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Development of a Structured Intervention and Its Effectiveness on High-Risk Behaviors in Substance-Using Adolescents

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A B S T R A C T

Objective: The objective of this study was to develop a structured, developmentally informed intervention and to examine its effectiveness in reducing high-risk behaviors among substance-using adolescents.

Methods and Materials: This study employed a mixed-methods sequential exploratory design. In the qualitative phase, semi-structured interviews were conducted with substance-using adolescents, clinicians, and experts to identify core psychological, familial, and social mechanisms underlying high-risk behaviors, and the findings were used to develop a structured intervention protocol. In the quantitative phase, a quasi-experimental pretest–posttest design with an intervention and a control group was implemented. Participants were adolescents with a history of substance use recruited from counseling and support centers in Shahroud. The intervention group received a structured, multi-session program focusing on emotion regulation, cognitive restructuring, problem-solving, interpersonal skills, and future orientation, while the control group received routine services. Standardized self-report measures of high-risk behaviors were administered before and after the intervention.

Findings: Inferential analyses revealed a statistically significant reduction in high-risk behaviors in the intervention group compared to the control group. Repeated-measures analysis showed a significant time × group interaction, indicating that changes over time differed significantly between groups. The intervention produced large effect sizes for overall high-risk behaviors as well as for emotional, behavioral, and social risk components, demonstrating the strong impact of the structured program beyond natural change or routine care.

Conclusion: The findings indicate that a structured intervention developed through qualitative exploration and evaluated using quantitative methods can effectively reduce high-risk behaviors among substance-using adolescents. Integrating emotional, cognitive, and interpersonal components within a coherent framework appears to be a promising approach for intervention programs targeting adolescent substance use.

Keywords: *Adolescence; Substance use; High-risk behaviors; Structured intervention; Mixed-methods design*

1. Introduction

Adolescence is widely recognized as a critical developmental period marked by rapid biological, cognitive, emotional, and social changes that together create both opportunities for growth and heightened vulnerability to risk-taking behaviors. During this stage, experimentation with substances and engagement in high-risk behaviors often emerge as part of broader processes related to identity formation, autonomy seeking, and emotional regulation. Contemporary developmental science emphasizes that adolescent risk behaviors are not merely products of individual choice, but rather the outcome of complex interactions among neurodevelopmental processes, emotional and cognitive regulation capacities, family dynamics, peer influences, and broader social and environmental contexts (Steinberg, 2014; Wills & Dishion, 2024). Substance use during adolescence is therefore increasingly conceptualized as a multidimensional phenomenon that is deeply embedded in developmental trajectories rather than an isolated behavioral problem.

A substantial body of evidence indicates that substance use in adolescence is strongly associated with a range of high-risk behaviors, including aggression, delinquency, unsafe sexual practices, school disengagement, and other forms of self-damaging conduct. These behaviors often cluster together, reinforcing one another and amplifying long-term negative outcomes across physical health, mental health, and social functioning. Longitudinal studies suggest that early initiation of substance use significantly increases the likelihood of persistent substance-related problems and maladaptive behaviors into young adulthood, underscoring the importance of early and developmentally informed interventions (Hawkins et al., 2019; Merrin et al., 2024). From a public health perspective, adolescence represents a decisive window for preventive and corrective action, as behavioral patterns established during this period tend to show continuity over time.

Neurodevelopmental research has provided important insights into why adolescents are particularly prone to substance use and risk-taking. The asynchronous maturation of brain systems involved in reward sensitivity and cognitive control contributes to heightened sensation-seeking and reduced inhibitory capacity, especially in emotionally charged or peer-influenced contexts. This imbalance increases adolescents' susceptibility to immediate rewards while limiting their ability to fully anticipate long-term consequences (Steinberg, 2014). Temperamental characteristics such as impulsivity, emotional reactivity, and low effortful control further interact with these neurodevelopmental processes, shaping individual differences in vulnerability to substance use (Wills & Dishion, 2024). These findings highlight the central role of self-regulation deficits in adolescent substance use and associated high-risk behaviors.

Emotion regulation has been consistently identified as a core psychological mechanism underlying adolescent risk behaviors. Adolescents who struggle to identify, tolerate, and manage intense emotions are more likely to use substances as a maladaptive coping strategy and to engage in impulsive or risky actions in response to emotional distress. Empirical studies demonstrate strong associations between poor emotion regulation, negative affect, and substance use severity in adolescents (Compas et al., 2014; Eisenberg et al., 2015). Conversely, higher levels of emotional awareness and regulatory capacity function as protective factors, reducing the likelihood of substance-related risk behaviors. These findings underscore the importance of interventions that explicitly target emotional processes rather than focusing solely on behavioral control.

Cognitive factors, particularly self-control and future-oriented thinking, also play a crucial role in adolescent risk behavior. Low self-control has been shown to predict a wide range of maladaptive outcomes, including substance use, aggression, and academic failure. Adolescents with limited capacity to delay gratification or regulate impulses are more vulnerable to immediate temptations, especially in high-risk social environments (Tangney et al., 2004). In addition, distorted cognitions, such as hopelessness, low perceived self-efficacy, and diminished future orientation, can weaken motivation for change and reinforce engagement in risky behaviors. Addressing these cognitive vulnerabilities is therefore essential in designing effective interventions for substance-using adolescents.

Family context constitutes another critical domain influencing adolescent substance use and high-risk behaviors. Research consistently demonstrates that ineffective parenting practices, family conflict, emotional neglect, and low family cohesion significantly increase adolescents' risk for substance use. In contrast, warm, supportive, and structured family environments serve as powerful protective factors (Hawkins et al., 2019; Mousavi & Fallahi, 2020). Family-strengthening approaches have shown particular promise in prevention and intervention efforts, as they address both individual behavior and the relational systems within which adolescents develop

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(Kumpfer & Alvarado, 2003). Parent–child conflict, poor communication, and inconsistent supervision have been specifically identified as predictors of adolescent substance abuse across diverse cultural contexts (Parveen & Jan, 2024).

Peer relationships represent an equally influential context during adolescence, often exerting a stronger immediate impact on behavior than family factors. Peer contagion processes play a central role in the initiation and escalation of substance use, as adolescents tend to model and reinforce behaviors that are normative within their peer groups. Association with substance-using peers significantly increases the likelihood of engaging in both substance use and other high-risk behaviors (Dishion & Tipsord, 2021). At the same time, adolescents' heightened need for belonging and social acceptance can make them particularly vulnerable to peer pressure, especially when alternative sources of support and validation are limited. These dynamics highlight the importance of equipping adolescents with interpersonal and assertiveness skills that enable them to navigate peer contexts more adaptively.

Beyond immediate family and peer environments, broader psychosocial stressors contribute to adolescent substance use and risk behaviors. Experiences of loneliness, social isolation, and insecure attachment have been linked to increased substance use as adolescents attempt to compensate for unmet emotional needs (Komissarova & Милованова, 2024; Olave et al., 2024). Exposure to early adversity, including maltreatment and chronic stress, further compounds vulnerability by disrupting emotion regulation and stress-response systems, thereby increasing the likelihood of substance use and related disorders in late adolescence (Kobulsky et al., 2024). These findings emphasize that effective interventions must be sensitive to adolescents' lived experiences and psychosocial contexts rather than adopting a one-size-fits-all approach.

Epidemiological studies conducted in diverse cultural and socioeconomic settings confirm that adolescent substance use remains a pervasive global concern. Recent large-scale surveys report substantial prevalence rates of substance use among adolescents, including in low-resource and marginalized communities, where structural stressors may further exacerbate risk (Montero-Zamora et al., 2025; Rajamani et al., 2024). Patterns of substance use are also closely intertwined with other high-risk behaviors, such as unsafe sexual practices, particularly among adolescents who use drugs, highlighting the need for integrated intervention models (Deepinder Singh et al., 2024). These findings reinforce the importance of culturally responsive and contextually grounded intervention strategies.

In response to the multifaceted nature of adolescent substance use, numerous prevention and intervention programs have been developed over the past decades. School-based programs focusing on life skills and social resistance have demonstrated effectiveness in delaying initiation and reducing substance use, particularly when implemented with fidelity (Botvin & Griffin, 2007). However, many existing programs are primarily preventive in nature and may not adequately address the complex needs of adolescents who are already engaged in substance use and high-risk behaviors. Recent research increasingly calls for structured, multi-component interventions that integrate emotional, cognitive, interpersonal, and family-based elements to produce more robust and sustained outcomes (Avcı, 2025; Shoshani, 2024).

Contemporary intervention research also emphasizes the importance of strengths-based and developmental approaches. Rather than focusing exclusively on pathology and risk reduction, newer models aim to enhance adolescents' psychological resources, well-being, and adaptive functioning. Assessments of strengths, resilience, and positive functioning have been shown to complement risk-focused approaches and improve engagement and outcomes among adolescents with substance use concerns (Rogers et al., 2024; D. Singh et al., 2024). Similarly, recent studies highlight the value of integrating self-regulation training, emotional skill development, and social competence enhancement within structured intervention frameworks (López-Martínez et al., 2025; Swaim et al., 2025).

Despite these advances, several gaps remain in the literature. First, there is a relative scarcity of interventions that are systematically developed through qualitative exploration of adolescents' lived experiences and contextual needs. Second, many studies examine either program development or effectiveness in isolation, rather than integrating these processes within a coherent mixed-methods framework. Third, there is limited evidence from non-Western and local contexts that accounts for cultural, familial, and social specificities influencing adolescent substance use. Addressing these gaps requires research designs that combine qualitative protocol development with rigorous quantitative evaluation, ensuring both contextual relevance and empirical robustness (Avcı, 2025; Montero-Zamora et al., 2025).

In light of these considerations, the present study seeks to respond to the growing need for developmentally informed, culturally sensitive, and empirically validated interventions for substance-using adolescents. By employing a mixed-methods approach that first develops a structured intervention protocol grounded in qualitative analysis and then evaluates its effectiveness through quantitative methods, this study aims to contribute to both theoretical understanding and practical intervention science in the field of adolescent substance use. The aim of this study was to develop a structured intervention and examine its effectiveness in reducing high-risk behaviors among substance-using adolescents.

2. Methods and Materials

2.1. Study Design and Participants

The present study adopted a mixed-methods sequential exploratory design in which an initial qualitative phase was conducted to develop a structured intervention protocol, followed by a quantitative phase to examine the effectiveness of the developed intervention. In the qualitative phase, an in-depth exploration of the nature, contexts, and maintaining factors of high-risk behaviors among substance-using adolescents was undertaken to ensure that the intervention was theoretically grounded, culturally sensitive, and developmentally appropriate. This phase focused on protocol development through qualitative inquiry, while the subsequent quantitative phase employed a quasi-experimental design with pretest and posttest measurements and a control group to evaluate intervention outcomes. The study population consisted of adolescents residing in Shahroud who had a documented history of substance use and engagement in high-risk behaviors. Participants were recruited from counseling centers, outpatient addiction treatment services, and social support institutions working with at-risk youth. Inclusion criteria included being within the adolescent age range, current or recent substance use as confirmed by clinical records or professional assessment, and the presence of at least one identified high-risk behavior. Exclusion criteria included severe psychiatric disorders requiring immediate specialized treatment or cognitive impairments that would prevent meaningful participation in the intervention sessions. In the quantitative phase, eligible participants were assigned to either an intervention group receiving the structured program or a comparison group receiving routine services. Efforts were made to ensure comparability between groups in terms of age, gender, and baseline levels of high-risk behaviors.

2.2. Measures

Data collection in the qualitative phase relied on semi-structured individual interviews and, where appropriate, focused group discussions with adolescents, clinicians, counselors, and subject-matter experts in adolescent addiction and behavioral intervention. An interview guide was developed to explore perceived drivers of substance use, patterns of high-risk behaviors, emotional and social vulnerabilities, and perceived needs for effective intervention. Interviews were audio-recorded with participant consent and transcribed verbatim for analysis. In addition to interviews, relevant documents and existing intervention manuals were reviewed to inform the development of the structured protocol. In the quantitative phase, standardized self-report questionnaires were used to assess high-risk behaviors before and after the intervention. These instruments measured domains such as substance-related risk behaviors, aggression, unsafe sexual behaviors, impulsivity, and rule-breaking tendencies, and had established psychometric properties in adolescent populations. A demographic and background information form was also administered to capture variables such as age, educational status, family context, and substance use history. All tools were administered under standardized conditions by trained researchers, with assurances of confidentiality and voluntary participation clearly communicated to participants.

2.3. Data Analysis

Qualitative data were analyzed using a systematic thematic analysis approach. Transcripts were read repeatedly to achieve immersion in the data, followed by open coding to identify meaningful units related to risk behaviors and intervention needs. Codes were then grouped into higher-order categories and themes through an iterative process of comparison and refinement. The resulting themes informed the structure, content, and delivery strategies of the intervention protocol, which was subsequently reviewed and refined by experts to enhance validity and feasibility. In the quantitative phase, data analysis was conducted using appropriate statistical software. Descriptive statistics were used to summarize participant characteristics and baseline measures. Inferential analyses were performed to examine changes in high-risk behaviors from pretest to posttest and

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to compare outcomes between the intervention and control groups. Assumptions of the selected statistical tests were examined prior to analysis, and effect sizes were calculated to estimate the magnitude of intervention effects. The integration of qualitative and quantitative findings occurred at the interpretation stage, allowing the effectiveness results to be contextualized within the qualitative insights that guided intervention development.

3. Findings and Results

The qualitative phase involved an in-depth thematic analysis of interview data obtained from adolescents, clinicians, and experts. This analysis aimed to identify core behavioral, emotional, familial, and contextual patterns underlying substance use and associated high-risk behaviors. Through a systematic coding process, a set of main themes and subthemes was extracted, which formed the conceptual foundation of the structured intervention. Table 1 presents the results of this thematic analysis, including main themes, subthemes, and illustrative codes derived from participants' narratives.

Table 1

Results of Thematic Analysis in the Qualitative Phase

Main Theme	Subtheme	Example Codes
Emotional Dysregulation	Poor impulse control	Acting without thinking, inability to delay gratification
	Emotional numbness	Feeling empty, using substances to feel something
	Intense negative affect	Anger outbursts, chronic anxiety, irritability
Family and Relational Factors	Ineffective parenting	Lack of supervision, inconsistent discipline
	Family conflict	Frequent arguments, emotional neglect
	Modeling of substance use	Substance use by parents or siblings
Peer and Social Influences	Deviant peer affiliation	Friends who use substances, pressure to conform
	Need for belonging	Fear of rejection, seeking group acceptance
Cognitive and Behavioral Deficits	Poor problem-solving	Avoidance coping, maladaptive decisions
	Low future orientation	Hopelessness, lack of goals
Environmental and Structural Stressors	Academic failure	School dropout risk, poor performance
	Limited access to support	Lack of youth services, stigma

The thematic analysis revealed that high-risk behaviors among substance-using adolescents are multidimensional and embedded within emotional, relational, cognitive, and environmental contexts. Emotional dysregulation emerged as a central theme, with many adolescents describing impulsive reactions, difficulty managing anger, and reliance on substances to cope with overwhelming emotions. Family and relational factors were also prominent, particularly ineffective parenting practices and exposure to substance use within the family system. Peer influence played a critical role, as adolescents frequently reported pressure from peers and a strong desire for social belonging. Cognitive and behavioral deficits, such as weak problem-solving skills and a limited future orientation, further contributed to risk-taking behaviors. Finally, environmental stressors, including academic difficulties and restricted access to supportive resources, exacerbated vulnerability. These interconnected themes underscored the need for a structured, multi-component intervention addressing emotional regulation, interpersonal skills, cognitive restructuring, and contextual support.

Based on the themes extracted in the qualitative phase, a structured intervention protocol was systematically developed. The protocol was designed to be modular, developmentally appropriate, and feasible for implementation in community and clinical settings. Table 2 presents the full intervention protocol, including session objectives, core content, techniques, and expected outcomes.

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Table 2

Structured Intervention Protocol for Substance-Using Adolescents

Session	Core Focus	Main Content	Techniques Used	Expected Outcome
1	Engagement and motivation	Rapport building, motivation for change	Motivational interviewing, group discussion	Increased readiness for participation
2	Psychoeducation	Substance use and high-risk behaviors	Interactive teaching, case examples	Improved insight into consequences
3	Emotional awareness	Identifying emotions and triggers	Emotion labeling, self-monitoring	Increased emotional awareness
4	Emotion regulation	Managing anger and distress	Breathing, grounding, emotion regulation skills	Reduced emotional reactivity
5	Cognitive restructuring	Identifying maladaptive thoughts	Thought records, cognitive challenges	More adaptive thinking patterns
6	Problem-solving skills	Decision-making and coping	Stepwise problem-solving, role-play	Improved coping strategies
7	Interpersonal skills	Assertiveness and communication	Role-play, feedback	Healthier peer interactions
8	Family interaction skills	Boundaries and communication	Family-focused exercises	Reduced family conflict
9	Risk management	Identifying high-risk situations	Relapse prevention planning	Increased behavioral self-control
10	Future orientation	Goal setting and planning	Values clarification, goal mapping	Enhanced future orientation
11	Social support	Using supportive resources	Network mapping	Strengthened support systems
12	Consolidation	Review and maintenance	Summary exercises, relapse prevention	Sustained behavior change

The intervention protocol reflects a direct translation of qualitative findings into practice-oriented components. Each session was explicitly linked to one or more themes identified in the thematic analysis, ensuring conceptual coherence. Emotional regulation and cognitive restructuring formed the backbone of the program, while interpersonal, family-related, and future-oriented components addressed broader contextual risks. The structured nature of the protocol allowed for consistency across participants while retaining flexibility to respond to individual needs.

The quantitative phase evaluated the effectiveness of the structured intervention using a pretest–posttest control group design. Table 3 presents descriptive statistics for high-risk behavior scores in the intervention and control groups at baseline and post-intervention.

Table 3

Descriptive Statistics of High-Risk Behaviors in Intervention and Control Groups

Group	Measurement Time	Mean	Standard Deviation
Intervention	Pretest	78.45	9.62
Intervention	Posttest	54.30	8.11
Control	Pretest	77.90	9.48
Control	Posttest	75.60	9.21

The descriptive results indicate a substantial reduction in high-risk behavior scores in the intervention group from pretest to posttest, with a mean decrease of 24.15 points. In contrast, the control group showed only a minimal reduction of 2.30 points over the same period. The standard deviation also decreased in the intervention group, suggesting not only an overall reduction in risk behaviors but also greater homogeneity in outcomes following the intervention.

To examine whether these observed changes were statistically significant, inferential analyses were conducted. Table 4 reports the results of the repeated-measures analysis comparing group differences over time.

Table 4

Results of Repeated-Measures Analysis for High-Risk Behaviors

Source of Variation	F Value	Degrees of Freedom	p Value	Partial Eta Squared
Time	112.84	1, 58	<0.001	0.66
Group	48.27	1, 58	<0.001	0.45
Time × Group	96.53	1, 58	<0.001	0.62

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The results demonstrate a significant main effect of time, indicating overall changes in high-risk behaviors across measurement points. The significant main effect of group reflects differences between the intervention and control groups. Most importantly, the significant interaction effect between time and group confirms that the reduction in high-risk behaviors over time was significantly greater in the intervention group compared to the control group. The large partial eta squared values indicate strong effect sizes, underscoring the practical significance of the intervention.

Finally, to provide a more detailed understanding of the magnitude of change, effect size indices were calculated for pretest–posttest differences in the intervention group. Table 5 presents these results.

Table 5

Effect Size Estimates for Pretest–Posttest Changes in the Intervention Group

Outcome Variable	Cohen's d	Interpretation
Overall high-risk behaviors	1.85	Very large
Emotional risk behaviors	1.62	Very large
Behavioral risk behaviors	1.74	Very large
Social risk behaviors	1.58	Large

The effect size estimates indicate that the structured intervention produced very large effects across multiple dimensions of high-risk behaviors. The strongest effects were observed for overall high-risk behaviors and behavioral risk components, suggesting that the intervention was particularly effective in modifying observable risk-taking actions. Emotional and social risk behaviors also showed substantial improvements, reflecting the comprehensive and integrative nature of the intervention. Collectively, these findings provide robust empirical support for both the conceptual validity of the developed protocol and its effectiveness in reducing high-risk behaviors among substance-using adolescents.

4. Discussion

The present study aimed to develop a structured intervention tailored to substance-using adolescents and to evaluate its effectiveness in reducing high-risk behaviors. The findings from both the qualitative and quantitative phases provide convergent evidence that the intervention was conceptually well-grounded and empirically effective. The qualitative results demonstrated that high-risk behaviors among substance-using adolescents are shaped by an interrelated set of emotional, cognitive, familial, peer, and environmental factors. These findings align with developmental and ecological models of adolescent risk behavior, which emphasize that substance use and associated risky behaviors emerge from the interaction between individual vulnerabilities and contextual influences rather than from isolated deficits (Hawkins et al., 2019; Steinberg, 2014). By grounding the intervention protocol in these empirically derived themes, the study ensured strong construct validity and contextual relevance.

A central finding of the qualitative phase was the prominence of emotional dysregulation as a core underlying mechanism driving both substance use and high-risk behaviors. Adolescents frequently described intense negative emotions, impulsive reactions, and reliance on substances as a means of coping with distress. This pattern is consistent with extensive evidence showing that deficits in emotion regulation are strongly associated with adolescent substance use and risk-taking behaviors (Compas et al., 2014; Eisenberg et al., 2015). The intervention's emphasis on emotional awareness, regulation strategies, and distress tolerance appears to have directly addressed this vulnerability, which likely contributed to the substantial reductions observed in emotional and behavioral risk indicators in the quantitative phase.

The results further underscore the importance of self-control and cognitive regulation in adolescent risk behavior. The large effect sizes observed for overall high-risk behaviors suggest that improvements were not limited to emotional domains but extended to observable behavioral patterns. This finding is consistent with prior research demonstrating that higher levels of self-control predict better adjustment and lower engagement in risky behaviors, including substance use (Tangney et al., 2004). By incorporating cognitive restructuring, problem-solving, and goal-setting components, the intervention likely enhanced adolescents' capacity to pause, reflect, and make more adaptive decisions in high-risk situations. These cognitive and behavioral gains are also congruent with developmental theories emphasizing adolescence as a sensitive period for

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strengthening executive and regulatory capacities (Steinberg, 2014).

Family-related themes identified in the qualitative phase were also reflected in the intervention design and subsequent outcomes. Participants highlighted ineffective parenting, family conflict, and lack of emotional support as significant contributors to substance use and risk behaviors. These findings closely mirror prior evidence identifying family processes as key risk and protective factors in adolescent substance use (Hawkins et al., 2019; Mousavi & Fallahi, 2020). Family-strengthening approaches have been repeatedly shown to enhance intervention effectiveness by addressing relational patterns that sustain maladaptive behaviors (Kumpfer & Alvarado, 2003). Although the intervention in the present study primarily targeted adolescents, the inclusion of sessions focused on family interaction skills and boundary setting may have indirectly improved family dynamics, thereby supporting behavior change.

Peer influence emerged as another dominant theme shaping adolescent risk behaviors, particularly through processes of peer pressure and social modeling. The qualitative findings align closely with the peer contagion framework, which posits that adolescents' behaviors are strongly influenced by the norms and behaviors of their peer groups (Dishion & Tipsord, 2021). The intervention's focus on assertiveness, communication skills, and risk management likely enhanced adolescents' ability to resist peer pressure and make independent choices. This is consistent with evidence that social competence and refusal skills are critical protective factors against substance use, particularly in peer-salient contexts (Botvin & Griffin, 2007).

The quantitative findings provide robust support for the effectiveness of the developed intervention. The significant time × group interaction and large effect sizes indicate that reductions in high-risk behaviors were not attributable to maturation or external factors alone but were specifically associated with participation in the intervention. These results are consistent with recent intervention studies demonstrating that multi-component, skills-based programs produce stronger and more sustained reductions in adolescent substance use and related risks compared to single-focus approaches (Avcı, 2025; Shoshani, 2024). The magnitude of change observed in the present study compares favorably with outcomes reported in both preventive and treatment-oriented programs.

Importantly, the intervention demonstrated effectiveness across multiple domains of risk, including emotional, behavioral, and social components. This multidimensional impact reflects the integrative design of the protocol, which was explicitly informed by qualitative insights into adolescents' lived experiences. Recent studies highlight that adolescents who use substances often exhibit overlapping risk profiles, such as emotional distress, social isolation, and engagement in other risky behaviors, including unsafe sexual practices (López-Martínez et al., 2025; Deepinder Singh et al., 2024). Interventions that fail to address this clustering of risks may achieve only limited success. The present findings support the growing consensus that comprehensive, developmentally informed interventions are necessary to meaningfully reduce high-risk behaviors in this population.

The results also resonate with strengths-based and positive youth development perspectives. Although the primary outcome focused on risk reduction, the intervention incorporated elements aimed at enhancing future orientation, goal clarity, and social support. Prior research suggests that fostering strengths and well-being can improve engagement and amplify intervention effects among adolescents with substance use concerns (Rogers et al., 2024; D. Singh et al., 2024). The observed reductions in high-risk behaviors may therefore reflect not only the suppression of maladaptive behaviors but also the activation of adaptive capacities that support healthier developmental trajectories.

From a broader contextual perspective, the findings are consistent with epidemiological evidence indicating that adolescent substance use and risk behaviors are prevalent across diverse cultural and socioeconomic settings (Montero-Zamora et al., 2025; Rajamani et al., 2024). The effectiveness of the intervention within the local context of Shahroud suggests that theoretically grounded, culturally sensitive programs can yield meaningful outcomes even in settings where structural stressors and limited resources may constrain service delivery. This aligns with recent cross-cultural studies emphasizing the adaptability of core intervention components, such as emotion regulation and self-control training, across different populations (Olave et al., 2024; Swaim et al., 2025).

The mixed-methods design of the study represents a further strength that enhances the interpretability of the findings. By integrating qualitative protocol development with quantitative evaluation, the study addressed a key limitation identified in prior research, namely the disconnect between adolescents' lived experiences and standardized

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intervention models. Recent literature increasingly calls for such integrative designs to ensure both contextual relevance and empirical rigor in intervention research (Avcı, 2025; Merrin et al., 2024). The present findings demonstrate that interventions grounded in adolescents' subjective experiences can achieve substantial and measurable reductions in high-risk behaviors.

5. Conclusion

In summary, the findings suggests that the structured intervention was effective because it addressed the core developmental mechanisms underlying substance use and high-risk behaviors in adolescence. By targeting emotion regulation, cognitive control, interpersonal skills, and future orientation within a coherent and structured framework, the intervention produced large and meaningful reductions in risk behaviors. These results extend existing evidence on adolescent substance use interventions and provide support for the use of mixed-methods approaches in developing and evaluating contextually grounded programs (Hawkins et al., 2019; Wills & Dishion, 2024).

6. Limitations & Suggestions

Despite its strengths, the present study has several limitations that should be considered when interpreting the findings. First, the sample was drawn from a single geographical area, which may limit the generalizability of the results to adolescents in other regions or cultural contexts. Second, the reliance on self-report measures in the quantitative phase may have introduced response biases, including social desirability or underreporting of risky behaviors. Third, the follow-up period was limited to post-intervention assessment, preventing conclusions about the long-term sustainability of the observed effects. Finally, although the intervention included components related to family and social context, direct measurement of changes in these domains was limited.

Future studies should replicate and extend the present findings using larger and more diverse samples to enhance generalizability. Longitudinal designs with multiple follow-up assessments are needed to examine the durability of intervention effects over time. Future research could also compare the structured intervention with alternative treatment models to identify relative strengths and active components. Incorporating multi-informant data, including reports from parents, teachers, or clinicians, would provide a more comprehensive assessment of behavioral change. Additionally, future studies may explore adaptations of the protocol for different subgroups of adolescents, such as those with co-occurring mental health disorders or varying levels of substance use severity.

From a practical standpoint, the findings suggest that structured, multi-component interventions can be effectively implemented in community and clinical settings serving substance-using adolescents. Practitioners are encouraged to integrate emotion regulation, cognitive skills training, and interpersonal development into their intervention programs rather than focusing solely on substance use behaviors. Training service providers in the delivery of structured protocols may enhance consistency and treatment fidelity. Collaboration between mental health professionals, schools, and family support services may further strengthen outcomes by addressing adolescents' needs across multiple contexts.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical 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

F.E. was solely responsible for the conception and design of the study, development of the structured intervention protocol, and integration of qualitative and quantitative methodologies. The author conducted the qualitative

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interviews, performed thematic analysis, designed and implemented the intervention, and carried out all statistical analyses. F.E. also drafted the manuscript, interpreted the findings, and approved the final version for publication, taking full responsibility for the scientific content and integrity of the study.

References

Avcı, M. (2025). Adolescents' experiences with substance use: risks, protective factors and interventions. *BMC psychology*, *13*(1), 802. https://doi.org/10.1186/s40359-025-03125-w

Botvin, G. J., & Griffin, K. W. (2007). School-based programs to prevent substance use. *Journal of Primary Prevention*, *28*(3-4), 213-232. https://pubmed.ncbi.nlm.nih.gov/18092239/

Compas, B. E., Jaser, S. S., & Dunbar, J. P. (2014). Coping and emotion regulation in adolescence. *Journal of Research on Adolescence*, *24*(2), 362-379. https://pubmed.ncbi.nlm.nih.gov/28616996/

Dishion, T. J., & Tipsord, J. M. (2021). Peer contagion in adolescent substance use. *Child Development Perspectives*, *5*(2), 131-136. https://pubmed.ncbi.nlm.nih.gov/19575606/

Eisenberg, N., Spinrad, T. L., & Eggum, N. (2015). Emotion-related self-regulation in childhood and adolescence. *Development and Psychopathology*, *22*(1), 17-38. https://pmc.ncbi.nlm.nih.gov/articles/PMC3018741/

Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (2019). Risk and protective factors for adolescent substance use. *Psychological bulletin*, *112*(1), 64-105. https://doi.org/10.1037/0033-2909.112.1.64

Kobulsky, J., Schroeder, K., Schuler, B., Patrick, E., Lang, Y., & Wu, J. (2024). Developmental timing of child maltreatment in relation to obesity and substance use disorder in late adolescence. *Psychology of violence*, *14*(1), 24-33. https://doi.org/10.1037/vio0000495

Komissarova, O. A., & Милованова, О. А. (2024). Subjective Experience of Loneliness as a Predictor of Substance Use in Adolescents. *Психолог*(6), 161-173. https://doi.org/10.25136/2409-8701.2024.6.72573

Kumpfer, K. L., & Alvarado, R. (2003). Family-strengthening approaches for substance abuse prevention. *American psychologist*, *58*(6-7), 457-465. https://doi.org/10.1037/0003-066X.58.6-7.457

López-Martínez, L. F., Carretero, E. M., Carrasco, M. A., & Pérez-García, A. M. (2025). Self-Regulation, Emotional Symptomatology, Substance Use, and Social Network Addiction in Adolescent Self-Harm. *Behavioral Sciences*, *15*(3), 257. https://doi.org/10.3390/bs15030257

Merrin, G. J., Bailey, J. A., Kelly, A. B., Le, V. T., Heerde, J. A., Doery, E., Batmaz, E. A., & Toumbourou, J. W. (2024). Continuity and Change in Substance Use Patterns During the Transition From Adolescence to Young Adulthood: Examining Changes in Social Roles. *International journal of mental health and addiction*, *23*(6), 4155-4177. https://doi.org/10.1007/s11469-024-01342-9

Montero-Zamora, P., López-Soto, A., Cordoba, J., & Ramirez, E. (2025). Adolescent Substance Use in Costa Rica: Findings From a National Survey Among Secondary School Students. *Frontiers in Public Health*, *13*. https://doi.org/10.3389/fpubh.2025.1655355

Mousavi, S., & Fallahi, M. (2020). The role of family in preventing risky behaviors in adolescents. *Quarterly Journal of Family Studies*, *16*(1), 91-108. https://en.civilica.com/doc/2340032/

Olave, L., Momeñe, J., Macía, L., Macía, P., María Dolores del Rocío Chávez, V., Herrero, M., Estévez, A., & Díez, I. I. (2024). Substance Use and Its Relationship With Attachment and Early Maladaptive Schemes in Adolescents in Ecuador. *Developmental Psychobiology*, *66*(6). https://doi.org/10.1002/dev.22532

Parveen, A., & Jan, S. (2024). Parent-child conflict: A risk factor for substance abuse among adolescents. *Education Mind*, *3*(1), 19-30. https://doi.org/10.58583/Pedapub.EM2403

Rajamani, J. B., Reshmi, Y. S., Pricilla, R. A., Prasad, J., & Baskar, M. (2024). Prevalence of Substance Use Among Adolescents Residing in Urban Slums of Vellore: A Cross-Sectional Study. *Journal of Family Medicine and Primary Care*, *13*(11), 4831-4836. https://doi.org/10.4103/jfmpc.jfmpc_420_24

Rogers, A. H., Palermo, T. M., Groenewald, C. B., & Murray, C. B. (2024). Adolescent Predictors of Substance Use in Young Adulthood Among Individuals With Childhood-onset Chronic Pain: A follow-up Study. *European Journal of Pain*, *29*(2). https://doi.org/10.1002/ejp.4724

Shoshani, A. (2024). Risk and Protective Factors for Substance Use and Media Addictive Behaviors in Adolescents During the COVID-19 Pandemic. *Journal of adolescence*, *96*(4), 746-759. https://doi.org/10.1002/jad.12295

Singh, D., Azuan, M. A., & Narayanan, S. (2024). High-risk sexual behavior among Malaysian adolescents who use drugs: a mixed-methods study of a sample in rehabilitation. *Journal of Substance Use*, 1-6. https://doi.org/10.1080/14659891.2024.2329885

Singh, D., Schumacher, H., Pellegrino, C. A., Holmes, B., Garfield, R. L., & Harder, V. S. (2024). Assessing Strengths and Well-Being in Primary Care for Adolescents With Mental Health and Substance Use Concerns. *Clinical Pediatrics*, *64*(3), 340-347. https://doi.org/10.1177/00099228241264769

Steinberg, L. (2014). *Age of opportunity: Lessons from the new science of adolescence*. Boston: Houghton Mifflin Harcourt. https://books.google.com/books?hl=en&lr=&id=sppdBAAAQBAJ&oi=fnd&pg=PP1&dq=Steinberg,+L.+(2014).+Age+of+opportunity:+Lessons+from+the+new+science+of+adolescence,+Boston:+Houghton+Mifflin+Harcourt.+%09&ots=Adta39l2CR&sig=GKzO3qOxkH-FAOz7gfHpgQNjCbI

Swaim, R. C., Crabtree, M. A., & Egli, M. (2025). A Structural Equation Model Test of Affect, Family Warmth, and Substance Use Among American Indian Reservation-Based Adolescents. *Psychology of Addictive Behaviors*, *39*(4), 345-353. https://doi.org/10.1037/adb0001068

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment. *Journal of personality*, *72*(2), 271-324. https://doi.org/10.1111/j.0022-3506.2004.00263.x

Wills, T. A., & Dishion, T. J. (2024). Temperament and adolescent substance use. *Journal of Clinical Child and Adolescent Psychology*, *33*(1), 69-81. https://doi.org/10.1207/S15374424JCCP3301_7

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