Second, stress management programs should be incorporated into substance use prevention efforts. The findings of this study highlight the importance of addressing perceived stress as a key factor influencing drug use tendency. Programs that teach adolescents effective stress management techniques, such as mindfulness, relaxation training, or cognitive-behavioral strategies, could help reduce the likelihood of substance use (Vangara et al., 2022). These programs could be delivered in school settings or through community-based organizations and should be tailored to the specific needs of adolescent girls.

Finally, interventions should consider individual differences in behavioral regulation, particularly BIS/BAS sensitivities, when designing prevention programs. Adolescents with heightened BAS sensitivity may benefit from programs that focus on impulse control and decision-making skills, while those with high BIS sensitivity may need support in managing anxiety and stress. Tailoring interventions to address these individual differences could enhance the effectiveness of substance use prevention efforts and reduce the likelihood of drug use among at-risk adolescents.

In conclusion, this study contributes to the growing body of literature on the factors influencing drug use tendency among adolescents, particularly the role of perceived social support, stress, and behavioral regulation systems. By highlighting the importance of stress management and social support in preventing substance use, the findings provide valuable insights for the development of targeted interventions aimed at reducing substance use among adolescent girls in Tehran and beyond.

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 interview and participated in the research with informed consent.

References

E-ISSN: 3041-8828

Abro, S. U., Khan, A., Saqib, M., Ara, G., Saleem, Q., & Baloch, F. A. (2023). Sleep Quality, Perceived Stress and Body Mass Index in Adolescent College Students- Cross- Sectional Study. *PJMHS*, *17*(4), 42-45. https://doi.org/10.53350/pjmhs202317442

Afshari, A., Hashemikamangar, S., & Hashemikamangar, S. S. (2021). The Correlation of Perceived Stress and Professional Concerns During COVID-19 Pandemic Among Iranian Dentists: The Mediating Role of Cognitive Flexibility. *Dentistry 3000*, *9*(1), 1-10. https://doi.org/10.5195/d3000.2021.119

Alvarez-Perez, V., Gago-Ageitos, A. M., Vicente-Alba, J., Garcia-Hijano, C. M., Duran-Maseda, M. J., & Vidal-Millares, M. (2022). The Psychological Impact of COVID19 Pandemic on Health Care Workers in Pontevedra (Spain). https://doi.org/10.21203/rs.3.rs-1847719/v1

Alwhaibi, M. (2023). Perceived Stress Among Healthcare Students and Its Association With Anxiety and Depression: A Cross-Sectional Study in Saudi Arabia. *Healthcare*, *11*(11), 1625. https://doi.org/10.3390/healthcare11111625

Anisi, J., Bahadori, M. H., & Jahanbakhsh, M. (2013). Developing and Validation of Identifying People in Risk of Addiction Questionnaire (I.P.R.A) [Research Article]. *Int J High Risk Behav Addict*, *1*(4), 183-191. https://doi.org/10.5812/ijhrba.8101

Babanejad, F., Shams Esfandabad, H., & Namvar, H. (2020). Investigate the Mediating Role of Attitudes to Cheating in the Relationship between Social Support and Educational Justice with Cheating Behavior. *iase-idje*, *3*(3), 88-96. https://doi.org/10.52547/ijes.3.3.88

Baniya, A., Paudel, A. K., Chhetri, M. R., & Thapa, P. (2021). Perceived Level of Stress Among Nightshift Working Nurses in Hospitals of Kathmandu City. *Journal of Chitwan Medical College*, *11*(1), 64-67. https://doi.org/10.54530/jcmc.299

Chavez, K., Palfai, T. P., Squires, L., Cheng, D. M., Lloyd-Travaglini, C., & Saitz, R. (2018). Perceived Discrimination and Drug Involvement Among Black Primary Care Patients Who Use Drugs. *Addictive behaviors*, *77*, 63-66. https://doi.org/10.1016/j.addbeh.2017.08.029

Cheema, S. (2022). Emotional Intelligence and Perceived Stress Against the Backdrop of the Covid-19 Pandemic Among Students of a Medical College in Pakistan: A Cross-Sectional Correlational Study. *Health Professions Educator Journal*, *5*(1), 26-31. https://doi.org/10.53708/hpej.v5i1.1326

Choo, H. (2012). Stress Process of Illicit Drug Use Among U.S. Immigrants' Adolescent Children: A Longitudinal Study. *Journal of Community Psychology*, *40*(3), 358-371. https://doi.org/10.1002/jcop.20519

Daniulaityte, R., & Carlson, R. G. (2011). "To Numb Out and Start to Feel Nothing": Experiences of Stress Among Crack-Cocaine Using Women in a Midwestern City. *Journal of Drug Issues*, *41*(1), 1-24. https://doi.org/10.1177/002204261104100101

Enayati Shabkolai, M., Enayati Shabkalai, M., & Bagheri Dadokolai, M. (2023). The Effectiveness of Treatment based on Acceptance and Commitment on Social Adaptation, Academic Self-Regulation and Cognitive Flexibility of Students with Specific Learning Disorders. *International Journal of Education and Cognitive Sciences*, *4*(1), 33-41. https://doi.org/10.61838/kman.ijecs.4.1.5

Häfner, A., Stock, A., & Oberst, V. (2014). Decreasing Students' Stress Through Time Management Training: An Intervention Study. *European Journal of Psychology of Education*, *30*(1), 81-94. https://doi.org/10.1007/s10212-014-0229-2

Horiuchi, S., Tsuda, A., Yoneda, K., & Aoki, S. (2018). Mediating Effects of Perceived Stress on the Relationship of Positivity With Negative and Positive Affect. *Psychology research and behavior management*, *Volume 11*, 299-303. https://doi.org/10.2147/prbm.s164761

Hutton, H. E., Lesko, C. R., Chander, G., Lau, B., Wand, G. S., & McCaul, M. E. (2017). Differential Effects of Perceived Stress on Alcohol Consumption in Moderate Versus Heavy Drinking HIV-infected Women. *Drug and Alcohol Dependence*, *178*, 380-385. https://doi.org/10.1016/j.drugalcdep.2017.05.021

Jagadeeswari, J., Lokeswari, S., Priyadarsini, A., Cecyli, C., & Jency, J. J. (2023). Level of Stress and Perceived Social Support Among Women Seeking Infertility Treatment: An Exploratory Study. *Cm*(25), 208-212. https://doi.org/10.18137/cardiometry.2022.25.208212

Jalali-Farahani, S., Amiri, P., Olazadeh, K., Panahi, R., & Azizi, F. (2022). Comparison of Anxiety, Stress, and Depression in Type 2 Diabetes Patients Before and after the Covid-19 Pandemic Considering Perceived Social Support: Tehran Lipid and Glucose Study (TLGS) [Original]. *Iranian Journal of Endocrinology and Metabolism*, *24*(5), 301-310. http://ijem.sbmu.ac.ir/article-1-3056-en.html

James, B. O., Thomas, I. F., Omoaregba, J. O., Okogbenin, E., Okonoda, K. M., Ibrahim, A. W., Salihu, A., Oshodi, Y., Orovwigho, A., Odinka, P. C., Eze, G., Onyebueke, G. C., & Aweh, B. E. (2017). Psychosocial Correlates of Perceived Stress Among Undergraduate Medical Students in Nigeria. *International Journal of Medical Education*, *8*, 382-388. https://doi.org/10.5116/ijme.59c6.3075

Jazayeri, A., Rafiei, H., & Nazari, M. (2003). Tehran Secondary School Student's Attitudes toward Addiction. *Social Welfare Quarterly*, *2*(7), 217-. https://www.magiran.com/paper/101930

Kumar, C. A. (2020). Stress and Eating – A One Way Path or Circular? Perceived Stress and Its Association With Body Mass Index Among Medical Students in a Medical College in South India. *International Journal of Advanced Community Medicine*, *3*(1), 239-244. https://doi.org/10.33545/comed.2020.v3.i1d.157

Lacour, M., Bloudeau, L., Combescure, C., Haddad, K., Hugon, F., Suppan, L., Rodieux, F., Lovis, C., Gervaix, A., Ehrler, F., Manzano, S., & Siebert, J. N. (2021). Impact of a Mobile App on Paramedics' Perceived and Physiologic Stress Response During Simulated Prehospital Pediatric Cardiopulmonary Resuscitation: Study Nested Within a Multicenter Randomized Controlled Trial. *Jmir Mhealth and Uhealth*, *9*(10), e31748. https://doi.org/10.2196/31748

Lei, G., Yang, C.-A., Yan, Y., Zhang, Y., Xie, Y., Chen, J., & Wu, J. (2021). Community Workers' Social Support and Sleep Quality During the Coronavirus Disease 2019 (COVID-19): A Moderated Mediation Model. *International Journal of Mental Health Promotion*, *23*(1), 119-138. https://doi.org/10.32604/ijmhp.2021.013072

Leventhal, A. M., Urman, R., Barrington-Trimis, J. L., Goldenson, N. I., Gallegos, K., Chou, C. P., Wang, K., Berhane, K., Cruz, T. B., Pentz, M. A., Unger, J. B., & McConnell, R. (2017). Perceived Stress and Poly-Tobacco Product Use Across Adolescence: Patterns of Association and Gender Differences. *Journal of psychiatric research*, *94*, 172-179. https://doi.org/10.1016/j.jpsychires.2017.07.010

Lindholdt, L., Labriola, M., Andersen, J. H., Kjeldsen, M.-M. Z., Obel, C., & Lund, T. (2021). Perceived Stress Among Adolescents as a Marker for Future Mental Disorders: A Prospective Cohort Study. *Scandinavian Journal of Public Health*, *50*(3), 412-417. https://doi.org/10.1177/1403494821993719

Mahdian, H., Tanhaye Reshvanloo, F., Zahmatkesh, Z., & Javidi, D. (2021). General health, psychological and social wellbeing

E-ISSN: 3041-8828

The role of personal and occupational factors. *International Journal of Education and Cognitive Sciences*, *2*(3), 44-50. https://doi.org/10.22034/injoeas.2021.161048

Nasiri , P., Mousavi , S. F., & Mollazadeh , J. (2022). Mediating Role of Cognitive Emotion Regulation Strategies in the relationship between Brain-Behavioral System Activity and Marital Satisfaction. *Iraninan Psychiatry and Clinical Psychology*, *27*(4), 474-491. https://www.magiran.com/paper/2430447

Nateghi, M., & Sohrabi, F. (2017). The Effectiveness of Cognitive-Behavioral Therapy in Suicidal Thoughts and Impulsivity among Adolescents with Addiction. *etiadpajohi*, *11*(42), 213-228. http://etiadpajohi.ir/article-1-1389-en.html

Öztop, F., Bilač, S., & Kutuk, Y. (2024). Improving Empathy and Peer Relationships in Adolescents: A Social Cognition Training Approach. *International Journal of Education and Cognitive Sciences*, *5*(2), 23-30. https://doi.org/10.61838/kman.ijeas.5.2.4

Radavelli-Bagatini, S., Sim, M., Blekkenhorst, L. C., Bondonno, N. P., Bondonno, C. P., Woodman, R., Dickson, J. M., Magliano, D. J., Shaw, J. E., Daly, R. M., Hodgson, J. M., & Lewis, J. R. (2022). Associations of Specific Types of Fruit and Vegetables With Perceived Stress in Adults: The AusDiab Study. *European journal of nutrition*, *61*(6), 2929-2938. https://doi.org/10.1007/s00394-022-02848-5

Salami, F., Hatami, H., & Noori, R. (2018). The prediction of drug use tendency based on the psychological space of the family, the family history of addiction and the role of the peer group in the tobacco-consuming adolescents. *Applied Psychology*, *12*(2), 265-284. https://apsy.sbu.ac.ir/article_97075.html

Siddiqui, M. K., Taqi, M., Naqvi, S., Raza, S. A., Bawany, H., & Hasan, Z. (2022). Levels of Perceived Stress According to Professional Standings Among Dental Surgeons of Karachi: A Descriptive Study. *BMC Oral Health*, *22*(1). https://doi.org/10.1186/s12903-022-02272-5

Valdez, E. S., Valdez, L., Korchmaros, J. D., Garcia, D. O., Stevens, S. J., Sabo, S., & Carvajal, S. C. (2020). Socioenvironmental Risk Factors for Adolescent Marijuana Use in a United States-Mexico Border Community. *American Journal of Health Promotion*, *35*(1), 20-27. https://doi.org/10.1177/0890117120927527

Vangara, S. V., Kumari, A., & Kumar, D. (2022). Evaluation of Perceived Stress and Its Correlation With Personality Traits in Undergraduate Students. *Asian Journal of Medical Sciences*, *13*(8), 127-132. https://doi.org/10.3126/ajms.v13i8.34044

Vasunilashorn, S., Glei, D. A., Weinstein, M., & Goldman, N. (2013). Perceived Stress and Mortality in a Taiwanese Older Adult Population. *Stress*, *16*(6), 600-606. https://doi.org/10.3109/10253890.2013.823943

Yang, C., Xia, M., Li, T., & Zhou, Y. (2021). How Do Specific Social Supports (Family, Friend, and Specialist) Reduce Stress in Patients With Substance Use Disorders: A Multiple Mediation Analysis. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.618576

Yang, X., Kovarik, C. L., Wang, Y., & Yu, S. (2021). A Multi-Site Cross-Sectional Study of Anxiety Symptoms and the Associated Factors Among Chinese Drug Users Undergoing Compulsory Detoxification Treatment. *Frontiers in Public Health*, *9*. https://doi.org/10.3389/fpubh.2021.524068

Zareipour, M., Abdolkarimi, M., Valizadeh, R., Mahmoodi, H., Khazir, Z., & Ghelichi-Ghojogh, M. (2016). Perceived Stress and Its Relationship With Spiritual Health in Patients With Diabetes in the City of Urmia, Iran. *Bioscience Biotechnology Research Communications*, *9*(4), 750-755. https://doi.org/10.21786/bbrc/9.4/25

Zhang, J., & Wang, E. (2022). Indulging in Smartphones in Times of Stress: A Moderated Mediation Model of Experiential Avoidance and Trait Mindfulness. *Behavioral Sciences*, *12*(12), 485. https://doi.org/10.3390/bs12120485

Zhang, X., Zhou, Y., & Zhang, K. (2023). Social Capital, Perceived Stress, and Mental Health of Men Who Have Sex With Men in China: A Cross-Sectional Study. *Frontiers in psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1134198

E-ISSN: 3041-8828