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The Effectiveness of Parent Skills Training on Attitudes Toward Addiction and Sensation Seeking in Male Lower Secondary School Students in Borujerd

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ABSTRACT

Purpose: This study aimed to examine the effectiveness of parent skills training on attitudes toward addiction and sensation seeking among male lower secondary school students in Borujerd.

Methods and Materials: The study employed an applied, quasi-experimental design with a pretest–posttest nonequivalent control group. The statistical population included male students aged 13–15 years enrolled in lower secondary schools in District 1 of Borujerd during the 2019–2020 academic year and their mothers. Following a two-stage screening process based on elevated scores in attitudes toward addiction and sensation seeking, 60 students were selected and randomly assigned to experimental and control groups. The intervention consisted of an eight-session, 90-minute parent skills training program delivered to mothers in the experimental group, grounded in communication- and family-systems principles. The control group received no intervention during the study period. Data were collected at pretest and posttest using standardized self-report measures assessing attitudes toward addiction and sensation seeking. Data were analyzed using analysis of covariance (ANCOVA) to control for baseline differences.

Findings: After controlling for pretest scores, ANCOVA results indicated a significant group effect on positive attitudes toward addiction ($F = 29.11$, $p < .001$, partial $\eta^2 = .34$) and negative attitudes toward addiction ($F = 25.04$, $p < .001$, partial $\eta^2 = .31$), demonstrating meaningful posttest differences between the experimental and control groups. Additionally, a significant group effect was observed for sensation seeking ($F = 35.10$, $p < .001$, partial $\eta^2 = .38$), indicating a substantial reduction in sensation seeking among students whose parents participated in the training program.

Conclusion: Parent skills training was effective in improving adolescents' attitudes toward addiction and reducing sensation seeking, highlighting the critical role of parent-focused interventions in preventing psychological risk factors associated with substance use during early adolescence.

Keywords: Parent skills training; attitudes toward addiction; sensation seeking; adolescents; substance use prevention

1. Introduction

Adolescence represents a critical developmental period characterized by rapid biological, psychological, and social changes that collectively increase vulnerability to risk-taking behaviors, including substance use and experimentation. During this stage, adolescents actively seek autonomy, novelty, and identity, while still relying heavily on family systems—particularly parents—for emotional regulation, value formation, and behavioral guidance. Extensive evidence indicates that early attitudes toward addiction and individual differences in sensation seeking are among the strongest psychological predictors of later substance use and related problem behaviors. Consequently, identifying family-based mechanisms that can modify these attitudes and emotional tendencies has become a central concern in prevention-oriented research and intervention design (Salami et al., 2018; Wang et al., 2013).

Attitudes toward addiction are not merely cognitive appraisals of substances but represent integrated belief systems shaped through family discourse, emotional climates, and modeled behaviors. Adolescents who perceive substance use as less harmful or socially acceptable are more likely to engage in experimentation and progress toward habitual use. Family communication patterns, parental monitoring, and emotional responsiveness play a decisive role in shaping these attitudes, either acting as protective buffers or as risk amplifiers. Research consistently demonstrates that dysfunctional parent-child relationships—marked by conflict, psychological control, or emotional neglect—are associated with more permissive attitudes toward drug use among adolescents (Mahdavi & Mirzavandi, 2020; Zarbagh et al., 2021). Conversely, families characterized by warmth, open communication, and emotional attunement foster more critical and preventive attitudes toward addiction.

Parallel to attitudinal factors, sensation seeking constitutes a dispositional trait that significantly contributes to adolescents' engagement in high-risk behaviors. Sensation seeking reflects the tendency to pursue novel, intense, and stimulating experiences, even when such pursuits involve potential harm. Neurodevelopmental research suggests that during early adolescence, reward sensitivity matures more rapidly than executive control systems, rendering sensation-seeking youth particularly susceptible to risky behaviors such as substance use. Empirical studies have shown that higher levels of sensation

seeking are associated with earlier onset of drug use, greater frequency of use, and increased likelihood of substance-related problems (Honarmand et al., 2008; Wang et al., 2013). Importantly, sensation seeking is not a fixed trait; rather, it is shaped and regulated within relational contexts, especially within the family environment.

Family systems theory emphasizes that parental behaviors, emotional regulation strategies, and communication styles profoundly influence adolescents' emotional development and behavioral self-regulation. Parents who lack effective communication skills or rely on rigid control and punitive strategies often inadvertently intensify adolescents' emotional reactivity and sensation-seeking tendencies. Meta-analytic evidence indicates that parental substance use, psychological dysregulation, and maladaptive parenting practices exert long-lasting negative effects on child and adolescent well-being, including increased vulnerability to risk-taking and substance use (Kuppens et al., 2019; Kuppens et al., 2020). Furthermore, adolescents raised in families with impaired communication patterns often experience role confusion, emotional suppression, or parentification, all of which are linked to heightened emotional dysregulation and maladaptive coping strategies (Tedgård et al., 2019).

Recent studies have increasingly highlighted the mediating role of emotional and self-regulatory processes in the relationship between parenting and adolescent substance-related outcomes. Emotional dysregulation, loneliness, anxiety, and reduced personal control have been identified as psychological pathways through which dysfunctional family interactions translate into higher drug use potential (Mahdavi & Mirzavandi, 2020; Zarbagh et al., 2021). Similarly, emerging research has linked parental psychological control to adolescents' fear of missing out (FoMO) and problematic media use, underscoring the broader impact of parenting styles on adolescents' reward sensitivity and emotional vulnerability (Khan et al., 2025; López-Martínez et al., 2025). These findings collectively suggest that interventions targeting parental behaviors and communication skills may indirectly but powerfully influence adolescents' attitudes toward addiction and sensation-seeking tendencies.

Parent-based preventive interventions have therefore gained increasing empirical and practical attention. Unlike individual-focused adolescent programs, parent-centered approaches aim to modify the relational context in which adolescent behaviors emerge. Evidence from diverse cultural settings demonstrates that parent-based

interventions can effectively reduce adolescents' perceived harm of drug use, improve emotional regulation, and decrease risk-related cognitions and behaviors (Parra-Cardona et al., 2023; Rahbar Karbasdehi et al., 2024). Such interventions are particularly relevant in early adolescence, when parental influence remains substantial despite growing peer involvement (Luk et al., 2017; Soh et al., 2018).

Within this framework, communication skills training grounded in family systems and humanistic theories—such as Satir's communication model—offers a theoretically robust and practically applicable approach. These interventions focus on enhancing active listening, emotional expression, congruent communication, and mutual respect within parent-child relationships. By improving parents' capacity to recognize emotional cues, regulate interactions, and establish consistent yet empathetic boundaries, such programs aim to reduce adolescents' emotional reactivity and reshape maladaptive attitudes toward risk behaviors. Prior studies in Iranian and international contexts have shown that family-centered and mindfulness-based interventions can significantly reduce sensation seeking and distress tolerance deficits among adolescents at risk for substance use (Chaleshtori et al., 2022; Ghorbani & Asadi, 2023).

Despite the growing body of evidence, several gaps remain. First, much of the existing research has focused either on adolescents with substance-using parents or on individual-level psychological interventions, leaving parent skill-based preventive approaches underexplored in general adolescent populations. Second, there is limited empirical work simultaneously examining both attitudinal outcomes (attitudes toward addiction) and emotional-dispositional outcomes (sensation seeking) within a single parent-focused intervention framework. Third, contextualized evidence from mid-sized Iranian cities remains scarce, despite the importance of cultural and regional factors in shaping family dynamics and adolescent risk behaviors (Montero-Zamora et al., 2025; Pirzadeh & Parsakia, 2023; Sârbu et al., 2023).

Addressing these gaps is particularly important in the context of Iranian adolescents, where family structures, parental roles, and cultural norms around communication and authority play a decisive role in developmental trajectories. Previous Iranian studies have documented strong associations between family functioning, parent-child conflict, and adolescents' tendency toward substance use, highlighting the urgent need for culturally adapted, family-centered preventive interventions (Salami et al., 2018; Zarbagh et al., 2021). However, empirical evaluations

of structured parent communication skills training programs and their effects on adolescents' attitudes toward addiction and sensation seeking remain limited.

Therefore, building on family systems theory, developmental psychopathology, and prevention science, the present study seeks to contribute to the literature by experimentally examining the effectiveness of parent skills training on modifying adolescents' attitudes toward addiction and sensation-seeking tendencies. The aim of this study was to determine the effectiveness of parent communication skills training on attitudes toward addiction and sensation seeking among male lower secondary school students in Borujerd.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in purpose and employed a quasi-experimental methodology using a pretest–posttest design with a nonequivalent control group. The statistical population comprised all male students aged 13 to 15 years who were enrolled in the first cycle of secondary education in Educational District 1 of Borujerd during the 2019–2020 academic year, along with their mothers. Eligibility was determined based on predefined inclusion criteria, including age range, residence and schooling within the study area, elevated baseline scores on measures of attitudes toward addiction, sensation seeking, and risky behaviors, voluntary informed consent from both students and mothers, and a minimum educational level equivalent to completion of lower secondary school for mothers. Exclusion criteria included lack of cooperation in parent-child communication skills training, absence from more than two consecutive intervention sessions or follow-up activities, relocation or school transfer during the study period, voluntary withdrawal or revocation of consent, and any ethical violations during participation. Sampling was conducted in two stages. In the first stage, screening questionnaires assessing attitudes toward addiction, sensation seeking, and risky behaviors were administered to eligible students. Based on the screening results, sixty students who obtained higher scores on these measures were selected as the total sample. These participants were then randomly assigned to either an experimental group or a control group, with thirty students in each group. In the second stage, coordination was carried out with the mothers of the selected students. The intervention was delivered exclusively to the mothers of

students in the experimental group, while the control group received no intervention during the study period.

2.2. Measures

Attitudes toward addiction were assessed using a self-report questionnaire developed by Nazari in 2008. This instrument consists of thirty-five items organized into two subscales: positive attitudes toward addiction, comprising sixteen items, and negative attitudes toward addiction, comprising nineteen items. The questionnaire is designed to evaluate individuals' cognitive and attitudinal orientations toward substance use and addiction. Items are scored on a five-point Likert scale. For positively worded items reflecting favorable attitudes toward addiction, response options range from "strongly agree" to "strongly disagree" and are scored from one to five, respectively. For negatively worded items, reverse scoring is applied. Total scores range from 35 to 175, with higher scores indicating a more favorable and permissive attitude toward addiction and substance use. Psychometric evaluation of the instrument demonstrated acceptable properties, with face and content validity confirmed and internal consistency reliability reported using Cronbach's alpha at 0.89, indicating strong internal homogeneity of the scale.

Sensation seeking was measured using the Sensation Seeking Scale developed by Zuckerman in 1971. This questionnaire contains forty items, each consisting of two alternative statements labeled "A" and "B," from which respondents select the option that best reflects their preferences or tendencies. Scoring is conducted using a standardized answer key, with one point assigned for each response that corresponds to the keyed sensation-seeking option. Total scores range from 0 to 40, with higher scores reflecting greater levels of sensation seeking. The resulting score can be interpreted relative to normative means and standard deviations to classify individuals into categories ranging from very low to very high sensation seeking. Reported psychometric indices for the scale include a total item variance of 8.5772, total test variance of 38.93, a mean score of 21.02, and a standard deviation of 6.24. The overall reliability coefficient of the test has been reported as 0.781, with a standard error of measurement of 2.92, supporting its adequacy for research purposes. Factorial analyses have identified a dominant general sensation-seeking factor encompassing the majority of items, alongside subsidiary factors such as experience seeking, adventure seeking, boredom susceptibility, variety seeking, and disinhibition.

Although these subcomponents are distinguishable, they are conceptually nested under the overarching construct of sensation seeking, which defines the scale as a primarily unidimensional measure adapted to cultural contexts.

2.3. Intervention

The intervention consisted of a structured parent communication skills training program grounded in Satir's family systems and communication theory, as adapted by Goldenberg and Goldenberg and later contextualized in Iranian family training frameworks. The program was delivered to mothers in the experimental group across eight weekly sessions, each lasting 90 minutes, in a group-based educational format. The sessions were sequentially designed to enhance parental awareness, skills, and emotional competence in parent-child interactions. Initial sessions focused on establishing a supportive learning environment, clarifying program goals, and introducing foundational concepts of interpersonal communication, including recognition of ineffective interaction patterns and maladaptive child behaviors. Subsequent sessions emphasized the role of communication in family functioning, identification of common communication barriers, and understanding how dysfunctional interaction styles can contribute to emotional dysregulation and risky tendencies in adolescents. Core skills such as active listening without judgment, empathetic responding, and constructive dialogue were systematically taught and practiced. Parents were guided to explore different relational viewpoints, articulate their perspectives respectfully, and adopt effective verbal and nonverbal communication strategies. Later sessions addressed the concept of control in parenting, highlighting the negative impact of inappropriate or excessive control on addictive and sensation-seeking behaviors, and introduced egalitarian communication principles based on a "win-win" relational mindset. Participants were further supported in identifying their habitual roles within dyadic parent-child interactions, recognizing maladaptive roles, and learning strategies to modify these roles toward healthier patterns. The final session involved a comprehensive review and integration of learned skills, reinforcing the role of effective communication in promoting psychological well-being and family health, and culminating in the development of a mutually agreed-upon communication roadmap to guide ongoing parent-child interactions beyond the intervention period.

2.4. Data Analysis

Data analysis was conducted using appropriate statistical software following completion of data collection at pretest and posttest stages. Prior to inferential analyses, data were screened for accuracy, completeness, and compliance with statistical assumptions, including normality and homogeneity of variances. Descriptive statistics were calculated to summarize the demographic characteristics of participants and the distributional properties of the study variables. To evaluate the effectiveness of the parent skills training intervention, inferential analyses were performed comparing pretest and posttest scores between the experimental and control groups. The analytical strategy focused on examining changes in students' attitudes toward addiction and levels of sensation seeking attributable to the intervention delivered to mothers. Statistical significance was determined using conventional alpha levels, and effect sizes were considered to assess the practical magnitude of observed differences.

3. Findings and Results

Table 1 presents the descriptive statistics for attitudes toward addiction and sensation seeking variables in the

experimental and control groups at pretest and posttest. At baseline, the experimental and control groups showed comparable mean scores across all variables, indicating initial equivalence. Following the intervention, the experimental group demonstrated a marked reduction in positive attitudes toward addiction and a substantial decrease in negative attitude scores compared to the control group, whose means remained largely stable across measurement points. Similarly, total sensation seeking and its subcomponents—including experience seeking, adventure seeking, boredom susceptibility, variety seeking, and disinhibition—showed notable posttest reductions in the experimental group, whereas the control group generally exhibited stable or increased mean scores, particularly in overall sensation seeking and experience seeking. Emotional reactivity declined in both groups at posttest, although the magnitude of change was more consistent and pronounced in the experimental group. Overall, the descriptive patterns suggest that parent communication skills training was associated with favorable shifts in adolescents' attitudes toward addiction and reductions in sensation seeking-related tendencies.

Table 1

Descriptive Statistics of Attitudes Toward Addiction and Sensation Seeking Variables in Experimental and Control Groups at Pretest and Posttest

Variable	Phase	Group	n	Mean	SD
Positive Attitude Toward Addiction	Pretest	Control	30	64.40	9.57
		Experimental	30	65.13	9.48
	Posttest	Control	30	64.23	9.67
		Experimental	30	55.10	7.27
Negative Attitude Toward Addiction	Pretest	Control	30	82.93	7.21
		Experimental	30	82.90	7.08
	Posttest	Control	30	82.83	7.18
		Experimental	30	71.33	12.65
Sensation Seeking (Total)	Pretest	Control	30	43.97	7.83
		Experimental	30	41.27	3.50
	Posttest	Control	30	51.74	8.90
		Experimental	30	36.12	10.44
Emotional Reactivity	Pretest	Control	30	21.27	2.57
		Experimental	30	20.73	2.13
	Posttest	Control	30	8.00	1.23
		Experimental	30	8.03	1.25
Experience Seeking	Pretest	Control	30	9.10	5.59
		Experimental	30	6.77	1.70
	Posttest	Control	30	29.87	9.16
		Experimental	30	20.11	10.36
Adventure Seeking	Pretest	Control	30	3.97	0.72
		Experimental	30	3.93	0.83

		Posttest	Control	30	3.87	0.68
Boredom Susceptibility		Posttest	Experimental	30	2.17	1.23
		Pretest	Control	30	4.23	1.10
		Posttest	Experimental	30	4.40	1.04
Variety Seeking		Posttest	Control	30	4.40	0.93
		Pretest	Experimental	30	2.37	1.16
		Posttest	Control	30	3.80	0.76
Disinhibition		Posttest	Experimental	30	3.87	0.78
		Pretest	Control	30	3.90	0.61
		Posttest	Experimental	30	2.23	1.25
		Pretest	Control	30	1.70	0.47
		Posttest	Experimental	30	1.63	0.49
		Posttest	Control	30	1.70	0.47
		Posttest	Experimental	30	1.21	0.57

Prior to conducting the inferential analyses, the underlying statistical assumptions were carefully examined to ensure the appropriateness and validity of the analytical procedures. The distribution of scores for all study variables at pretest and posttest was evaluated, and indices of skewness and kurtosis, together with visual inspection of histograms, indicated acceptable approximation to normality. The assumption of homogeneity of variances across the experimental and control groups was assessed and found to be satisfied, supporting the comparability of group variances at each measurement point. Independence of

observations was ensured through the study design, as each participant contributed data independently and group assignment was conducted without overlap. In addition, the absence of extreme outliers was confirmed through preliminary data screening, and the linearity of relationships between covariates and dependent variables was verified where applicable. Collectively, these diagnostic checks indicated that the data met the required assumptions for subsequent parametric analyses, allowing the results to be interpreted with confidence.

Table 2

Summary of Analysis of Covariance (ANCOVA) for the Effects of Parent Skills Training on Attitudes Toward Addiction and Sensation Seeking

Dependent Variable	Source of Variation	Sum of Squares	df	Mean Square	F	p	Partial η^2
Positive Attitude Toward Addiction	Pretest (Covariate)	1578.054	1	1578.054	33.739	.001	.372
	Group	1361.628	1	1361.628	29.112	.001	.338
	Error	2666.013	57	46.772			
Negative Attitude Toward Addiction	Pretest (Covariate)	1639.169	1	1639.169	20.783	.001	.267
	Group	1975.194	1	1975.194	25.043	.001	.305
	Error	4495.665	57	78.871			
Sensation Seeking	Pretest (Covariate)	27.974	1	27.974	0.294	.590	.005
	Group	3342.891	1	3342.891	35.095	.001	.381
	Error	5429.378	57	95.252			

Table 2 presents the results of the analysis of covariance examining the effect of parent skills training on students' attitudes toward addiction and sensation seeking while controlling for pretest scores. For positive attitudes toward addiction, the covariate effect of pretest scores was statistically significant, indicating a strong association between baseline and posttest levels, and a significant group effect was observed, demonstrating that the experimental and control groups differed meaningfully at posttest after adjusting for initial scores. A similar pattern emerged for negative attitudes toward addiction, where both the pretest covariate and group membership exerted significant effects,

with moderate to large effect sizes, suggesting that parent skills training contributed substantially to changes in adolescents' attitudinal orientations toward addiction. In contrast, for sensation seeking, the pretest covariate did not reach statistical significance, indicating limited predictive influence of baseline sensation seeking on posttest outcomes; however, the group effect was statistically significant and associated with a large effect size, reflecting a robust impact of the intervention on reducing sensation seeking among students in the experimental group. Overall, the ANCOVA results indicate that parent skills training had a significant and practically meaningful effect on both

attitudes toward addiction and sensation seeking after controlling for pre-intervention differences.

4. Discussion and Conclusion

The present study examined the effectiveness of parent communication skills training on attitudes toward addiction and sensation seeking among male lower secondary school students in Borujerd. The findings demonstrated that, after controlling for pretest scores, students in the experimental group showed significantly lower positive attitudes toward addiction, significantly lower negative attitude scores (indicating a more critical and preventive stance toward substance use), and a substantial reduction in sensation seeking compared with the control group. These results collectively indicate that parent-focused communication skills training can meaningfully influence both cognitive-attitudinal and emotional-dispositional risk factors associated with adolescent substance use.

With regard to attitudes toward addiction, the results revealed a significant post-intervention difference between the experimental and control groups for both positive and negative attitude dimensions. Specifically, students whose mothers participated in the training program exhibited a marked decrease in favorable attitudes toward addiction and a corresponding shift toward more negative and protective attitudes. This finding is theoretically consistent with family socialization models, which posit that adolescents' beliefs about substance use are shaped through parental communication, emotional climate, and implicit value transmission within the family system. When parents acquire skills such as active listening, congruent emotional expression, and constructive dialogue, they are better equipped to discuss sensitive topics, clarify expectations, and convey clear anti-drug norms in a non-coercive manner. Empirical support for this mechanism has been reported in prior studies demonstrating that effective parent-child communication is associated with lower acceptance of substance use and reduced engagement in risky behaviors (Boyd et al., 2021; Luk et al., 2017).

The current findings align closely with intervention-based research emphasizing the preventive value of parent-centered programs. Parra-Cardona and colleagues showed that parent-based preventive interventions significantly increased adolescents' perceptions of harm associated with drug use, with particularly strong effects among male youth (Parra-Cardona et al., 2023). Similarly, Rahbar Karbasdehi et al. reported that family-centered behavioral management

programs led to significant improvements in dysfunctional attitudes among adolescents inclined toward drug use (Rahbar Karbasdehi et al., 2024). The convergence of these findings with the present study suggests that modifying parental interaction patterns can indirectly but powerfully reshape adolescents' cognitive schemas regarding addiction. In the Iranian cultural context, where parental authority and emotional closeness coexist within family life, improvements in communication quality may be especially effective in influencing adolescents' internalized beliefs and attitudes toward substance use (Salami et al., 2018; Zarbagh et al., 2021).

The significant effect of the intervention on sensation seeking represents another key contribution of this study. Sensation seeking has been repeatedly identified as a robust predictor of early substance use, escalation of use, and engagement in multiple risk behaviors during adolescence. The ANCOVA results indicated that, although pretest sensation seeking did not significantly predict posttest scores, group membership exerted a strong and statistically significant effect, with a large effect size. This pattern suggests that the parent skills training program had a direct and meaningful impact on reducing adolescents' sensation-seeking tendencies. From a developmental perspective, this finding is noteworthy, as sensation seeking is often conceptualized as a relatively stable personality trait. However, growing evidence indicates that sensation seeking is malleable and responsive to environmental influences, particularly within emotionally significant relationships such as the parent-child dyad (Kuppens et al., 2019; Wang et al., 2013).

The observed reduction in sensation seeking may be explained through improvements in emotional regulation and relational security fostered by enhanced parental communication. According to emotion regulation frameworks, adolescents who experience consistent, empathetic, and emotionally attuned interactions with parents are less likely to seek external stimulation or risky experiences to manage internal emotional states. Previous research has shown that dysfunctional family environments characterized by conflict, emotional unavailability, or excessive control are associated with heightened sensation seeking and risk-taking behaviors (Honarmand et al., 2008; Mahdavi & Mirzavandi, 2020). Conversely, interventions that improve parental responsiveness and reduce maladaptive control can attenuate adolescents' need for novelty-seeking as a compensatory strategy. In this regard, the present findings are consistent with those of Chaleshtori

et al., who demonstrated that family- and mindfulness-based interventions significantly reduced sensation seeking in adolescents with substance-dependent parents (Chaleshtori et al., 2022).

The results also resonate with broader empirical evidence highlighting the enduring influence of parental behaviors on adolescent well-being. Meta-analytic findings indicate that parental substance use and maladaptive parenting practices have long-term negative effects on children's emotional and behavioral adjustment, including increased susceptibility to substance use and related risk behaviors (Kuppens et al., 2019; Kuppens et al., 2020). By contrast, the present study suggests that targeted improvements in parental communication skills can function as a protective factor, mitigating these risks even in early adolescence. This interpretation is further supported by studies demonstrating that time spent with parents, quality of parent-child interaction, and emotional closeness are inversely associated with adolescent drug use and sensation-seeking behaviors (Sârbu et al., 2023; Tedgård et al., 2019).

Another important implication of the findings concerns the mediating role of emotional and relational processes in adolescent risk behavior. Prior studies have identified anxiety, loneliness, emotional dysregulation, and reduced personal control as pathways linking dysfunctional parenting to drug use potential (Mahdavi & Mirzavand, 2020; Zarbagh et al., 2021). The communication skills training implemented in this study explicitly targeted these relational processes by teaching parents how to listen empathically, express emotions appropriately, and establish consistent yet flexible boundaries. Improvements in these domains may have reduced adolescents' emotional reactivity and need for stimulation, thereby lowering sensation seeking and reshaping attitudes toward addiction. This interpretation is in line with recent research linking parental psychological control to maladaptive reward-seeking behaviors, such as fear of missing out and problematic media use, mediated by deficits in emotional regulation (Khan et al., 2025; López-Martínez et al., 2025).

The findings of the present study also contribute to the growing literature emphasizing the importance of culturally adapted family interventions. While international studies have consistently shown the effectiveness of parent-based prevention programs, contextual factors such as family structure, cultural norms, and parenting values can moderate intervention outcomes. Research conducted in Iranian populations has underscored the centrality of family cohesion, communication, and emotional bonds in shaping

adolescents' vulnerability to substance use (Pirzadeh & Parsakia, 2023; Salami et al., 2018). By demonstrating significant effects in a mid-sized Iranian city, the present study extends the generalizability of parent skills training approaches and provides locally relevant evidence for policymakers and practitioners. Moreover, the consistency of these results with findings from other cultural contexts, including European and Latin American samples, suggests that the underlying mechanisms of parental influence on adolescent risk behaviors may be broadly universal, despite cultural variations (Montero-Zamora et al., 2025; Sârbu et al., 2023).

In summary, the discussion of findings indicates that parent communication skills training is an effective preventive strategy for modifying adolescents' attitudes toward addiction and reducing sensation seeking. By enhancing parental emotional competence and interaction quality, the intervention appears to have altered key cognitive and emotional risk factors associated with substance use. These findings support family systems and developmental psychopathology models that conceptualize adolescent risk behaviors as embedded within relational contexts rather than as solely individual-level phenomena. The study thus adds to a growing body of evidence advocating for parent-centered approaches in adolescent substance use prevention and emotional development.

Despite its contributions, the present study has several limitations that should be considered when interpreting the findings. First, the sample was limited to male students in the first cycle of secondary education and their mothers in a single educational district, which restricts the generalizability of the results to female adolescents, fathers, or other age groups and regions. Second, the use of self-report measures may have introduced response biases related to social desirability or limited self-awareness among adolescents. Third, the absence of a follow-up assessment precludes conclusions about the long-term sustainability of the observed effects. Finally, although the quasi-experimental design included a control group, randomization was limited by practical constraints, and unmeasured contextual factors may have influenced the outcomes.

Future research should aim to replicate these findings using larger and more diverse samples, including female adolescents, different age ranges, and families from varied socio-cultural backgrounds. Longitudinal designs with multiple follow-up assessments are recommended to examine the durability of intervention effects over time. In



addition, future studies could explore potential mediating mechanisms, such as changes in parental emotional regulation, parenting styles, or family cohesion, to better understand how parent skills training exerts its effects on adolescent outcomes. Comparing different parent-based intervention models and integrating multi-informant data from parents, teachers, and peers may also enrich the understanding of family-centered prevention strategies.

From a practical perspective, the findings highlight the value of incorporating parent communication skills training into school-based and community-based prevention programs. Educational authorities and mental health practitioners may consider offering structured parent training workshops as part of routine adolescent health promotion initiatives. Training programs should emphasize active listening, emotional expression, and consistent yet supportive boundary-setting to strengthen parent-child relationships. Integrating such interventions into existing school counseling services and family support programs could enhance their reach and effectiveness, ultimately contributing to the reduction of adolescent substance use risk and the promotion of healthier emotional development.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent. The present study was approved by the Ethics Committee under the ethical code IR.IAU.ARACK.REC.1404.049.

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