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Research Paper

Addiction Readiness in Adolescents: Role of Co-dependency, Interpersonal Cognitive Distortions, and Resilience

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ABSTRACT

Objective: The present study examines the mediating role of resilience in the relationship between co-dependency and interpersonal cognitive distortions with addiction readiness in adolescents.

Methods: This research employed a descriptive-correlational design and utilized path analysis. Using a multistage cluster sampling method, 200 male high school students aged 15–18 years from Abadan City, Iran, were selected. Research instruments included the Weed and Butcher addiction readiness scale (1992), Connor-Davidson resilience scale (2003), Hamamci and Büyüköztürk's interpersonal cognitive distortions questionnaire (2004), and Spann and Fischer co-dependency questionnaire (1990).

Results: Path analysis revealed that both co-dependency and interpersonal cognitive distortions had significant positive relationships with addiction readiness. Additionally, resilience demonstrated a significant negative relationship with addiction readiness. Indirect effects analysis showed that resilience significantly mediated the relationship between co-dependency and addiction readiness, but did not mediate the relationship between interpersonal cognitive distortions and addiction readiness.

Conclusion: Co-dependency and interpersonal cognitive distortions may act as risk factors for addiction readiness in adolescents. Moreover, resilience can attenuate the effect of co-dependency on addiction readiness. These results can inform the design of preventive programs aimed at enhancing resilience and addressing maladaptive interpersonal beliefs among adolescents.

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Highlights

- A significant positive relationship was found between co-dependency and addiction readiness.
- A significant positive relationship was observed between interpersonal cognitive distortions and addiction readiness.
- Resilience played a significant mediating role in the relationship between co-dependency and addiction readiness.
- Resilience did not significantly mediate the relationship between interpersonal cognitive distortions and addiction readiness.

Plain Language Summary

Examining addiction readiness in adolescents is crucial as they are at an age vulnerable to psychological pressures, interpersonal difficulties, and risky behaviors. This study investigated whether maladaptive thoughts in social relationships (interpersonal cognitive distortions) and an excessive emotional or psychological reliance on others (co-dependency) increase adolescents' susceptibility to addiction, and whether resilience, that is, the ability to cope with adversity, can mitigate this risk. The results indicated that adolescents with higher levels of co-dependency or interpersonal cognitive distortions exhibited greater addiction readiness. Furthermore, resilience was found to reduce the impact of co-dependency on addiction readiness but did not have a mediating effect on the relationship between interpersonal cognitive distortions and addiction readiness. These findings suggest that enhancing resilience and modifying adolescents' cognitive patterns regarding social relationships may be effective in addiction prevention.

Introduction

Substance dependence disorder is one of the most significant mental health challenges in today's world, affecting the individual and their family and the broader community (Vujanovic et al., 2020). This disorder is characterized by behavioral, cognitive, and physical symptoms, with its most prominent feature being the continued use of substances despite experiencing negative consequences (American Psychiatric Association, 2022). Reports indicate a growing global prevalence of substance abuse (Saboor et al., 2019), with estimates suggesting that between 162 to 324 million people used substances in the past year (Aryan et al., 2020). In Iran, approximately 4 million individuals are regular or occasional substance users (Drug Control Headquarters, 2019), and the mortality rate resulting from drug overdose is on the rise (Zeledona et al., 2020).

One of the key concepts in the field of substance use is addiction readiness, which refers to a psychological predisposition toward substance use. This concept implies that certain individuals are more likely to develop addiction when specific conditions are present (Sohrabi et al., 2019). Addiction Readiness primarily develops during adolescence and young adulthood (Trifilieff et al., 2017), a period marked by biological, cognitive, and social changes (Karami, 2018). Adolescents are particularly vulnerable to the harms associated with addiction compared to other age groups (Mosalman et al., 2020), and studies have shown a decline in their negative attitudes toward substances along with an increase in high-risk behaviors (Arghabaei et al., 2018).

Addiction readiness is influenced by multiple factors whose interaction contributes to the initiation and continuation of substance use. According to the cognitive-behavioral approach, irrational beliefs or cognitive distortions play a significant role in the development and persistence of maladaptive behaviors and psychological disorders (Ellis, 2005). These distortions, especially in the context of interpersonal cognitive distortions, affect how individuals analyze, interpret, and judge events, leading to inaccurate assessments of situations and poor decision-making (Ciccarelli et al., 2017). Such faulty evaluations are among the key reasons individuals may turn to substance use as a way to regulate emotions or escape problems (Chukwuorji et al., 2021).

Since the 1980s, research has focused on interpersonal cognitive distortions related to beliefs about interpersonal relationships (Stackert & Bursich, 2003). Ellis (2003) defined these beliefs as exaggerated, rigid, irrational, and absolute regarding human relationships. Studies have shown that interpersonal cognitive distortions are

associated with negative psychological outcomes, such as anxiety (Yazici-Çelebi & Kaya, 2022), decreased life satisfaction (Şimşek et al., 2021), feelings of loneliness, and problematic internet use (Kuzucu et al., 2020). Additionally, individuals with greater interpersonal cognitive distortions are more susceptible to substance use–related psychological problems than healthy individuals (Zarbakhsh Bahri et al., 2023). In this regard, Ahmadi Tahour and Najafi (2011) emphasized the role of dysfunctional cognitive beliefs as a psychological factor predicting Addiction Readiness. Furthermore, Haji alizadeh et al. (2009) demonstrated that the prevalence of cognitive distortions is higher among substance users than healthy controls.

Another important factor in addiction readiness is co-dependency. Research indicates that social relationships and co-dependency have a significant impact on the tendency toward substance use (Dupree, 2010). Co-dependency refers to a state in which an individual becomes excessively preoccupied with the lives of others, which can lead to maladaptive behaviors (Mendenhall, 1989). Individuals with co-dependency typically neglect their needs due to an excessive focus on the emotions of others and often engage in self-destructive behaviors (Whitfield, 2002). According to findings, co-dependency has a significant relationship with behavioral addiction and can be an influential factor in Addiction Readiness (Diotaiuti et al., 2022). Additionally, co-dependency is associated with psychological problems, low self-esteem (Dear et al., 2005), as well as family stress and substance addiction (Fuller & Warner, 2000).

In contrast to risk factors, resilience is one of the key psychological characteristics that facilitates successful adaptation when facing stress and provides a positive appraisal of stressful events (Gras Pérez et al., 2019; Silk et al., 2007). Resilient individuals can withstand hardships and maintain their bio-psychological balance (Connor & Davidson, 2003), and this characteristic can act as a protective factor against addiction readiness (Mohammadi et al., 2006). Research has shown that both individual and environmental resilience play an effective protective role in reducing the incidence of psychological disorders and other illnesses (Llistosella et al., 2023). Meanwhile, resilience is strongly associated with the mental health of children and adolescents (Mesman et al., 2021) and can predict the psychological well-being of students (Bagheri Sheykhangafshe et al., 2021). Ghanbari Talab and Fooladchang (2015) also found a negative relationship between resilience and Addiction Readiness, indicating its role as a protective factor.

According to global reports, the typical age of onset for substance use is between 16 and 20 years, and this age is gradually decreasing (Eiseman et al., 2019). In Iran as well, addiction remains a serious social challenge, and adolescents, due to their psychological and developmental characteristics, are at greater risk than other age groups for initiating substance use, with many continuing this behavior in subsequent years after initiation (Eyni et al., 2020). Therefore, precise identification of factors influencing Addiction Readiness is a critical focus of psychological research (Sadri Damirchi et al., 2019). Understanding these factors, especially psychological, familial, and social components, is crucial for identifying individuals at risk and designing preventive interventions (Eslamdoost, 2018). Furthermore, awareness of these factors can aid in selecting appropriate treatment methods and providing effective counseling and support services (Oudejans et al., 2019).

Accordingly, simultaneous examination of individual, familial, and social factors within conceptual models featuring mediating roles can provide a deeper understanding of the addiction readiness process. Despite the prominent role of resilience as a protective factor, the mediating role of resilience in the relationship between addiction readiness and variables, such as co-dependency and interpersonal cognitive distortions, has received less attention. This research gap highlights the necessity of designing a predictive model for adolescent addiction readiness with an emphasis on these variables.

Accordingly, the present study examines the relationships between co-dependency, interpersonal cognitive distortions, resilience, and addiction readiness in adolescents. It is hypothesized that co-dependency and interpersonal cognitive distortions are positively related to addiction readiness, while resilience is negatively related. Additionally, the mediating role of resilience in the relationship between Co-dependency and addiction readiness, as well as between interpersonal cognitive distortions and addiction readiness, is also investigated (Figure 1).

Materials and Methods

Type of research and study design

From a purpose perspective, this research is classified as a fundamental (basic) study. Methodologically, it is a descriptive-correlational study conducted to examine the direct and indirect relationships among co-dependency, interpersonal cognitive distortions, resilience, and addiction readiness in adolescents, using structural equation modeling (path analysis).

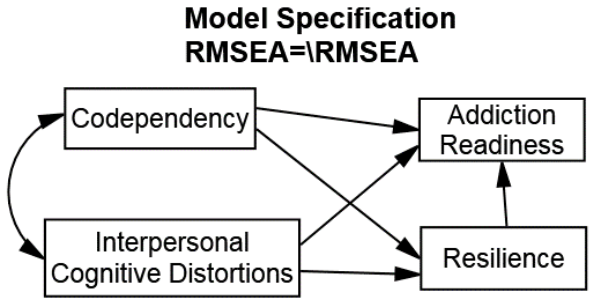

Figure 1. Theoretical model of the study

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Participants and sampling methods

The statistical population of the study consisted of all male high school students (grades 10 to 12) in Abadan City, Iran, during the 2022–2023 academic year. A multistage cluster sampling method was employed. Initially, several high schools were randomly selected, and then multiple classes were chosen from each selected school. In total, 220 students participated in the study. After removing incomplete responses, 200 complete questionnaires were used for the final analysis. The age range of participants was between 15 and 18 years. The inclusion criteria were obtaining informed consent, being enrolled in high school, and having no history of diagnosed psychiatric disorders (based on the school counselor's report). Meanwhile, the exclusion criteria included incomplete questionnaire responses or withdrawal of consent by participants at any stage during data collection.

Study procedure

After obtaining ethical approval from the relevant committee and coordinating with the Abadan County Education Department, the online questionnaire link, designed on the "Porsall" platform, was provided to the counselors of the selected schools. In collaboration with the counselors, the questionnaire link was shared in the official messaging groups of students in grades 10 through 12.

The introduction accompanying the link clearly explained the purpose of the study, the voluntary nature of participation, the confidentiality of the information, and adherence to ethical principles. Additionally, an informed consent form was included at the beginning of the questionnaire, which students were required to read and approve before participating. All data collection procedures were conducted remotely and without in-person contact.

Research instruments

Addiction readiness questionnaire

The addiction readiness questionnaire was developed by Weed and Butcher (1992), and its Persian version was validated by Zargar (2008). This instrument consists of 36 main items and 5 lie-detection items, scored based on a 4-point Likert scale ranging from 0 ("strongly disagree") to 3 ("strongly agree"). scores above 21 indicate a high level of readiness toward substance use.

The construct validity of this scale was established through its correlation with the symptom checklist-25 scale (r=0.44), and its reliability was reported using the Cronbach α coefficient of 0.90 (Zargar, et al., 2008). Moreover, Sohrabi et al. (2019) reported a Cronbach α of 0.94. In the present study, the reliability coefficient calculated by Cronbach α was 0.86.

Resilience questionnaire

The resilience questionnaire was developed by Connor and Davidson (2003), and its Iranian version was standardized by Mohammadi (2006). The questionnaire includes 25 items scored based on a 5-point Likert scale ranging from 0 ("Completely False") to 4 ("Completely True"). The total score of the questionnaire ranges from 0 to 100.

In Mohammadi's study (2006), item-total correlations ranged from 0.41 to 0.64, and the overall Cronbach α coefficient was reported as 0.89. Additionally, Ghanbari Talab and Fooladchang (2015) found the reliability coefficient of this instrument to be 0.74. In the present study, the Cronbach α coefficient was calculated as 0.88, indicating satisfactory reliability of the instrument.

Interpersonal cognitive distortions questionnaire

The interpersonal cognitive distortions questionnaire was developed by Hamamci and Büyüköztürk (2004) and translated into Persian by Bahari (2010). The instrument consists of 19 items scored based on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with total scores ranging from 19 to 95.

In the original study, the construct validity of the tool was confirmed through correlations with the irrational beliefs scale (r=0.45), automatic thoughts questionnaire (r=0.53), and tendency toward interpersonal conflict (r=0.53). In Iran, Esmaeel Poor et al. (2015) confirmed the concurrent validity of the questionnaire using measures of borderline personality traits and immature neurotic defense styles. Bahari (2010) reported the overall reliability of the scale with a Cronbach α coefficient of 0.79. In the present study, the Cronbach α coefficient was calculated at 0.63 for this scale.

Co-dependency questionnaire

This instrument was developed by Spann and Fischer (1990), and its Persian version was validated by Ashraf (2010). The questionnaire consists of 16 items rated based on a 6-point Likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"). two items (items 5 and 7) are scored inversely.

In Ashraf's (2010) study, the construct, convergent, and criterion validity of this instrument were confirmed, demonstrating its ability to distinguish between co-dependent and non-co-dependent groups, as well as between individuals with addicted and non-addicted parents. Additionally, a significant positive correlation with Wilson's co-dependency questionnaire was reported. The Cronbach α coefficient of this instrument was reported as 0.87 in Ashraf's study and 0.79 in Khosravi et al. (2013) for the Iranian population. In the present study, the Cronbach α coefficient was calculated at 0.67.

Data analysis

Before conducting the main analyses, statistical assumptions, including data normality, absence of multicollinearity, and sample size adequacy, were examined and confirmed. Data collection was performed remotely via online questionnaires with the cooperation of school counselors. For data analysis, descriptive statistics, the Pearson correlation coefficients, and structural equation modeling (path analysis) were employed using the AMOS software, version 24. To assess the significance of indirect effects, the bootstrap method with 5000 resamples was applied.

Results

Descriptive analysis of data

This section presents descriptive statistics related to the demographic characteristics (grade level and age) and the main variables of the study.

A total of 200 students participated in the study. Among them, 87 students (43.5%) were in the 10th grade, 54 students (27%) in the 11th grade, and 59 students (29.5%) in the 12th grade. The mean age of the participants was 16.52 years with a standard deviation of 0.90. The age range of the sample was between 15 and 18 years.

The data presented in Table 1 indicate that the distribution of scores for the study variables falls within an acceptable range in terms of skewness and kurtosis indices; therefore, the assumption of data normality is confirmed.

Table 1. Descriptive statistics of the main research variables (n=200)

Variables	1	2	3	4
Interpersonal cognitive distortions	1			
Co-dependency	0.331	1		
Resilience	-0.166*	-0.256	1	
Addiction readiness	0.396	0.470	-0.371	1
Mean±SD	56.597±7.44	54.774±11.453	65.645±16.076	28.557±14.315
Skewness	0.739	0.049	0.152	-0.622
Kurtosis	0.406	-0.193	0.069	0.245

*P<0.05, **P<0.01.

Table 2. Model fit indices of the research model

Fit Indices	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	IFI	CFI
Path model	1.24	1	1.24	0.045	0.995	0.948	0.997	0.997
Acceptable range	Close to 0	-	<3	<0.08	>0.90	>0.80	>0.90	>0.90

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Abbreviations: Df: Degree of freedom; RMSEA: Root mean square error of approximation; GFI: Goodness of fit index; AGFI: Adjusted goodness of fit index; IFI: Incremental fit index; CFI: Comparative fit index.

Based on the results of Pearson's correlation coefficient, a significant relationship was observed between addiction readiness and all three independent variables of the study. Specifically, interpersonal cognitive distortions (r=0.396, P<0.01) and co-dependency (r=0.470, P<0.01) have a positive and significant relationship with addiction readiness, whereas resilience (r=-0.371, P<0.01) shows a significant negative relationship with addiction readiness.

Accordingly, with the increase in co-dependency and interpersonal cognitive distortions, readiness for substance use also increases; meanwhile, higher levels of resilience are associated with a decrease in addiction readiness.

Path analysis and model fit indices

To examine the fit of the model predicting addiction readiness based on co-dependency and interpersonal cognitive distortions with the mediating role of resilience, path analysis was conducted using the Maximum Likelihood Estimation method.

Before performing the path analysis, the following statistical assumptions were assessed: univariate normality was evaluated using skewness and kurtosis indices (Table 1); multivariate normality was confirmed through the standardized Mardia's coefficient with a value of 0.927; the absence of multicollinearity was examined by reviewing the Pearson correlation matrix (Table 1), which indicated no extremely high correlations among the predictor variables. Table 2 presents the model fit indices.

As shown in Table 2, all model fit indices are within acceptable ranges. These results indicate a good fit of the proposed model to the research data.

The standardized path coefficients are presented in Figure 2, which illustrates the direct and indirect relationships among the variables.

Analysis of direct effects in the path model

Table 3 presents the standardized and unstandardized coefficients of the direct paths between the study variables along with their statistical significance.

The results of Table 3 indicate that all direct paths in the model, except for the path between interpersonal cognitive distortions and resilience, are statistically significant. Specifically, co-dependency has a positive and significant effect on addiction readiness; resilience plays a significant negative role in reducing addiction readiness; interpersonal cognitive distortions have a direct and positive impact on addiction readiness; however, their effect on resilience was not significant. Additionally, the model was able to explain 36% of the variance in addiction readiness through the variables included.

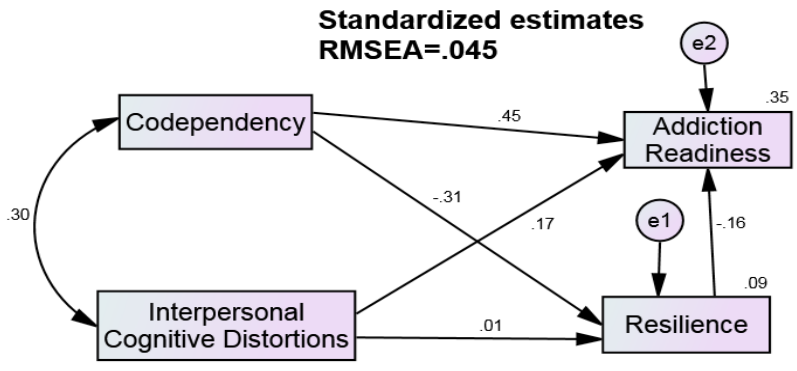

Figure 2. Path analysis model of addiction readiness (standardized coefficients)

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Table 3. Standardized and unstandardized path coefficients with significance

From Predictor Variables	To Criterion Variables	Standardized Coefficient (β)	Unstandardized Coefficient (b)	Standard Error	Critical Ratio	P	R^2	Result
Co-dependency	Resilience	-0.31	-0.442	0.13	-3.93	0.001	0.09	Supported
Interpersonal cognitive distortions	Resilience	0.01	0.032	0.195	0.165	0.869		Not supported
Resilience	Addiction readiness	-0.16	-0.143	0.067	-2.42	0.032	0.36	Supported
Interpersonal cognitive distortions	Addiction readiness	0.17	0.325	0.144	2.52	0.024		Supported
Co-dependency	Addiction readiness	0.45	0.563	0.101	5.77	0.001		Supported

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Analysis of indirect effects (mediation)

To examine the mediating role of resilience in the relationship between co-dependency and interpersonal cognitive distortions with addiction readiness, the bootstrap method with 5000 resamples was used. The results of the bootstrap test are presented in Table 4.

According to Table 4, the indirect effect of co-dependency on addiction readiness through resilience is significant (P=0.018), as the 95% confidence interval for this effect does not include zero. Therefore, resilience plays a significant mediating role in the relationship between co-dependency and addiction readiness. In contrast, the indirect effect of interpersonal cognitive distortions on addiction readiness through resilience is not significant (P=0.725), since the confidence interval includes zero. Hence, resilience does not mediate this relationship.

Discussion

The present study examined the mediating role of resilience in the relationship between co-dependency and interpersonal cognitive distortions with addiction readiness in adolescents. The results of the path analysis supported the study hypotheses, except for the mediating role of resilience in the relationship between Interpersonal cognitive distortions and addiction readiness.

Firstly, the findings indicated a significant positive relationship between co-dependency and addiction readiness. This result aligns with the findings of Karapet (2024), Salonia et al. (2021), and Bortolon et al. (2016), who introduced co-dependency as a maladaptive pattern in interpersonal relationships, which can pave the way for self-harming behaviors, including addiction readiness. From a theoretical perspective, Cermak (1986) posits that co-dependency stems from a lack of differentiation of the "self" in interpersonal relationships, and a co-dependent individual may engage in risky behaviors, such as substance use, to gain a sense of worth, acceptance, or approval from others. The present study's findings also demonstrate that adolescents with co-dependency, due to excessive emotional reliance on others, are at greater risk of engaging in risky behaviors.

Secondly, a significant positive relationship between interpersonal cognitive distortions and addiction readiness was also confirmed. This finding aligns with the results of studies by Zarbakhsh Bahri et al. (2023), Su Topbaş et al. (2024), and Ahmadi Tahour and Najafi (2011). Interpersonal cognitive distortions, especially in adolescents with weaker communication skills and emo-

Table 4. Standardized indirect effects of co-dependency and interpersonal cognitive distortions on addiction readiness through resilience

Predictor Variables	Mediated	Criterion Variables	Indirect Effect	95% CI		P*
				Lower	Upper	
Co-dependency	Resilience	Addiction readiness	0.05	0.014	0.108	0.018
Interpersonal cognitive distortions	Resilience	Addiction readiness	-0.002	-0.035	0.029	0.725

*Significance

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tional regulation, can lead to misinterpretations of others' intentions or behaviors, feelings of rejection, social isolation, and increased psychological distress, conditions that may drive the individual toward maladaptive strategies such as substance use.

Thirdly, the findings indicated a significant negative relationship between resilience and addiction readiness. This result is consistent with research by Boron et al. (2023), Qutb and Abedi (2024), and Vinayak and Judge (2018), who introduced resilience as a protective factor against various psychological harms and risky behaviors, including addiction. Adolescents with higher levels of resilience have a greater ability to regulate negative emotions, resist peer pressure, and cope adaptively with life challenges; consequently, their likelihood of engaging in substance use decreases.

Overall, the results of the present study indicate that co-dependency and interpersonal cognitive distortions are factors that increase addiction readiness in adolescents. In contrast, having a high level of resilience can play a protective role and mitigate the negative effects of these variables. Next, the mediating role of resilience in these relationships is examined.

Examining the mediating role of resilience

The results showed that resilience has a significant mediating role in the relationship between co-dependency and addiction readiness. This finding is consistent with the study by Kaya et al. (2024), which demonstrated that resilience can reduce the negative effects of dependent and maladaptive relationships. In other words, co-dependent adolescents who possess a high level of resilience, despite having maladaptive emotional dependencies, are less likely to engage in high-risk behaviors, such as substance use. In such cases, resilience acts as an internal and supportive resource, protecting the individual against the negative consequences of co-dependency.

However, contrary to expectations, the mediating role of resilience in the relationship between interpersonal cognitive distortions and addiction readiness was not confirmed. This finding can be explained by the deep, persistent, and ingrained nature of cognitive distortions. These distortions typically develop in early life within the family context, upbringing, and initial relationships, gradually becoming part of the individual's cognitive structure. Therefore, changing them requires specialized and targeted cognitive interventions. Even with a high level of resilience, an individual may still be entangled in misinterpretations, perceived threats, or feelings of rejection in interpersonal relationships, factors that can weaken or neutralize the protective effect of resilience.

Overall, the findings of this study suggest that focusing on cognitive, emotional components, such as co-dependency and resilience, can be effective in preventing addiction readiness in adolescents. However, when dealing with interpersonal cognitive distortions, merely strengthening resilience is insufficient, and the use of more structured cognitive–behavioral interventions such as cognitive behavioral therapy or schema therapy appears necessary to fundamentally modify these maladaptive patterns.

Conclusion

To identify the underlying factors contributing to behavioral disorders, a precise examination of the proximal and influential components affecting these behaviors is of special importance. One such component is psychological resilience, defined as an individual's ability to cope with challenges and adapt to difficult and stressful conditions. Resilience is a flexible and dynamic trait shaped by the interaction between individual and environmental factors. Among environmental factors, emotional and interpersonal relationships play a prominent role, especially during adolescence, when the individual is seeking to define social identity and gain acceptance within peer groups.

In this context, co-dependency, as a form of maladaptive emotional attachment to others, can steer adolescents toward high-risk behaviors, such as substance use, particularly when these behaviors are performed to gain approval and acceptance from peers. However, the findings of the present study showed that resilience can serve as an effective mediator in this relationship. Adolescents with co-dependency who possess high levels of resilience demonstrate greater resistance to social pressure, make more independent decisions, and consequently show a lower readiness for substance use.

On the other hand, interpersonal cognitive distortions were also identified as important factors influencing addiction readiness in adolescents. These distortions, which include inaccurate and irrational beliefs about others and social relationships, can lead to misinterpretations, feelings of rejection, and ultimately a tendency toward maladaptive coping strategies such as substance use. Although resilience has a protective role against many psychological harms, its effect alone is not sufficient when facing cognitive distortions. This is because

these distortions have deep roots in early life experiences and are not easily modified by protective factors.

Accordingly, the findings of this study suggest that enhancing resilience in adolescents can be an effective strategy for reducing addiction readiness, especially in the context of co-dependency. However, regarding interpersonal cognitive distortions, structured cognitive interventions, such as cognitive-behavioral therapy or schema therapy, are necessary to fundamentally modify these maladaptive patterns.

Overall, this research emphasizes the necessity of simultaneously addressing cognitive, emotional, and interpersonal factors in designing preventive programs and psychological interventions for adolescents. Focusing on resilience and restructuring maladaptive cognitions can lead to a reduction in risky behaviors and promote mental health in this age group.

Study limitations

Like other studies, this research had several limitations that should be considered when interpreting the results. The type of substance or addictive behavior was examined in a general manner without differentiation, which may reduce the precision of the findings. Additionally, the data were collected through self-report measures, which may be subject to biases such as social desirability. Also, important contextual variables such as socioeconomic status, ethnicity, and cultural background were not controlled; therefore, generalizing the results to other groups should be done with caution.

Future research suggestions

Based on the findings and limitations of the study, the following recommendations are made for future research: Conducting similar studies with female adolescent samples and comparing the results by gender to gain a more accurate understanding of differences in factors influencing addiction readiness; examining cognitive and emotional components of addiction readiness separately using more precise and multi-source tools such as self-assessment, observer reports, and parental reports; employing experimental or quasi-experimental designs to evaluate the effects of intervention programs aimed at enhancing resilience and reducing addiction readiness; studying integrative models including family, educational, social, and cultural factors alongside psychological components for a more comprehensive explanation of addiction readiness.

Practical study recommendations

Based on the research findings, the following recommendations are offered to policymakers, psychologists, parents, and educators: designing and implementing school-based programs to strengthen adolescents' resilience to enhance coping skills and emotion regulation; developing cognitive-based therapeutic interventions to identify and modify interpersonal cognitive distortions in vulnerable adolescents; training parents and educational staff to recognize signs of co-dependency and interpersonal cognitive distortions in adolescents and to refer them to psychological specialists at early stages; forming emphasize group and family-centered interventions to reinforce healthy and balanced relationships between adolescents and their social environment, aiming to prevent the development of maladaptive dependency patterns.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Roudehen Branch, Islamic Azad University, Roudehen, Iran (Code: IR.IAU.R.REC.1401.022). Participation in the study was voluntary, confidential, and conducted with informed consent obtained from the students.

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Authors' contributions

All authors contributed equally to the conception and design of the study, data collection and analysis, interpretation of the results, and drafting of the manuscript. Each author approved the final version of the manuscript for submission.

Conflict of interest

The authors declared no conflict of interest.

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