

The Structural Model of the Causal Relationship Between Childhood Trauma and Deviant Behaviors and Academic Performance with the Mediation of Resilience in Students

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ABSTRACT

Objective: Today, the academic progress and performance of students have been considered an important indicator for evaluating the educational system. The present study aimed to fit the proposed model of the causal relationship between childhood traumas, deviant behaviors, and academic performance with the mediation of resilience in students.

Methods and Materials: This correlational study employed structural equation modeling (SEM) or causal modeling for model fitting. The statistical population included all male and female high school students in the 22 districts of Tehran during the 2023-2024 academic year, from which 370 students were randomly selected. Data were collected using the Bernstein et al. (2003) Childhood Trauma Questionnaire, the Eyberg and Ross (1978) Child Behavior Checklist, and the Liebenberg et al. (2012) Child and Youth Resilience Measure. Data were analyzed using SPSS.24 and AMOS.24 software.

Findings: The results showed that childhood traumas had a direct effect on resilience ($t = -6.38, \beta = -0.61$). Childhood traumas had a direct effect on deviant behaviors ($t = 4.27, \beta = 0.38$). Childhood traumas had a direct effect on academic performance ($t = -2.68, \beta = -0.28$). Resilience had a direct effect on deviant behaviors ($t = -4.96, \beta = -0.47$). Additionally, the model of childhood traumas with deviant behaviors and academic performance mediated by resilience in students was a good fit.

Conclusion: It can be concluded that resilience plays a mediating role in the relationship between childhood traumas, deviant behaviors, and academic performance.

Keywords: trauma, deviant behavior, academic performance, resilience, students.

1. Introduction

Continuous and ongoing evaluation of students' academic status during their education and the

examination of related factors are essential and indispensable components of the quality of the educational system. Academic performance is influenced by multiple biological, psychological, and social dimensions. These

factors are categorized into four groups: student conditions, family, school, and factors related to the community and external environment. Therefore, overall, a student's academic performance results from both their conditions and external environment (Shareinia et al., 2019). Academic life is one of the most critical dimensions of an individual's life, significantly impacting other life aspects. One of the fundamental issues in the academic life of individuals and the educational system of any country is the problem of academic decline and the low level of students' and students' academic performance (Rehman et al., 2022).

Today, students' academic progress and performance have been considered important indicators for evaluating the educational system (MacCann et al., 2020). Additionally, academic performance is important for teachers, parents, theorists, and educational researchers (Musshafen et al., 2021; Musshafen, 2018). For example, learners' academic progress is one of the most critical criteria for evaluating teachers' performance. Students respond differently to school tasks, with some reacting enthusiastically and others with reluctance and refusal. Why do some students evaluate their success concerning their previous tasks and performance, while others constantly compare themselves to others, trying to prove their competence by appearing intelligent to classmates, parents, and teachers? Reviewing research in the field of education reveals that most studies have focused on classifying students and various teaching methods, paying less attention to the active role of students and the motivational processes that occur during learning (Nahang et al., 2020; Owusu-Ansah et al., 2012).

Studying the factors affecting academic performance and progress is a complex issue, as it is a multidimensional element intricately related to the physical, social, cognitive, and emotional development of the learner. Many previous researchers emphasized the impact of mental and cognitive abilities on academic progress. However, over time, it became clear that although mental and cognitive abilities are somewhat related to academic performance and can predict it to a large extent, they are not the only key to predicting academic performance (Pinto-Escalona et al., 2022). Overall, performance and, specifically, students' academic performance are influenced by cognitive, emotional, feelings, and values that individuals hold. Throughout their education, individuals can impact their performance and, under the influence of these variables, may exhibit different behaviors. One of the cognitive factors affecting academic performance is the perception of control (Mahmoudi et al.,

2022; Shonhadji & Maulidi, 2022; Suárez et al., 2023; Useche et al., 2021).

On the other hand, one issue that can affect an individual's perception of their influence on what happens around them is childhood trauma (Elliot et al., 2018). Trauma is an emotionally disturbing and destructive event or experience that hinders an individual's ability to cope (Denton et al., 2016). Interpersonal trauma may occur in early childhood, referred to as childhood trauma, within the context of interpersonal relationships, including exposure to forms of parental and child care, typically involving long-term anxiety and distress in the form of parental neglect and abuse (Mahmoudi et al., 2022). Child abuse is a widespread international problem with various consequences used to describe all forms of child maltreatment, including neglect (physical and emotional), physical abuse, emotional abuse, sexual abuse, and domestic violence. Physical neglect refers to actions where a child's basic needs are not met, depriving them of essentials like security and nutrition. Emotional neglect refers to actions where a child does not receive adequate emotional care and support from their caregiver. Physical abuse involves intentionally causing injury or physical harm to a child, risking death, injury, loss of body parts, or health. Emotional abuse occurs when a child is made to feel worthless, flawed, unloved, unwanted, and endangered. Child sexual abuse involves sexual relations between a child and an adult or two children, where one is significantly older or uses force and coercion (Cabanis et al., 2021).

Childhood trauma has detrimental impacts on the developmental, cognitive, emotional, and behavioral aspects of a child, including academic performance, a crucial cognitive aspect during this period, and threatens their mental health into adulthood. Existing studies show that early painful experiences predispose individuals to various psychological damages, including anxiety, stress, and depression, in adulthood (Lazary et al., 2019; Nikkheslat et al., 2020). Childhood trauma affects the locus of control and creates a sense of helplessness, preventing individuals from feeling in control of themselves, their lives, and emotions, which can affect various aspects of their lives, including academic performance (Elliot et al., 2018; Fuchs et al., 2021).

Early problems and damages can profoundly impact children's emotional growth, emotional issues, behavior, and mental health outcomes (Musshafen, 2018; Nikkheslat et al., 2020). One of the most critical issues in this context is children's deviant behaviors. Deviant behaviors are common

and disabling disorders that pose problems and challenges for students, adolescents, school authorities, teachers, and families (Abolghasem, 2016). Students with deviant behaviors display behaviors contrary to social norms compared to their peer group, which hinders their academic performance (Ali Asghar & Robabbeh, 2016). The spread of deviant behaviors in society and its deepening among different groups, especially students, become secondary values in society and gradually undermine the dominant values and norms. The increasing prevalence of deviant behaviors among students results in the wastage of society's creative and productive potential and has very undesirable consequences that are costly to address (Kerig, 2019; Kondo et al., 2021).

Although exposure to childhood traumas is associated with increased mental and physical problems and reduced mental health, not all individuals exposed to childhood traumas, even with severe and prolonged adverse experiences, develop these problems. Indeed, research by Malhi et al. (2019) shows that up to two-thirds (65.7%) of individuals exposed to a stressful childhood event exhibit "resilience" - demonstrating no significant harm (Malhi et al., 2019). Research on resilience has been a primary topic in the developmental psychopathology of children and adolescents, focusing on why some children and adolescents maintain positive adaptation despite experiencing stressful life conditions and social conditions such as violence, poverty, stress, trauma, deprivation, oppression, and substance use (Lee et al., 2012). Resilience refers to individuals' ability to access psychological, social, cultural, and physical resources that maintain their mental health and their capacity to negotiate access to these resources meaningfully (Sanders et al., 2017). Lee et al. (2019) consider resilience as a process (or capacity) for successful adaptation despite challenging and threatening conditions. In the context of risk, resilience has been conceptualized in various ways, including predicted pathways for healthy functioning over time, resource utilization to overcome problems and maintain mental health, or the existence of a dynamic system for successful adaptation to a situation (Penterbrick et al., 2018), determined by external (environmental) and intrinsic (genes and personality) factors and the interaction between environment and genetics (Malhi et al., 2019), and defined by various factors, including personality, biology and psychological characteristics, relationships with family and peers, and environmental influences (Dray, 2021). The most crucial environmental factor considered a prerequisite for resilience

development is the amount of hardship an individual faces. In such a context, resilience is considered positive adaptation; thus, resilience is recognized as a complex, multifactorial structure with psychosocial underpinnings that manifest in emotional, cognitive, behavioral, social, and psychological functioning (Malhi et al., 2019). Moreover, resilience requires individuals to find resources that enhance their health while emphasizing that providing these resources is the responsibility of families, communities, and governments. In this case, resilience means successfully guiding an individual towards resources and negotiating for them in meaningful ways (Ungar, 2018).

Therefore, considering the above, the present study aimed to fit the proposed model of the causal relationship between childhood traumas, deviant behaviors, and academic performance with the mediation of resilience in students.

2. Methods and Materials

2.1. Study Design and Participants

This correlational study employed structural equation modeling (SEM) or causal modeling for model fitting. The statistical population included all male and female high school students in the 22 districts of Tehran during the 2023-2024 academic year. According to inquiries from education authorities, the population size was approximately 200,000, and the sample size, considering Morgan's table, was 350. Given the extensive population, multistage cluster sampling was conducted, selecting several districts (five districts from the north, south, east, west, and center of Tehran), several high schools from each district, and several classes from each high school. Finally, 370 students were randomly selected, questionnaires were distributed among them, and then collected. Participants were assured that all information was confidential and they had the right to decline participation. Entry criteria included being a high school student, being single, and aged 12 to 16. Exclusion criteria included unwillingness to participate and incomplete questionnaire responses. Brief information about the research topic and objectives was provided to the participants. Students were informed that all information would be used for research purposes, and mentioning their names in the questionnaires was unnecessary.

A letter will be obtained from the Faculty of Educational Sciences and Psychology, the university, to the Tehran Education Organization to conduct the research. Permission to administer the questionnaires will be obtained from the relevant organization for five districts, and a list of boys' and

girls' high schools will be provided to the researcher. Several high schools and classes from various grades will be selected from each district. After selecting the schools, and coordinating with the school principals, the questionnaires will be administered to the students. A helper will be chosen to assist the researcher in implementing the study, and the necessary explanations and training on how to conduct the research and interact with the students will be provided by the researcher. The tools were administered to a sample of 370 participants. The participants were tested in groups, and after explaining the purpose to the students, they were asked to read and carefully answer all items in the questionnaires. There was no time limit for completing the questionnaires. During the sampling stage, the researcher closely monitored the students' completion of the questionnaires, providing needed explanations both orally through the research assistant and in writing by attaching instructions to the questionnaires. These explanations included information about the voluntary nature of participation, the confidentiality of students' personal information, the importance of participating in the research, and brief information about the research topic. Additionally, they were asked to respond honestly and attentively. The research assistant encouraged students who seemed hurried or uninterested in answering or excluded their questionnaires from the analysis.

2.2. Measures

2.2.1. Childhood Trauma

This questionnaire, developed by Bernstein et al. (2003), measures childhood traumas and damages. It is a screening tool to identify individuals with experiences of childhood abuse and neglect, usable for both adults and adolescents. The questionnaire assesses five types of childhood maltreatment: sexual abuse, physical abuse, emotional abuse, and emotional and physical neglect. It contains 28 questions, with 25 for assessing the main components and 3 for detecting individuals who deny their childhood problems. Higher scores indicate more trauma or damage, and lower scores indicate less. The score range for each subscale is 5 to 25, and for the entire questionnaire, it is 25 to 125. In Bernstein et al.'s (2003) study, Cronbach's alpha coefficients for the subscales on a group of adolescents were 0.87 for emotional abuse, 0.86 for physical abuse, 0.95 for sexual abuse, 0.89 for emotional neglect, and 0.78 for physical neglect. Concurrent validity with therapists' ratings of childhood traumas was reported to range from 0.59 to 0.78

(Bernstein et al., 2003). In Iran, Ebrahimi, Dezhkam, and Taghva-Alsalam reported Cronbach's alpha coefficients ranging from 0.81 to 0.98 for the five components (Nikkheslat et al., 2020).

2.2.2. Deviant Behavior

This self-report tool, developed by Eyberg and Ross in 1978, consists of 36 items designed to measure common disruptive and problematic behaviors in children and adolescents aged 2 to 16 on two scales: intensity and problem. It is rated by parents on a 7-point Likert scale from "never" to "always." Problematic behaviors are also determined by rating each item as "yes" or "no." The intensity scale score ranges from 36 to 252, and the problem scale score ranges from 0 to 36. Higher scores indicate more severe and frequent problem behaviors. The tool takes about 20 minutes to administer and score. In Connors et al.'s (2007) study, Cronbach's alpha was 0.95 for the intensity scale and 0.91 for the problem scale, with acceptable criterion validity. In an Iranian sample of 200, Cronbach's alpha was 0.93 for the intensity scale and 0.92 for the problem scale. Validity was confirmed by five psychology professors. Reliability in Haji Seyed Rezaie et al.'s (2012) study was 0.74 for the intensity scale and 0.58 for the problem scale, significant at the 0.01 level. Test-retest reliability ranged from 0.88 to 0.86; inter-rater reliability from 0.86 to 0.79; and Cronbach's alpha was 0.95 (Ali Asghar & Robabbeh, 2016).

2.2.3. Resilience

Developed by Liebenberg et al. in 2012, this scale measures individual, relational, and contextual resilience resources in children and adolescents. It has 28 items, with respondents rating their agreement on a Likert scale from 1 (not at all) to 5 (very much). The minimum score is 28, and the maximum is 140, with higher scores indicating greater resilience. It has three subscales: individual capacities/resources, relationships with primary caregivers, and contextual factors facilitating a sense of belonging (Resilience Research Centre, 2018). Split-half reliability coefficients ranged from 0.71 to 0.85. Concurrent validity with the Personal Support Inventory was positive and significant. In Nahang, Najafi, and Mohammadi's (2020) study, Cronbach's alpha was 0.82 (Nahang et al., 2020).

2.3. *Data analysis*

Descriptive data was analysed using SPSS version 24, and the proposed model was evaluated using AMOS version 24.

Table 1

Descriptive Findings of the Research Subscales

Scale	Mean	Standard Deviation	Skewness	Kurtosis
Sexual Abuse	13.18	4.81	0.45	-1.17
Emotional Abuse	13.48	4.62	0.40	-1.13
Physical Abuse	13.24	4.88	0.50	-1.13
Emotional Neglect	13.72	5.15	0.34	-1.37
Physical Neglect	10.51	3.81	1.69	1.17
Individual Resources	53.05	9.64	-0.73	0.00
Relationships with Primary Caregivers	51.01	11.21	-0.10	-0.94
Contextual Factors	49.83	10.23	-0.17	-0.67
Deviant Behaviors	147.44	19.71	-0.40	0.33
Academic Performance	15.33	3.93	-0.44	-0.84

The results in Table 1 show that among the dimensions of childhood trauma, the highest mean is related to emotional abuse. In some subscales, missing data occurred. Therefore, to address this issue, the method of median substitution was used to replace missing values, and all missing data were substituted. In this research, after converting the scores to standard scores, values of ± 2.58 were used to identify outliers. After identifying outliers, the outlier values for each variable were replaced with the mean of that variable. Based

3. Findings and Results

The highest frequency is for students aged 17 (45.43%). Most of the sample group consists of female students (59.14%). Descriptive findings of the research variables are presented in Table 1.

on the data in Table 1, it is clear that the skewness and kurtosis indices of none of the indicators fall outside the range of (-3, 3), and therefore they can be considered normal or approximately normal. As indicated, all numbers show the absence of severe multicollinearity effects between the predictor variables. The results related to the model implementation in the standardized state, along with some of the most important fit indices of the initial model, are presented in Table 2.

Table 2

Model Fit Indices

Fit Indices	Value	Permissible Limit
(χ^2)/df	2.10	Less than 3
RMSEA (Root Mean Square Error of Approximation)	0.05	Less than 0.10
CFI (Comparative Fit Index)	0.94	Above 0.90
NFI (Normed Fit Index)	0.91	Above 0.90
GFI (Goodness of Fit Index)	0.96	Above 0.90
AGFI (Adjusted Goodness of Fit Index)	0.94	Above 0.90

Overall, when working with AMOS software, none of the obtained indices alone justify the model fit or misfit. These indices should be interpreted together. The obtained values

for these indices indicate that, overall, the model has a good fit for explaining and fitting the data. The following presents the indices of the measurement model.

Table 3

Coefficients and Significance of the Direct Effect of Childhood Trauma on Resilience

Criterion Variable	Predictor Variable	Type of Effect	Standardized β	Significance Statistic	sig
Resilience	Childhood Traumas	Direct	-0.61	-6.38	0.001
Deviant Behaviors	Childhood Traumas	Direct	0.38	4.27	0.001
Academic Performance	Childhood Traumas	Direct	-0.28	-2.68	0.008
Deviant Behaviors	Resilience	Direct	-0.47	-4.96	0.001

Academic Performance	Childhood Traumas	Indirect (Resilience)	0.12	1.84	0.061
Deviant Behaviors	Childhood Traumas	Indirect (Resilience)	0.29	3.94	0.001

The results in Table 3 indicate that childhood traumas have a direct effect on resilience, with the relationship between childhood traumas and resilience being directly equal to ($t = -6.38, \beta = -0.61$). Therefore, the hypothesis regarding the direct effect of childhood traumas on students' resilience is confirmed with 99% confidence. Childhood traumas have a direct effect on deviant behaviors, with the relationship between childhood traumas and deviant behaviors being directly equal to ($t = 4.27, \beta = 0.38$). Therefore, the hypothesis regarding the direct effect of childhood traumas on students' deviant behaviors is confirmed with 99% confidence. To examine the mediating effect of resilience in the relationship between childhood traumas and deviant behaviors, the Sobel test was used. The Sobel test (1982) is a method used to assess the significance of the mediating variable's effect by directly measuring the significance of β relative to the standard normal distribution Z using the standard error of the mediating variable. This involves dividing the product of the two unstandardized coefficients forming the mediating variable paths by the standard error of this product and comparing the resulting ratio with the standard normal distribution table; if the resulting ratio is greater than 1.96, it is concluded that the mediating variable's effect is significant.

Childhood traumas have a direct effect on academic performance, with the relationship between childhood traumas and academic performance being directly equal to ($t = -2.68, \beta = -0.28$). Therefore, the hypothesis regarding the direct effect of childhood traumas on students' academic performance is confirmed with 99% confidence. To examine the mediating effect of resilience in the relationship between childhood traumas and academic performance, the Sobel test was used. The results in Table 3 indicate that the hypothesis regarding the indirect effect of childhood traumas on students' academic performance through resilience is rejected with 95% confidence ($p > 0.05$). Resilience has a direct effect on deviant behaviors, with the relationship between resilience and deviant behaviors being directly equal to ($t = -4.96, \beta = -0.47$). Therefore, the direct effect of resilience on students' deviant behaviors is confirmed with 99% confidence.

4. Discussion and Conclusion

The present study aimed to determine the fit of the structural model of the causal relationship between childhood traumas, deviant behaviors, and academic

performance with the mediation of resilience in students. The obtained results indicated that the values for the indices under study show that overall, the model has a good fit for explanation and prediction. The results are consistent with the findings of prior researchers (Shareinia et al., 2019; Zhao et al., 2022).

In explaining the relationship between childhood traumas and deviant behaviors, it can be said that according to Perry et al. (1995), severe mistreatment and other painful experiences can lead to abnormal brain development in childhood and changes in brain function in adulthood. Perry has shown that when boys who have been mistreated are asked to describe their experiences, their autonomic nervous system function increases. Conversely, girls who have been mistreated often show the opposite reaction when describing their experiences, with a decrease in their autonomic nervous system function. Therefore, they display deviant behaviors when placed in these situations (Schaffer, 2023).

Regarding the relationship between childhood traumas and academic performance, it can be said that adversities and traumatic events in childhood are divided into physical abuse, sexual abuse, neglect, and psychological abuse. Emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect are significant examples of early childhood adversities (Schulze et al., 2019). Individuals who have experienced mistreatment in early life have more mental health problems and face difficulties in various academic, occupational, and familial domains (Cabanis et al., 2021; Elliot et al., 2018; Fuchs et al., 2021).

The results confirmed the direct effect of childhood traumas on students' resilience. The findings are consistent with those of prior (Owusu-Ansah et al., 2012; Ungar, 2018).

In explaining the findings, it can be said that trauma teaches individuals to defend themselves and suppress their feelings and anger instead of confronting it; however, over time, all these feelings start to emerge. Some individuals may think they are avoiding negativity, but in reality, they are only harming themselves in the long run. If a child is neglected or left alone by parents or caregivers, they may hide their fear and anger, hoping that no one will neglect or abandon them again (Kim et al., 2022). Another explanation is that when a person becomes a victim, it becomes part of their identity and gets ingrained in their mind. Unfortunately, accepting this identity affects all aspects of the individual's life and prevents them from moving forward. Self-talk can determine whether a person feels strong or weak. Negative

self-talk makes them feel they have no control over their life (Raposo et al., 2014), which can explain the negative relationship between childhood traumas and resilience. If developmental trauma remains unresolved, individuals will find their identity in being a survivor, leading to repeated harm and deprivation of growth-oriented experiences in their relationships with others. They become highly identified with the "wounded self." Those suffering from developmental trauma withdraw from their surroundings early in life and become disconnected from themselves during childhood, adolescence, and early adulthood, only realizing it when there is no other choice (Kerig, 2019).

Another reason is that individuals with flexible thinking use alternative explanations, positively reconstruct their mental framework, and accept challenging situations or stressful events (Forkus et al., 2020). Therefore, the negative relationship between resilience and childhood traumas is justified.

The direct effect of childhood traumas on students' deviant behaviors was confirmed. The mediating effect of resilience in the relationship between childhood traumas and deviant behaviors was also confirmed. These results align with those of prior researchers (Owusu-Ansah et al., 2012; Ungar, 2018; Useche et al., 2021; Yang et al., 2019; Zhao et al., 2022).

In explaining the findings, it can be said that childhood abuse can change a child's view of themselves and the world around them. Especially, being a victim during this period can lead to excessive caution, excessive worry about their body, and overestimation of danger in later stages of life, which can predict various anxiety disorders and deviant behaviors. The more a person has experienced sexual and physical abuse in childhood, the more they critically judge parts of their personality they do not like when faced with difficult and painful situations. Instead of supporting themselves in critical situations, they do not treat their shortcomings kindly and speak to themselves in a non-supportive emotional tone, activating their negative schemas (Lazary et al., 2019; Mahmoudi et al., 2022), justifying the direct relationship between childhood traumas and deviant behaviors.

Another explanation is that disrupted attachment suggests that significant people in their lives were not sufficiently available to meet the child's needs, laying the groundwork for developing maladaptive schemas for deviant behaviors (Zhao et al., 2022). It seems that children who have experienced childhood trauma and formed insecure attachment and maladaptive schemas are influenced by the

"angry child" mindset, expressing their anger without considering the consequences. Those with borderline personality disorder act impulsively and without discipline, behaving according to immediate impulses without considering limitations. They also seem to rely heavily on the grandiose mindset, where they desire to be the center of attention, possibly stemming from childhood neglect experiences (Atmaca & Gençöz, 2016). When a traumatized adolescent faces the challenges and changes of adolescence with a negative perception, their resilience to these challenges and changes decreases, leading them to deviant behaviors. Therefore, it is logical that resilience mediates the relationship between childhood traumas and deviant behaviors.

The direct effect of childhood traumas on students' academic performance was confirmed. However, the indirect effect of childhood traumas on academic performance through resilience was rejected. These results are consistent with those of prior researchers (Mahmoudi et al., 2022).

In explaining the findings, it can be said that developmental trauma or psychological damage in early life is a common phenomenon that, if untreated, can result in a problematic adulthood. Those who face negative developmental experiences often isolate themselves and engage less in finding ways to improve in any area (Denton et al., 2016; Elliot et al., 2018). Freud's deferred action theory also explains that a secondary event reactivates the primary trauma, which is repressed in memory (Nikkheslat et al., 2020; Panter-Brick et al., 2018). A secondary event in the life of an affected individual can reactivate their early traumas and awaken unresolved conflicts or issues. Subsequent life events can activate childhood traumas like physical, emotional, and sexual abuse. These traumas indicate a severe deficiency in the attachment relationship between caregiver and child, preventing the normal development of basic capacities like self-efficacy, autonomy, and emotion regulation, leading to psychological disorders such as depression and suicidal thoughts (Spinhoven et al., 2016). This can justify the lack of a relationship because the secondary event did not develop the necessary resilience in these individuals.

The direct effect of resilience on students' deviant behaviors was confirmed. The findings are consistent with those of prior researchers (Elliot et al., 2018; Forkus et al., 2020).

In explaining the findings, it can be said that resilience helps individuals become aware of their characteristics and

abilities and emphasizes goal-setting and planning to achieve their goals, considering all life aspects (Tarantino et al., 2013). It encourages individuals to focus on and strengthen intrapersonal factors to adapt to challenging life situations and reduces their stress (Yang et al., 2019).

Resilient individuals approach stressful events with optimism, assertiveness, and self-confidence, viewing them as controllable. Optimistic attitudes make information processing more effective, leading to active coping strategies and increased ability to handle difficult situations. Therefore, resilience enhances individuals' flexibility, increasing their adaptability to various conditions and reducing deviant behaviors (Slijper et al., 2020). Additionally, resilient individuals can use coping strategies and defense mechanisms effectively, reducing anxiety and maintaining calmness in difficult situations (Mena et al., 2020).

It seems that resilience leads to changes in the belief systems of highly resilient individuals, helping them adapt to life situations, give meaning to their lives, and balance their interaction patterns. Resilience increases protective factors such as positive emotions, self-confidence, and self-leadership, while reducing negative emotions, stress, and depression. Resilient individuals often return to normalcy by creating positive emotions after facing stressors (Greco, 2021). Resilience enables individuals to maintain their sense of humor even in adverse conditions, seek help from others in difficult situations, accept their imperfections, and strive to control their thoughts, feelings, and actions, all of which reduce deviant behaviors (Pittman et al., 2022).

Another explanation is that resilience, as a process, ability, or outcome of successful adaptation despite threatening conditions, does not mean the absence of risk factors but the presence of supportive psychological factors. Supportive psychological factors can refer to functional processes and methods leading to positive outcomes in human lives (Storholm et al., 2019). When individuals face life's risks and challenges, the presence of supportive factors like positive thinking, self-confidence, and negative emotion regulation can reduce the negative effects of life pressures. Resilient individuals generally have an internal locus of control, meaning they can take responsibility for their conditions and issues, have positive self-awareness, and are optimistic about life (Fuchs et al., 2021). Resilient individuals have stronger personalities and better mental and physical health than those intolerant to life's stresses. Resilience, as a psychological ability, helps individuals face

risks, overcome them, and avoid negative outcomes (Raposo et al., 2014).

Additionally, resilient individuals, due to their desire to overcome and control overwhelming conditions, seek to use problem-solving more. When these conditions are controllable, active coping strategies are preferred, reducing psychological stress. In contrast, low resilience leads individuals to avoid problem-solving and use emotion-focused coping strategies due to less confidence in overcoming problems (MacCann et al., 2020). Therefore, the relationship between resilience and deviant behaviors is justified.

5. Limitations & Suggestions

In this study, data collection was done through questionnaires, and responses were evaluated based on self-reporting, depending on the individual's honesty and self-assessment. This method inherently has limitations such as distraction, inaccuracy, judgment errors, and misinterpretation of instructions, which can affect the research results. Undoubtedly, intervening variables such as the influence of subcultures and socioeconomic conditions can impact the current study's results. The sample consisted of high school students in Tehran, limiting the generalizability of the results to other individuals and locations. To enhance future research, it is suggested to use other data collection methods such as interviews and observations. Future research should also consider intervening variables such as subcultures and socioeconomic conditions. Future studies should sample from other social environments. It is recommended to use localized questionnaires in the studied community for future research. The findings of the present study can be used in counseling centers, educational workshops to prevent deviant behaviors, and improve academic performance in adolescents. Counselors, psychologists, and communication media can prevent deviant behaviors in children by educating families and increasing individuals' awareness.

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Declaration

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

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors contributed equally.

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