

Presenting a Causal Model of Bias towards Drugs in Students based on the Academic Failure and Hyperactivity and Attention Deficit with the Mediating Role of Hopelessness Feelings

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Purpose: Considering the decreasing age of addiction and the many problems faced by addicts, the present research was conducted with the aim of presenting a causal model of bias towards drugs in students based on the academic failure and hyperactivity and attention deficit with the mediating role of hopelessness feelings.

Method: The current research in terms of purpose was applied and in terms of implementation method was descriptive from type of correlation. The research population was all the junior and senior high school students of one district of Mashhad city in the 2020-2021 academic years, which number of 310 people of them were selected as a sample by cluster random sampling method. The tools of the current research were the questionnaires of addiction potential, academic failure, hyperactivity and attention deficit and hopelessness, which whose psychometric indicators were confirmed in previous researches and in this study. Data were analyzed by structural equation modeling method in SPSS version 24 and AMOS version 24 software.

Results: The findings of the present study showed that the causal model of bias towards drugs in students based on the academic failure and hyperactivity and attention deficit with the mediating role of hopelessness feelings had a good fit. Also, the variable of academic failure on the hopelessness feelings and bias towards drugs, the variable of hyperactivity and attention deficit on the hopelessness feelings and the variable of hopelessness feelings on the bias towards drugs had a direct and significant effect ($P < 0.05$), but the variable of hyperactivity and attention deficit on the bias towards drugs hadn't a direct and significant effect ($P > 0.05$). In addition, academic failure and hyperactivity and attention deficit had an indirect and significant effect on the bias towards drugs with the mediating of hopelessness feelings ($P < 0.05$).

Conclusion: The results indicated the effective role of academic failure and hyperactivity and attention deficit with the mediating of hopelessness feeling on bias towards drugs. Therefore, the planners and specialists of cultural and educational activities of adolescents in order reduce to bias towards drugs can seek to design and implement programs to reduce academic failure, hyperactivity and attention deficit and hopelessness feelings.

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1. Introduction

Addiction is a biopsychosocial disease, encompassing biological, psychological, and social dimensions, with sufferers facing numerous challenges in economic, social, political, and cultural areas (Momoh, Alhassan, Ibrahim & Amoo, 2022). Drug addiction implies acute and chronic poisoning by natural and synthetic pharmaceutical substances harmful to individuals and society, leading to numerous psychological and physical complications (Subramaniam, Nolan, Huntley, Corbin, Crenshaw, Mandekk et al., 2023). The issue of addiction and drug abuse is one of the most significant problems of the present age in human societies, having a global extent and an increasing prevalence each year (Little, Sud, Nobile & Bhattacharya, 2021). Substance misuse is a major problem for both developed and developing societies in terms of health decline, and diseases, deaths, and injuries resulting from substance misuse incur substantial costs for families and societies (Borgschulte, Corredor-Waldron & Marshall, 2018). Drug predisposition means that some individuals have a greater readiness or vulnerability to drug abuse, while others have less (Kendler, Ohlsson, Edwards, Sundquist & Sundquist, 2017). In other words, some people are prone to addiction and will become addicted if exposed to drugs, while others are not prone and will either not become addicted or will become addicted much later if exposed (Moeller, Zilverstand, Konova, Kundu, Parvaz, Preston-Compbell et al., 2018). Individuals with a predisposition to drugs are more likely to experience negative health entanglements, a high risk of injury, and death from interpersonal violence, accidents, and engagement in risky behaviors such as sexual activities (Truong, Egnaczyk, O'Brien, Raymond, Gilardi, Shreenivas et al., 2022).

One of the effective factors in predisposition to drugs is the academic decline of students, which is not only an individual problem but also a social issue, affecting the society (Bugbee, Beck, Fryer & Arria, 2019). Students who experience academic decline and dropout are more at risk of crime, drug abuse, physical and sexual abuse, and personality and psychological disorders (Van Vemde, Donker & Mainhard, 2022). Therefore, preventing academic decline is a serious challenge, as those who experience it and fail academically face more economic, social, and even cultural challenges in life (Ajjawi, Dracup, Zacharias, Bennett & Boud, 2020). The issue of academic decline is a concerning matter for families and educational stakeholders, with many students and students facing this phenomenon annually (Lee, 2017). Students with academic problems face many issues, including academic decline, dropout, noncompliant academic behaviors, etc., where academic decline means a reduction in learners' performance from a satisfactory level to an unsatisfactory one (Takaki, Dutra, De Araujo & DaSilva Junior, 2022). Academic decline is a significant problem in educational systems, identified by indicators such as conditional passing, repeating courses, prolonged study duration, expulsion, withdrawal, and dropout, reducing educational and academic quality (Morelli, Chirumbolo, Baiocco & Cattelino, 2021).

Another factor in predisposition to drugs is the hyperactivity and attention deficit of students, which represents a stable pattern of inattention, hyperactivity, and impulsivity behaviors (Zulauf, Sprich, Safren & Wilens, 2014). Attention Deficit Hyperactivity Disorder (ADHD) is one of the common reasons for children and adolescents to consult a psychiatrist, and if not identified, it leads to academic failure and peer rejection (Liu, Hsiao, Chou & Yen, 2023). This disorder, in addition to reducing academic performance, causes weaknesses in cognitive, emotional, social, and family functions, and negatively affects job performance and marital relationships in adulthood (Zhang, Chen, Li, Yao & Wu, 2021). ADHD is a complex, multifaceted, and neurobehavioral disorder characterized by a continuous pattern of unwanted inattention, hyperactivity-impulsivity, and although considered a childhood-specific disorder, sometimes continues into adulthood (Planton, Lemesle, Cousineau, Carlier, Milongo-Rigal, Carle-Toulemonde et al., 2021). This disorder is divided into three subgroups: predominantly inattentive, predominantly hyperactive-impulsive, and a combination of both, manifesting as problems in playing quietly, participating silently in leisure activities, excessive movement, and talkativeness (Nfonoyim, Griffis & Guevara, 2020).

One of the variables that can mediate between academic decline, hyperactivity and attention deficit, and predisposition to drugs is the feeling of hopelessness. Hopelessness is defined as a negative emotional state related to negative expectations about the future, a subset of the emotion of sorrow, causing despair and

depression (Zuo, Yang, Yao, Han, Nie & Wen, 2021). Hope is a sign of physical and mental health for a better future, but hopelessness, the opposite of hope, gradually leads to despair and depression by eliminating motivation and reducing effort (Gong, Ren, Wu, Jiang, Hu & You, 2019). This construct is a cognitive factor that begins with repeated failures, characterized by negative expectations and the occurrence of stressful and tense events (Ballard, Farmer, Gerner, Bloomfield-Claggett, Park & Zarate, 2022). Hopelessness, as a passive and harmful mood, both paralyzes the will of humans and causes a lack of desire to escape from the current situation and make efforts in this area (Mair, Kaplan & Everson-Rose, 2012). Hopelessness leads to school avoidance, depression, suicidal thoughts, shyness, decreased self-esteem and quality of life, tendency towards destructive behaviors, and inclination towards risky behaviors such as substance misuse (Grafiadeli, Glaesmer, Hofmann, Schafer & Wagner, 2021). Hopeless individuals typically have no inclination to interact and communicate with others, tend towards solitude and seclusion, use more passive and maladaptive coping strategies, and use fewer active and adaptive coping strategies (Legrand, Lallement & Kasmi, 2022).

Research on the relationships between academic decline, hyperactivity and attention deficit, feelings of hopelessness, and predisposition to drugs are detailed. For example, Keshoofy, Pearl, Lisnyj, Thaivalappil & Papadopoulos (2023) concluded that there was a significant relationship between general health, academic performance, and life stress factors with hopelessness. The findings of Shafiepour Motlagh & Torabi Nahad (2019) showed that academic stress, academic demotivation, and negative academic self-concept had a direct and significant effect on the academic hopelessness of high school students. In another study, PourTaleb & Mirnasab (2019) reported that exam anxiety had a positive and significant relationship with hopelessness among sixth-grade female students, and academic self-concept had a negative and significant relationship with their hopelessness. Moreover, Keramati & Emadian (2016) found that academic decline had a positive and significant correlation with addiction to messaging among first to third-grade high school students. Additionally, the results of the research by Kermani, Hoseini & Basharpour (2023) showed that there was a significant positive relationship between symptoms of attention deficit/hyperactivity and readiness for addiction among clients of addiction treatment centers. Balandeh, Zanjani, Mousavi, Mohammadi & Omid (2022) concluded that there was a significant relationship between Attention Deficit Hyperactivity Disorder (ADHD) and the temptation to use substances among those with ADHD and substance use disorder. In another study, Chen, Dai, Shi, Shen & Ou (2021) reported that there was a significant positive correlation between Attention Deficit Hyperactivity Disorder (ADHD) and symptoms of Internet Gaming Disorder with hopelessness. Furthermore, Servatyari, Yousefi, Valizadeh Ardalan, Rasouli, Hosseini, Ghaderi et al. (2019) found that there was a significant negative relationship between hopelessness and the grade point average of high school students and a significant positive relationship between hopelessness and inclination towards drug misuse among them. The results of the research by Du, Li, Lin & Tan (2014) showed that with the increase in hopelessness, the rate of substance use among young rural migrants increased.

The psychological and personality characteristics of addicts are not solely caused by drugs, but addicts have various deficiencies before addiction, which appear more destructively and intensify after addiction. Therefore, the problem of addicts is not just drugs, but essentially the mutual relationship of their psyche and personality with drugs. Many factors affect the predisposition to drugs in students, including academic decline, hyperactivity and attention deficit, and feelings of hopelessness. Undoubtedly, planning to reduce predisposition to drugs is essential, and before this, research should be conducted in this area, where correlational studies aiming to examine the severity and direction of relationships between variables can be useful and effective. Therefore, considering the importance of predisposition to drugs in the family nucleus, the educational environment, and given the characteristics of the student period and its impact on their life course, as well as the importance of planning to identify significant and effective factors in the vulnerability of this segment of society, the current research was conducted with the aim of presenting a causal model of predisposition to drugs in students based on academic decline and hyperactivity and attention deficit with the mediating role of feelings of hopelessness.

2. Methodology

The present study was applied in terms of purpose and descriptive-correlational in terms of execution method. The research population consisted of all first and second-grade middle school students in District 1 of Mashhad city during the 2020-2021 academic year, out of which 310 were selected as the sample through cluster random sampling. In this study, there were 21,265 first-grade middle school students and 15,969 second-grade middle school students, totaling 37,234 students. In structural equation modeling for determining the sample size, the use of a 20 (sample) to 1 (variable) ratio is highly emphasized. Also, since the minimum sample size in modeling is 200 and if the sample size is small, the probability of model fitting decreases, and moreover, considering the large size of the population, 350 students were selected as the sample in this study; 200 of them were in the first grade of middle school and 150 were in the second grade. Given that some questionnaires were not fully completed, they were excluded from the analyses (40 cases), and ultimately, analyses were conducted for 310 students.

The research process began with coordinating with the educational authorities of District 1 of Mashhad city and obtaining a collaboration letter for the research after explaining its importance and necessity and committing to ethical considerations. Subsequently, a list of first and second-grade middle schools was prepared according to their statistics, and sampling was performed, where some classes were selected as samples, and all students of the selected class joined the sample if they were willing to participate in the research. The importance and necessity of the research were explained to the samples in the presence of a school executive staff member, and they were reassured about ethical considerations such as confidentiality. Finally, they were asked to respond to the research instruments fully and honestly. It was clarified to them that there are no right or wrong answers, and the best response is the one that reflects their actual situation. Questionnaires were collected by a school executive staff member after completion and handed over to the researcher.

The instruments of the current research included questionnaires on addiction propensity, academic decline, hyperactivity and attention deficit, and hopelessness, whose psychometric indicators were validated in previous studies and this study.

Addiction Propensity Questionnaire: The addiction propensity questionnaire by Zeinali and Vahdat (2011) with 50 items was used to measure predisposition to drug use. Responses to each item were based on a binary Likert scale including yes (score two) and no (score one), and the tool's score was calculated by summing up the item scores. Therefore, the score range is between 50 to 100, with higher scores indicating greater predisposition to drug use. The instrument's creators confirmed its face and content validity with expert opinions and reported its reliability with Cronbach's alpha method as 0.98. In the present study, reliability was calculated using Cronbach's alpha method as 0.93.

Academic Decline Questionnaire: The academic decline questionnaire by Keramati and Emadian (2016) with 10 items was used to measure academic decline. Responses to each item were based on a five-point Likert scale including very much (score five), much (score four), medium (score three), little (score two), and very little (score one), and the tool's score was calculated by summing up the item scores. Therefore, the score range is between 10 to 50, with higher scores indicating greater academic decline. The instrument's creators confirmed its face validity with expert opinions and reported its reliability with Cronbach's alpha method as 0.80. In the present study, reliability was calculated using Cronbach's alpha method as 0.86.

Hyperactivity and Attention Deficit Questionnaire: The hyperactivity and attention deficit questionnaire by Adler, Kessler, and Spencer (2003) with 18 items was used to measure hyperactivity and attention deficit. Responses to each item were based on a five-point Likert scale including very often (score four), more often (score three), sometimes (score two), very little (score one), and never (score zero), and the tool's score was calculated by summing up the item scores. Therefore, the score range is between 0 to 72, with higher scores indicating greater hyperactivity and attention deficit. The instrument's creators investigated and confirmed its construct validity with exploratory factor analysis and reported its reliability with Cronbach's alpha method as 0.76. Additionally, Manavipor, Yazdanpanah, Fadakar Gabaloo, and Sobhi Gharamaleki (2020) confirmed

its face validity with university professors' opinions and reported its reliability with Cronbach's alpha method as 0.79. In the present study, reliability was calculated using Cronbach's alpha method as 0.82.

Hopelessness Questionnaire: The hopelessness questionnaire by Beck, Weissman, Lester, and Trexler (1974) with 20 items was used to measure feelings of hopelessness. For responding to 9 items, a binary Likert scale including yes or true (score zero) and no or false (score one) was used, and for responding to the other 11 items, a binary Likert scale including yes or true (score one) and no or false (score zero) was used, and the tool's score was calculated by summing up the item scores. Therefore, the score range is between 0 to 20, with higher scores indicating greater feelings of hopelessness. The instrument's creator confirmed its face validity with expert opinions and reported its reliability with Cronbach's alpha method as 0.75. Also, Tarsafi, Kalantar Kousheh, and Lester (2015) reported its reliability with Cronbach's alpha method as 0.86. In the present study, reliability was calculated using Cronbach's alpha method as 0.85.

The data of the present research were analyzed using structural equation modeling in SPSS version 24 and AMOS version 24 software after collection and removal of incomplete questionnaires.

3. Findings

In this study, 350 questionnaires were administered among first and second-grade middle school students, 40 of which were discarded due to incompleteness, and analyses were conducted for 310 individuals. The results of the means, standard deviations, and correlation coefficients of the research variables are presented in Table 1.

Table 1. Results of Means, Standard Deviations, and Correlation Coefficients of Research Variables

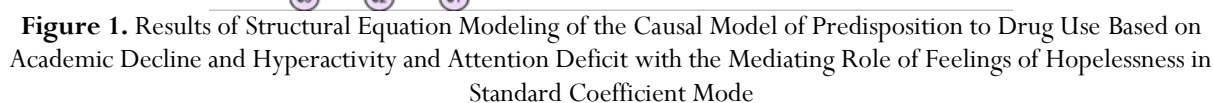
Variable	Mean	Standard Deviation	1	2	3	4
Academic decline	24.69	4.12	1			
Hyperactivity and attention deficit	16.35	2.40	0.16*	1		
Feelings of hopelessness	8.39	1.17	0.34*	0.46*	1	
Predisposition to drug use	73.29	8.31	0.31*	-0.09	0.28*	1

Based on the results of Table 1, there was a significant positive correlation between academic decline, hyperactivity and attention deficit, feelings of hopelessness, and predisposition to drug use among students ($P < 0.05$). The results of the fit indices for the causal model of predisposition to drug use based on academic decline, hyperactivity and attention deficit with the mediating role of feelings of hopelessness are presented in Table 2.

Table 2. Fit Indices Results of the Causal Model of Predisposition to Drug Use Based on Academic Decline and Hyperactivity and Attention Deficit with the Mediating

Index	Cutoff point	Model's Value
X^2/df	< 3	2.02
RMSEA	< 0.08	0.05
GFI	> 0.90	0.98
CFI	> 0.90	0.96
PCFI	> 0.60	0.63
PNFI	> 0.60	0.61

According to the results of Table 2, the causal model of predisposition to drug use in students based on academic decline, hyperactivity and attention deficit with the mediating role of feelings of hopelessness showed a satisfactory fit. The results of the structural equation modeling of the causal model of predisposition to drug use based on academic decline, hyperactivity and attention deficit with the mediating role of feelings of hopelessness are presented in Figure 1 and Table 3.



Path	Path Coefficient	t-value	p
The direct path of academic decline on feelings of hopelessness	0.24	3.72	0.001
The direct path of academic decline on predisposition to drug use	0.11	2.19	0.028
The direct path of hyperactivity and attention deficit on feelings of hopelessness	0.42	4.78	0.001
The direct path of hyperactivity and attention deficit on predisposition to drug use	-0.04	-0.61	0.537
The direct path of feelings of hopelessness on predisposition to drug use	0.25	3.06	0.002
The indirect path of academic decline, mediated by feelings of hopelessness, on predisposition to drug use	0.09	2.38	0.010
The indirect path of hyperactivity and attention deficit, mediated by feelings of hopelessness, on predisposition to drug use	0.22	4.25	0.005

4. Conclusion

The findings of the present study showed that the variable of academic decline had a direct and significant effect on feelings of hopelessness and predisposition to drug use. These findings are consistent with the effects of academic decline on feelings of hopelessness as reported in studies by Keshoofy et al. (2023), Shafiepour Motlagh and Torabi Nahad (2019), and PourTaleb and Mirnasab (2019), and on the predisposition to drug use as found in the study by Keramati and Emadian (2016). To explain the impact of academic decline on

feelings of hopelessness and predisposition to drug use, it can be stated that academic decline is the reduction of a student's academic performance from a satisfactory level to a lower and unsatisfactory level, and this construct is one of the major problems of educational systems in the current world; such that every year, a large amount of financial resources are wasted, and the effect of human, educational, and nurturing forces becomes futile. In academic decline, there is a difference between the potential capacity of children and what they actually demonstrate, and even the active performance of learners is below the level of performance they previously showed. Therefore, academic decline does not only summarize in repeating grades or subjects and can include any learner whose level of learning and academic progress is less than the potential or expected standard. Consequently, it is logical that academic decline, through reducing academic performance, dropping out, isolation, decreasing self-esteem, etc., has a direct and significant impact on feelings of hopelessness and predisposition to drug use.

Furthermore, the findings of the current study showed that the variable of hyperactivity and attention deficit had a direct and significant effect on feelings of hopelessness. These findings are in line with the impact of hyperactivity and attention deficit on feelings of hopelessness as found in the study by Chen et al. (2021). In explaining the effect of hyperactivity and attention deficit on feelings of hopelessness, it can be said that individuals with hyperactivity and attention deficit face considerable emotional and social problems in life and are at greater risk for various emotional and social problems compared to their normal peers. The main characteristic of this disorder is the presence of a persistent and continuous pattern of attention deficit, hyperactivity, and impulsivity, which causes a disruption in the individual's academic performance. Attention deficit in this disorder is associated with behaviors such as leaving tasks unfinished, lack of perseverance, and difficulty maintaining attention, which is not due to disobedience or misunderstanding. Hyperactivity refers to increased motor activities at inappropriate times, excessive movement, fidgeting with fingers, or excessive talking. Impulsivity is acting and performing actions hastily and rashly without any thought. Given the main characteristics of Attention Deficit Hyperactivity Disorder (ADHD) as described, they can provide a vulnerability context in various areas and cause an increase in feelings of hopelessness. Therefore, it can be expected that hyperactivity and impulsivity, given the explained mechanisms, have a direct and significant effect on feelings of hopelessness.

Other findings of the current study showed that the variable of hyperactivity and attention deficit did not have a direct and significant effect on the predisposition to drug use. These findings are inconsistent with the research results of Kermani et al. (2023) and Balandeh et al. (2022) regarding the impact of hyperactivity and attention deficit on the predisposition to drug use. To explain the lack of impact of hyperactivity and attention deficit on the predisposition to drug use, it can be said that on one hand, individuals with hyperactivity and attention deficit become bored when facing repetitive and mundane daily activities, leading them towards seeking stimulating and risky behaviors such as substance abuse as a way to escape from calm and monotonous situations. On the other hand, the primary and secondary school students in this study are likely well-controlled by their parents, or they have developed well cognitively and understand the educational courses provided in both educational and non-educational settings well, which makes them less inclined to turn to drug use. Therefore, it is logical that hyperactivity and attention deficit, according to the explanations above that on one side provide a basis for increasing risky behaviors and on the other side lead to the reduction of such behaviors, do not have a significant impact on the predisposition to drug use.

Moreover, the findings of the current study showed that the variable of feelings of hopelessness had a direct and significant effect on the predisposition to drug use. These findings are consistent with the research results of Servatyari et al. (2019) and Du et al. (2014) regarding the impact of feelings of hopelessness on the predisposition to drug use. To explain the impact of feelings of hopelessness on the predisposition to drug use, it can be said that individuals themselves and their negative perceptions and attitudes about themselves, others, the world, and the future are the most important elements causing hopelessness, which is the main factor in despair and depression leading to consequences such as weakening of will, intolerance of various and challenging situations, substance misuse, and an increased likelihood of suicidal thoughts and attempts.

Nowadays, the increase in psychological problems and conflicts has led to an increased prevalence of hopelessness, which can impact the inclination towards substance misuse. Therefore, it can be expected that feelings of hopelessness, through the explanations provided, have a direct and significant effect on the predisposition to drug use.

In addition, the findings of the current study showed that academic decline and hyperactivity and attention deficit, mediated by feelings of hopelessness, had an indirect and significant effect on the predisposition to drug use. No research was found regarding the impact of academic decline and hyperactivity and attention deficit, mediated by feelings of hopelessness, on the predisposition to drug use, but it can be explained that the impact of academic decline and hyperactivity and attention deficit on the predisposition to drug use occurs through cognitive and motivational mechanisms, and feelings of hopelessness have both cognitive aspects, such as beliefs about the occurrence of negative events in the future, negative evaluation of one's abilities, belief in one's weakness and inability, etc., and motivational aspects, such as the inclination towards negative events occurring to oneself, feelings of weakness and lack of motivation, negative attitude towards one's abilities, etc. Since feelings of hopelessness have both cognitive and motivational aspects, it can be expected that this variable, namely feelings of hopelessness, would be a suitable mediator between academic decline and hyperactivity and attention deficit and the predisposition to drug use. Therefore, variables such as academic decline, hyperactivity, and attention deficit, through feelings of hopelessness, can impact the predisposition to drug use. Consequently, it seems logical that academic decline, hyperactivity, and attention deficit, mediated by feelings of hopelessness, have an indirect and significant impact on the predisposition to drug use.

The main limitations of this study include the restriction of the research population to all primary and secondary school students in District 1 of Mashhad city and the lack of investigation of results by gender and educational level. Another limitation could be the limited cooperation of some students, which led to a dropout phenomenon in the sample. Therefore, it is suggested that this research be conducted in other research communities, even among university students, and its results be compared with those of this study. Another research suggestion is to investigate the comparative differences in the relationships of the same variables by gender and educational level. The results of this study indicate the effective role of academic decline and hyperactivity and attention deficit, mediated by feelings of hopelessness, on the predisposition to drug use. Thus, planners and specialists in cultural and educational activities for adolescents to reduce the predisposition to drug use can seek to design and implement programs to reduce academic decline, hyperactivity, and attention deficit, and feelings of hopelessness.

Ethical Considerations

In this study, necessary explanations regarding the observance of ethical standards were provided, and the first researcher, who was responsible for conducting the research, committed to their implementation.

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Authors' Contributions

The first researcher was responsible for conducting the research, data collection, and writing the initial draft of the article, and other researchers were responsible for data analysis and writing the final version of the article.

Conflict of Interest

There was no conflict of interest among the authors of this study.

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