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# The Effectiveness of Group-Based Positive Youth Development Training on Attachment to Parents and Alexithymia in Male Adolescents with a Tendency Toward Addiction in Isfahan

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A B S T R A C T

**Objective:** This study aimed to determine the effectiveness of group-based Positive Youth Development training on attachment to parents and alexithymia among male adolescents with a tendency toward addiction in Isfahan.

**Methods and Materials:** This quasi-experimental study used a pretest–posttest–follow-up design with a control group. The statistical population included male lower-secondary students with a tendency toward addiction in Isfahan during the 2023–2024 academic year. Thirty eligible adolescents were selected through purposive sampling and randomly assigned to experimental and control groups. The experimental group received twelve 90-minute weekly sessions of Positive Youth Development training, while the control group remained on a waiting list. Data were collected using the Inventory of Parent and Peer Attachment and the Toronto Alexithymia Scale. Data were analyzed using repeated-measures analysis of variance and Bonferroni post-hoc tests.

**Findings:** Repeated-measures ANOVA indicated a significant time effect for attachment to mother, attachment to father, and alexithymia. The results showed that the intervention produced a significant improvement in attachment to mother and a significant reduction in alexithymia from pretest to posttest and follow-up. However, the between-group effect for attachment to father was not significant, and Bonferroni comparisons confirmed that changes in attachment to father were not statistically meaningful. The intervention effects for attachment to mother and alexithymia remained stable at follow-up.

**Conclusion:** Group-based Positive Youth Development training can be considered an effective preventive and corrective intervention for improving attachment to mothers and reducing alexithymia in male adolescents with a tendency toward addiction. However, improving attachment to fathers may require longer, family-based, or father-inclusive interventions.

***Keywords:*** *Positive Youth Development; attachment to parents; attachment to mother; attachment to father; alexithymia; tendency toward addiction; adolescents.*

## 1. Introduction

Adolescence is one of the most sensitive developmental periods in the human life span because it is accompanied by simultaneous biological, cognitive, emotional, relational, and social transitions. During this period, the adolescent gradually moves from dependence on family structures toward greater autonomy, identity exploration, peer affiliation, and decision-making independence. These developmental transitions create opportunities for growth, but they also increase vulnerability to high-risk behaviors when protective resources are weak or when the adolescent is exposed to unstable family, peer, educational, or emotional contexts. In this regard, studies on adolescents with high-risk behaviors have emphasized that emotional instability, ineffective coping, identity ambiguity, impulsivity, and inadequate psychosocial support may increase the probability of maladaptive behavioral patterns, including substance use tendency and addiction vulnerability (Esmaeilipour et al., 2024; Mirzakhanloo et al., 2024). Therefore, adolescence should not be understood merely as a period of crisis, but as a developmental window in which both risk and protection are highly modifiable through timely educational and psychological interventions.

The tendency toward addiction among adolescents is a multidimensional phenomenon that cannot be explained only by the availability of substances or individual curiosity. Rather, it is shaped by the interaction of developmental needs, emotional regulation capacity, family relationships, peer pressure, self-control, identity formation, and social learning. Adolescents may be attracted to substance-related behaviors because these behaviors appear to provide temporary relief from emotional distress, social rejection, loneliness, boredom, or perceived inadequacy. At the same time, substance use may be reinforced by peer norms, social modeling, sensation seeking, and the adolescent's developmental need for autonomy and belonging. Research has shown that any form of substance experimentation during adolescence can increase vulnerability to broader health, educational, interpersonal, and psychological problems, particularly when the adolescent lacks secure relational supports and adaptive self-regulation skills (Ahmadi & Narimani, 2024; Chiang et al., 2022). Consequently, prevention-oriented studies increasingly emphasize the need to identify modifiable psychological and relational variables that may either increase or reduce adolescents' tendency toward addiction.

One of the most important relational variables in adolescent adjustment is attachment to parents. Attachment provides the psychological foundation through which adolescents experience emotional security, internalize self-worth, regulate distress, and establish expectations about interpersonal relationships. Secure attachment to parents can protect adolescents by strengthening trust, communication, emotional support, and the ability to seek guidance in risky situations. Conversely, insecure attachment may increase vulnerability by weakening the adolescent's confidence in family support, intensifying emotional dysregulation, and increasing dependence on peers as primary sources of validation. Research has indicated that secure attachment and positive self-concept are inversely related to addiction risk, suggesting that adolescents who experience stronger relational security may be less likely to rely on maladaptive coping behaviors (Cornella-Font et al., 2020). Similarly, studies on adolescent addictions have shown that attachment styles are associated with alcohol, cigarette, waterpipe, internet-related addictive behaviors, and other maladaptive patterns, supporting the view that attachment is a central protective or risk-related factor in adolescent behavioral health (Nakhoul et al., 2020).

The role of parental attachment becomes especially important when adolescents begin to seek independence from the family and develop stronger peer relationships. Peer affiliation is a normative feature of adolescence, but its consequences depend on the quality of both family attachment and peer attachment. When parental attachment is secure, peer relationships may function as a source of social competence, companionship, and identity development. However, when parental attachment is weak, emotionally distant, or insecure, peer relationships may become a substitute for family security and may expose adolescents to social pressure, risk-taking, and maladaptive behavioral norms. Evidence suggests that peer attachment and peer pressure are associated with risk-taking behaviors in adolescence, indicating that adolescents' behavioral choices are shaped by the emotional and normative power of peer groups (Satan & Kaplaner, 2022). Similarly, the structural relationships among peer attachment, parental attitudes, self-efficacy, and health-risk behaviors show that adolescent risk behaviors are embedded in a broader relational system involving both family and peers (Lee & Lee, 2021). Therefore, strengthening healthy attachment to parents may reduce the adolescent's excessive susceptibility to risky peer influence.

Recent studies have further clarified that parent-peer attachment dynamics can influence a wide range of adolescent and young adult outcomes, including psychological problems, social anxiety, self-control, and problematic technology use. For example, parent-peer attachment has been linked to negative automatic thoughts and psychological problems, indicating that attachment insecurity may contribute to maladaptive cognitive-emotional patterns (Irfan & Zulkefly, 2023). Peer attachment has also been associated with self-control and social anxiety, suggesting that attachment experiences may shape the adolescent's capacity to regulate behavior and manage interpersonal threat (Mota et al., 2024). In addition, parental autonomy granting, peer attachment, and school climate have been examined in relation to problematic internet use, showing that adolescent maladjustment is influenced by the interaction of family autonomy, peer relations, and contextual protective factors (Wu et al., 2026). These findings collectively suggest that interventions for adolescents with addiction tendency should not focus only on substance-related attitudes, but should also target the relational and self-regulatory foundations of behavior.

Another important psychological variable related to addiction tendency is alexithymia. Alexithymia refers to difficulty identifying, describing, and processing emotions, often accompanied by externally oriented thinking and limited emotional awareness. Adolescents with high alexithymia may experience emotional arousal without being able to understand or verbalize what they feel. As a result, they may be more likely to use avoidance-based coping strategies, impulsive behaviors, or substance-related behaviors to reduce emotional discomfort. Although alexithymia is not identical to emotional dysregulation, it can undermine emotional regulation because adolescents who cannot identify and describe their feelings may struggle to select adaptive coping strategies. Research on early trauma, attachment insecurity, emotional dysregulation, and substance abuse has shown that these factors jointly contribute to delinquent and maladaptive behaviors among vulnerable adolescents, highlighting the pathway through which disrupted emotional and attachment systems may increase behavioral risk (Asiyanbi et al., 2025). Therefore, reducing alexithymia may be an important mechanism through which preventive interventions decrease addiction vulnerability and improve adolescent adjustment.

The relationship between attachment and alexithymia is theoretically meaningful because emotional awareness is often learned within early and ongoing relational contexts. Parents who respond sensitively to children's emotional needs help them label, understand, and regulate their internal states. In contrast, emotionally invalidating, inconsistent, or insecure relational environments may weaken the adolescent's capacity for emotional differentiation and communication. In adolescents with addiction tendency, this problem may be intensified because substance-related vulnerability often co-occurs with emotional avoidance, poor self-control, low distress tolerance, and weak interpersonal communication. Studies conducted on adolescents with addiction readiness or substance-dependent family backgrounds have shown that psychological interventions can improve important self-regulatory and emotional variables, such as cognitive flexibility, distress tolerance, self-care, rejection sensitivity, oppositional behavior, and self-control (Abbasi et al., 2025; Safikhani Gholizadeh et al., 2024; Shahcheraghi & Izadi, 2025; Soleimani & Chitsaz, 2025). These findings support the necessity of interventions that simultaneously address emotional, cognitive, interpersonal, and behavioral capacities.

In recent years, adolescent intervention studies have moved beyond deficit-oriented models and increasingly emphasized strengths-based and developmental approaches. Traditional approaches to adolescent risk often focus on pathology, behavioral problems, and symptom reduction. Although such approaches are necessary in many clinical contexts, they may be insufficient for preventive work with adolescents who are at risk but still have substantial developmental potential. Positive Youth Development is one of the most important frameworks in this area. This approach is based on the assumption that adolescents are not merely problems to be controlled, but developing individuals with strengths, capacities, values, and social potential that can be cultivated through structured support. Positive Youth Development emphasizes competence, confidence, connection, character, caring, resilience, self-regulation, social participation, and meaningful engagement. Contemporary formulations of this approach conceptualize adolescent development as a holistic process in which psychological growth, relational connectedness, moral development, and social functioning are integrated (Lindsay et al., 2021; Shek et al., 2025).

The Positive Youth Development framework is especially relevant for adolescents with addiction tendency because it does not merely warn adolescents against substance use; instead, it strengthens the developmental assets that make high-risk behaviors less attractive and less

functional. When adolescents develop self-efficacy, communication skills, empathy, planning ability, emotional regulation, social responsibility, and a sense of meaning, they may become better able to resist peer pressure, seek support from parents, interpret emotional experiences, and make constructive decisions. Positive Youth Development also provides opportunities for adolescents to experience supportive group interactions, practice interpersonal skills, and reconstruct their self-perception around competence rather than deficiency. Evidence from international youth development programming indicates that integrating Positive Youth Development principles into adolescent services can enhance program relevance and strengthen youth capacities in diverse contexts (Lindsay et al., 2021). Moreover, service-learning and developmental programs for children and adolescents have demonstrated that structured youth-oriented educational experiences can support psychosocial development even under challenging social conditions (Lin & Shek, 2021).

Empirical evidence increasingly supports the effectiveness of strengths-based developmental interventions for adolescents. A longitudinal strengths-based career intervention for junior secondary students with special educational needs showed that structured developmental support can improve important psychological and educational outcomes, confirming the value of asset-building approaches during early adolescence (Yuen et al., 2022). In the Iranian context, Positive Youth Development training has been shown to improve psychological capital and reduce anxiety among adolescents, indicating that this approach can enhance internal resources that are relevant to both emotional health and risk prevention (Soheili Salek et al., 2022). Similarly, a Positive Youth Development educational program has been found effective in improving happiness and hope among students, suggesting that the program may strengthen positive emotional and motivational states that protect adolescents against maladjustment (Akbarzadeh & Najafi, 2025). Recent systematic and meta-analytic evidence has also linked Positive Youth Development with prosocial behavior, further supporting its relevance for improving interpersonal functioning and adaptive social orientation (Meulenbeek et al., 2026).

Alongside Positive Youth Development, other psychological and educational interventions have been used to address addiction vulnerability and high-risk behavior among adolescents. School-based addiction prevention programs have been developed and validated to reduce students' tendency toward addiction, emphasizing the role of structured educational content in prevention (Ahmadi & Narimani, 2024). Group positive-thinking training has been shown to change attitudes toward drugs among at-risk male adolescents, indicating that cognitive-emotional reframing may influence substance-related beliefs (Khaftan et al., 2023). Psychological self-care training has improved cognitive flexibility and distress tolerance in male students with addiction readiness, suggesting that strengthening self-care capacities may reduce vulnerability to maladaptive coping (Abbasi et al., 2025). Unified transdiagnostic treatment has also been found effective in improving intolerance of uncertainty and self-control among adolescent boys with addiction vulnerability, highlighting the importance of emotion-focused and self-regulatory mechanisms (Soleimani & Chitsaz, 2025). These studies indicate that adolescent addiction prevention requires multidimensional interventions that go beyond information provision and address the psychological systems underlying risk behavior.

Family and attachment-related findings provide further justification for focusing on attachment to parents in adolescents with addiction tendency. The relationship between attachment styles, perceived social support, and identity development differs among substance users and non-users, suggesting that adolescents and young people involved with substances may experience distinct patterns of relational insecurity and identity vulnerability (Khan et al., 2025). Since identity development is a central adolescent task, weak attachment and low perceived support may interfere with the adolescent's ability to form a coherent and stable sense of self. Such vulnerability can make the adolescent more dependent on peers or external sources of validation, thereby increasing the risk of maladaptive behavioral choices. Research on peer attachment and self-control also suggests that relational experiences influence behavioral regulation, which is particularly relevant for addiction tendency (Mota et al., 2024). Therefore, improving attachment to parents, especially in early adolescence, may strengthen emotional security and reduce dependence on risky peer contexts.

Despite the growing literature on adolescent addiction prevention and Positive Youth Development, there remains a need for studies that examine the effects of this approach on relational and emotional variables among adolescents with addiction tendency. Many existing interventions focus on substance-related attitudes, self-care, self-control, or general psychological outcomes, while fewer studies

examine whether a strengths-based developmental program can improve attachment to parents and reduce alexithymia. This gap is important because attachment and alexithymia are not superficial symptoms; they reflect deeper interpersonal and emotional processes that may influence the adolescent's vulnerability to addiction. If Positive Youth Development training can improve attachment security and emotional awareness, it may serve as a preventive intervention that strengthens the adolescent's internal and relational protective systems. Given the importance of parent-adolescent relationships, emotional expression, self-regulation, and positive developmental assets in preventing addiction tendency, investigating this issue among male adolescents at risk is both theoretically and practically necessary.

The aim of the present study was to determine the effectiveness of group-based Positive Youth Development training on attachment to parents and alexithymia among male adolescents with a tendency toward addiction in Isfahan.

## 2. Methods and Materials

### *2.1. Study Design and Participants*

The present study was conducted to examine the effectiveness of group-based Positive Youth Development training on attachment to parents and alexithymia among male adolescents with a tendency toward addiction in Isfahan. The research employed a quasi-experimental design with a pretest–posttest–follow-up structure and a control group. The statistical population included all male lower-secondary school students with a tendency toward addiction in Isfahan during the 2023–2024 academic year. From this population, 30 eligible male adolescents were selected through purposive sampling based on the defined inclusion and exclusion criteria and were then randomly assigned to the experimental and control groups, with 15 participants in each group. In the sampling process, one educational district was first randomly selected from among the districts of Isfahan, and then one highly populated public school was randomly selected from that district. The Addiction Tendency Questionnaire developed by Masaei Mousavi et al. (1999) was administered to students, and those who obtained scores one standard deviation above the mean score were identified as having a tendency toward addiction. A total of 52 students met this initial criterion, and their families were contacted and informed about the psychological enrichment program entitled Positive Youth Development training. Among them, 30 students met the full eligibility criteria and agreed to participate. The inclusion criteria were obtaining a score above the mean on the addiction tendency questionnaire, willingness and consent to participate in the study, enrollment in lower-secondary education, being within the age range of 13 to 15 years, absence of acute or chronic psychiatric disorders confirmed by school health records or clinical evaluation, no simultaneous participation in other psychological interventions, no use of psychiatric medication during the previous three months, and absence of significant physical illness based on educational and health records. The exclusion criteria included lack of cooperation, failure to complete assigned homework, and absence from more than two intervention sessions. Informed consent was obtained from the parents of all participants before implementation of the intervention.

### *2.2. Measures*

The Inventory of Parent and Peer Attachment was used to assess adolescents' attachment patterns. This questionnaire was developed by Armsden and Greenberg (1987) and consists of 24 items measuring attachment to parents and attachment to peers. The items are scored on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The instrument includes four subscales related to secure and insecure attachment to parents and peers. Armsden and Greenberg reported evidence of validity through correlations between attachment scores and social and family self-concept indices. In Iran, Hashemi and Jokar examined the factor structure of the instrument using principal component analysis with varimax rotation and extracted two general factors. They also reported reliability coefficients of 0.82 for attachment to parents and 0.72 for attachment to peers. In the present study, Cronbach's alpha was recalculated for the attachment-to-parents dimensions, and the reliability coefficients for secure and insecure attachment were 0.78 and 0.76, respectively, indicating acceptable internal consistency.

The Toronto Alexithymia Scale was used to measure alexithymia. This scale was developed by Bagby et al. (1994) and contains 25 items organized into three subscales: difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking. Responses are scored on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The psychometric properties of the Toronto Alexithymia Scale have been confirmed in various


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cross-cultural studies. In the Persian version, Cronbach's alpha coefficients for the total alexithymia score and the three subscales of difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking were reported as 0.85, 0.82, 0.75, and 0.72, respectively, indicating satisfactory internal consistency. Test–retest reliability in a sample of 67 participants over a four-week interval ranged from 0.80 to 0.87 for the total scale and its subscales. Confirmatory factor analysis also supported the three-factor structure of the Persian version. In the present study, Cronbach's alpha was recalculated and obtained as 0.81, confirming the acceptable reliability of the instrument in the study sample.

### *2.3. Intervention*

After obtaining the necessary permissions from the research office of the General Department of Education and coordinating with lower-secondary schools in Isfahan, the selected participants were assigned to the experimental and control groups. The intervention was implemented in one of the counseling centers in Isfahan. The experimental group received group-based Positive Youth Development training based on the protocol of Shek et al. (2025) and Shek and Wu (2025). The program consisted of twelve 90-minute weekly sessions conducted by an experienced and licensed therapist. The sessions focused on introducing the program and the developmental characteristics of adolescence; socialization skills and the role of family, school, peers, and media; spiritual skills and meaning-making; planning skills; creative and critical thinking; physical self-care; empathy; intimacy and interpersonal exchange; effective communication and assertiveness; techniques for enhancing self-esteem; self-regulation and emotional regulation; and self-efficacy. Each session included review of previous assignments, psychoeducation, practical exercises, group activities, and homework assignments. The control group received no psychological intervention during this period and remained on a waiting list. Assessments were conducted at three stages: before the intervention, immediately after the completion of the intervention, and 60 days after the intervention as the follow-up phase. Although some participants missed one or two sessions, none met the exclusion criterion for excessive absence, and no participant discontinued the intervention.

### *2.4. Data Analysis*

The collected data were analyzed at both descriptive and inferential levels. At the descriptive level, means and standard deviations were calculated for attachment to mother, attachment to father, and alexithymia across the pretest, posttest, and follow-up stages in both groups. Before conducting the main analyses, the assumptions required for repeated-measures analysis of variance were examined. The Shapiro–Wilk test was used to assess the normality of score distributions, Levene's test was applied to examine the equality of error variances, Box's M test was used to assess the equality of variance–covariance matrices, and Mauchly's test was used to examine the sphericity assumption. Because the sphericity assumption was not met, the Greenhouse–Geisser correction was applied in the repeated-measures analysis. Repeated-measures ANOVA was then used to examine within-group changes over time, between-group differences, and the interaction effect of time and group. Bonferroni post-hoc tests were conducted to compare the mean scores across the pretest, posttest, and follow-up stages and to identify the stability of intervention effects. The level of statistical significance was set at 0.05.

## 3. Findings and Results

The participants consisted of 30 male lower-secondary school students with a tendency toward addiction in Isfahan during the 2023–2024 academic year. All participants were between 13 and 15 years old and were selected after screening with the Addiction Tendency Questionnaire. Of the 52 students who initially scored one standard deviation above the mean on addiction tendency, 30 adolescents met the inclusion criteria and were randomly assigned to the Positive Youth Development training group and the control group, with 15 participants in each group. All participants completed the pretest, posttest, and follow-up assessments, and no participant was excluded because of absence or withdrawal.

**Table 1**

*Descriptive statistics of attachment to mother, attachment to father, and alexithymia across the three measurement stages*

| Variable | Time | Positive Youth Development Group Mean (SD) | Control Group Mean (SD) |
|---|---|---|---|
| Attachment to mother | Pretest | 70.26 (11.11) | 71.46 (13.92) |
| Attachment to mother | Posttest | 77.46 (8.29) | 71.53 (13.25) |
| Attachment to mother | Follow-up | 77.86 (10.23) | 71.54 (12.99) |
| Attachment to father | Pretest | 66.26 (14.50) | 70.46 (16.17) |
| Attachment to father | Posttest | 76.40 (14.67) | 71.66 (15.14) |
| Attachment to father | Follow-up | 75.40 (14.22) | 71.00 (16.00) |
| Alexithymia | Pretest | 65.26 (10.13) | 66.26 (10.85) |
| Alexithymia | Posttest | 54.33 (10.54) | 66.13 (10.54) |
| Alexithymia | Follow-up | 53.53 (6.51) | 66.60 (10.27) |

As shown in Table 1, the mean score of attachment to mother increased in the Positive Youth Development group from pretest to posttest and remained stable at follow-up, whereas the control group showed almost no meaningful change across the three stages. Attachment to father also increased descriptively in the intervention group after the intervention, but the control group remained relatively stable. Regarding alexithymia, the intervention group showed a clear reduction from pretest to posttest and follow-up, while the control group showed no substantial reduction over time. Overall, the descriptive pattern suggests that Positive Youth Development training was associated with improved attachment to mother and reduced alexithymia, with the intervention effects maintained at the follow-up stage.

Before conducting the main inferential analysis, the statistical assumptions were examined. The Shapiro–Wilk test showed that the distributions of attachment to mother, attachment to father, and alexithymia were normal across the pretest, posttest, and follow-up stages. Levene's test was not significant for the dependent variables, indicating equality of error variances between the groups. Box's M test was also not significant, supporting the equality of variance–covariance matrices. However, Mauchly's test of sphericity was significant for the repeated measurement factors; therefore, the sphericity assumption was not met. Accordingly, the Greenhouse–Geisser correction was applied in the repeated-measures analysis of variance.

**Table 2**

*Results of repeated-measures analysis of variance for attachment to mother, attachment to father, and alexithymia*

| Variable | Source of Effect | SS | df | MS | F | p | Partial $\eta^2$ | Power |
|---|---|---|---|---|---|---|---|---|
| Attachment to mother | Time | 297.35 | 1.34 | 208.38 | 12.98 | < .001 | .317 | .974 |
| Attachment to mother | Time × Group | 296.48 | 1.34 | 201.02 | 12.52 | < .001 | .309 | .995 |
| Attachment to mother | Error (Time) | 602.48 | 37.53 | 16.05 | — | — | — | — |
| Attachment to mother | Group | 306.17 | 1 | 306.17 | 0.772 | .387 | .027 | .836 |
| Attachment to mother | Error | 11101.11 | 28 | 396.46 | — | — | — | — |
| Attachment to father | Time | 561.66 | 1.11 | 504.20 | 16.89 | < .001 | .376 | .985 |
| Attachment to father | Time × Group | 348.68 | 1.11 | 345.33 | 11.57 | .001 | .292 | .928 |
| Attachment to father | Error (Time) | 930.97 | 31.19 | 29.84 | — | — | — | — |
| Attachment to father | Group | 60.84 | 1 | 60.84 | 0.093 | .763 | .003 | .600 |
| Attachment to father | Error | 18352.22 | 28 | 655.43 | — | — | — | — |
| Alexithymia | Time | 631.35 | 1.73 | 363.32 | 27.78 | < .001 | .498 | 1.000 |
| Alexithymia | Time × Group | 659.62 | 1.73 | 379.58 | 29.02 | .001 | .509 | 1.000 |
| Alexithymia | Error (Time) | 636.35 | 53.44 | 11.90 | — | — | — | — |
| Alexithymia | Group | 1672.71 | 1 | 1672.71 | 6.83 | .041 | .196 | .714 |
| Alexithymia | Error | 6847.91 | 28 | 244.568 | — | — | — | — |

As presented in Table 2, the time effect was significant for attachment to mother, attachment to father, and alexithymia, indicating that the scores changed significantly across the pretest, posttest, and follow-up stages. The interaction effect of time and group was significant for attachment to mother, $F = 12.52$, $p < .001$, partial $\eta^2 = .309$, showing that the pattern of change in attachment to mother differed significantly between the intervention and control



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groups. For attachment to father, the time × group interaction was significant, F = 11.57, p = .001, partial $\eta^2$ = .292, but the between-group effect was not significant, F = 0.093, p = .763, indicating that the overall difference between the groups was not statistically meaningful. For alexithymia, both the time effect, F = 27.78, p < .001, partial $\eta^2$ = .498, and the time × group interaction, F = 29.02, p = .001, partial $\eta^2$ = .509, were significant. The between-group effect for alexithymia was also significant, F = 6.83, p = .041, partial $\eta^2$ = .196, indicating that Positive Youth Development training significantly reduced alexithymia compared with the control condition.

**Table 3**

*Bonferroni post-hoc comparisons between the intervention and control groups across measurement stages*

| Variable | Time | Group Comparison | Mean Difference | SE | p |
|---|---|---|---|---|---|
| Attachment to mother | Pretest | Positive Youth Development group vs. control group | -3.63 | 1.00 | .001 |
| Attachment to mother | Posttest | Positive Youth Development group vs. control group | 3.78 | 1.00 | .001 |
| Attachment to mother | Follow-up | Positive Youth Development group vs. control group | 3.89 | 0.964 | .001 |
| Attachment to father | Pretest | Positive Youth Development group vs. control group | -4.20 | 5.61 | .460 |
| Attachment to father | Posttest | Positive Youth Development group vs. control group | 4.73 | 5.44 | .392 |
| Attachment to father | Follow-up | Positive Youth Development group vs. control group | 4.40 | 5.54 | .434 |
| Alexithymia | Pretest | Positive Youth Development group vs. control group | -1.00 | 3.83 | .796 |
| Alexithymia | Posttest | Positive Youth Development group vs. control group | -11.80 | 3.29 | .001 |
| Alexithymia | Follow-up | Positive Youth Development group vs. control group | -13.06 | 3.06 | .001 |

As shown in Table 3, Bonferroni post-hoc comparisons indicated significant differences between the Positive Youth Development group and the control group in attachment to mother at the posttest and follow-up stages, suggesting that the intervention improved adolescents' attachment to their mothers and that this effect was maintained over time. The comparisons for attachment to father were not statistically significant at pretest, posttest, or follow-up, indicating that the intervention did not produce a reliable improvement in attachment to father compared with the control group. For alexithymia, there was no significant difference between the two groups at pretest, but significant differences were observed at posttest and follow-up. These findings show that Positive Youth Development training significantly reduced alexithymia in the intervention group, and the reduction remained stable 60 days after the intervention.

## 4. Discussion

The present study aimed to determine the effectiveness of group-based Positive Youth Development training on attachment to parents and alexithymia among male adolescents with a tendency toward addiction in Isfahan. The findings showed that the intervention significantly improved attachment to mother and significantly reduced alexithymia in the experimental group compared with the control group, and these changes were maintained at the follow-up stage. However, the intervention did not produce a statistically significant improvement in attachment to father. These results indicate that Positive Youth Development training can be effective in modifying some relational and emotional characteristics of adolescent boys with addiction vulnerability, particularly those related to maternal attachment and the ability to identify and process emotions. The significant reduction in alexithymia also suggests that the program may have enhanced emotional awareness, emotional expression, and self-regulatory capacities among the participants. Nevertheless, the non-significant finding for attachment to father indicates that father-related attachment patterns may be more resistant to change through adolescent-only group training and may require more direct family-based or father-inclusive intervention components.

The finding that Positive Youth Development training improved attachment to mother can be explained through the relational and strengths-based nature of this intervention. Positive Youth Development does not define adolescents primarily through risk, pathology, or behavioral deficits; rather, it emphasizes competence, confidence, connection, character, caring, self-regulation, and constructive participation. Such an approach may help adolescents reinterpret their relationships, improve interpersonal communication, increase empathy, and develop more adaptive ways of seeking support from significant adults. This is consistent with the theoretical foundation of the Positive Youth Development approach, which emphasizes holistic growth and the strengthening of developmental assets rather than merely reducing problematic behaviors (Shek et al., 2025). The results are also aligned with evidence showing that Positive Youth Development



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programs can enhance positive psychological and interpersonal outcomes in adolescents and youth (Lin & Shek, 2021; Lindsay et al., 2021). Since the mother is often experienced as the primary emotional caregiver in many family contexts, improvements in emotional expression, self-awareness, and communication may first become visible in the adolescent's relationship with the mother.

This finding is also consistent with attachment-based studies showing that secure attachment to parents is a protective factor against addiction vulnerability and maladaptive behaviors. Adolescents with secure parental attachment are more likely to experience family relationships as a source of support, guidance, and emotional safety. In contrast, insecure attachment may increase the adolescent's need to seek validation and belonging from peers, including peers who reinforce risk-taking behaviors. Previous studies have shown that addiction risk in adolescence is related to attachment security and self-concept, supporting the idea that stronger family attachment can reduce vulnerability to substance-related behaviors (Cornella-Font et al., 2020). Similarly, attachment styles have been associated with different forms of addictive behaviors among adolescents, including substance-related and behavioral addictions (Nakhoul et al., 2020). From this perspective, the improvement in attachment to mother observed in the present study may reflect the intervention's capacity to strengthen the adolescent's perception of emotional availability, trust, and relational support within the family system.

The improvement in attachment to mother may also be interpreted in relation to the developmental tension between family dependence and peer orientation during adolescence. Adolescents naturally move toward peers and seek greater autonomy, but when parent-adolescent attachment is weak, peer relationships may become excessive substitutes for family security. This can expose adolescents to peer pressure and health-risk behaviors. Studies have shown that peer attachment and peer pressure are associated with adolescent risk-taking behaviors (Satan & Kaplaner, 2022). Moreover, peer attachment, parental attitudes, career-related self-efficacy, and health-risk behaviors are structurally related, showing that adolescent behavior emerges from the interaction of family and peer systems (Lee & Lee, 2021). The present findings suggest that Positive Youth Development training may have strengthened the adolescent's ability to communicate, empathize, and regulate interpersonal responses, thereby making reconnection with the mother more possible. This interpretation is also compatible with findings indicating that parent-peer attachment is related to psychological problems and negative automatic thoughts among adolescents (Irfan & Zulkefly, 2023).

The non-significant effect of the intervention on attachment to father is an important finding and requires careful interpretation. Although the descriptive results showed some improvement in father attachment in the experimental group, the Bonferroni comparisons did not confirm a statistically reliable effect. This may suggest that the adolescent-father relationship is influenced by interactional patterns that are less responsive to adolescent-only training. In many families, fathers may be less emotionally expressive or less involved in daily emotional communication, and therefore adolescents' improved interpersonal skills may not immediately translate into perceived attachment security with fathers. The finding may also indicate that attachment to father requires direct modification of paternal responsiveness, emotional availability, and communication patterns. Previous research has shown that attachment styles, perceived social support, and identity development differ between substance users and non-users, emphasizing the importance of relational resources in developmental adjustment (Khan et al., 2025). Therefore, when father-related attachment is weak, strengthening the adolescent alone may not be sufficient unless the father also participates in the relational change process.

The lack of significant change in attachment to father may also be understood through the complexity of autonomy, authority, and peer relations in adolescence. Studies have shown that parental autonomy granting and peer attachment are associated with problematic behaviors such as problematic internet use, and that contextual factors such as school climate may moderate these relationships (Wu et al., 2026). In the present study, Positive Youth Development training likely improved skills such as communication, self-regulation, empathy, and self-efficacy, but father attachment may depend more strongly on the father's autonomy-supportive behavior, emotional responsiveness, and availability. Similarly, research on peer attachment and self-control indicates that self-regulation and social functioning are closely connected to attachment dynamics (Mota et al., 2024). Therefore, the absence of significant improvement in father attachment does not necessarily mean that the intervention was ineffective at the relational level; rather, it may show that father-specific attachment requires longer

duration, direct parent training, or systemic family intervention.

The significant reduction in alexithymia is another central finding of the present study. Adolescents with alexithymia have difficulty identifying, describing, and cognitively processing emotional states. Such difficulty may increase vulnerability to addiction because the adolescent may use substances or other maladaptive behaviors to manage emotional distress that cannot be understood or verbalized. The present findings suggest that Positive Youth Development training helped participants develop greater emotional awareness and more adaptive emotional expression. This result can be explained by several components of the intervention, including empathy training, effective communication, self-regulation, self-esteem enhancement, problem-solving, self-efficacy, and meaning-making. These components may have helped adolescents recognize internal states, link emotions to situations, express feelings more appropriately, and regulate emotional reactions. The finding is consistent with research showing that early trauma, attachment insecurity, emotional dysregulation, and substance abuse are associated with delinquent behavior among adolescents, highlighting the interconnection between emotional processing and behavioral risk (Asiyanbi et al., 2025).

The reduction in alexithymia is also consistent with studies showing that interventions targeting emotional and self-regulatory mechanisms can improve psychological outcomes among adolescents with addiction vulnerability or family substance-related risk. For example, psychological self-care training has been shown to improve cognitive flexibility and distress tolerance in male students with addiction readiness (Abbasi et al., 2025). Dialectical behavior therapy has also been found effective in improving self-care and rejection sensitivity among adolescents with a substance-dependent parent (Shahcheraghi & Izadi, 2025). Similarly, unified transdiagnostic treatment has improved intolerance of uncertainty and self-control among adolescent boys with addiction vulnerability (Soleimani & Chitsaz, 2025). Compassion-based therapy has also been effective in improving oppositional defiant behavior and self-control in students with a substance-dependent parent (Safikhani Gholizadeh et al., 2024). These findings collectively support the conclusion that interventions strengthening emotional regulation, self-awareness, and adaptive coping can reduce psychological vulnerabilities associated with addiction tendency.

The present findings are also in line with previous studies supporting positive and developmental interventions for at-risk adolescents. School-based addiction prevention programs have been shown to reduce students' tendency toward addiction, confirming that structured educational interventions can play an important preventive role during adolescence (Ahmadi & Narimani, 2024). Group positive-thinking training has been effective in changing attitudes toward drugs among at-risk male adolescents, suggesting that positive cognitive orientation may reduce risk-related beliefs and behavioral tendencies (Khaftan et al., 2023). Acceptance-and-commitment-based hope-in-life training has also improved mature defense mechanisms and competitive anxiety in students with high-risk behaviors, showing that values-based and hope-oriented interventions may strengthen adaptive psychological functioning (Esmaeilipour et al., 2024). In addition, programs designed to improve adolescent responsibility indicate that developmental training can target the psychosocial competencies needed for healthier decision-making (Mirzakhanloo et al., 2024). These studies support the broader interpretation that adolescent risk reduction is most effective when interventions target emotional, cognitive, relational, and motivational domains simultaneously.

The findings are particularly consistent with prior research on Positive Youth Development training. Positive Youth Development training has been shown to improve psychological capital and reduce anxiety among adolescents (Soheili Salek et al., 2022). It has also improved happiness and hope among students, which suggests that the model can strengthen positive emotional resources that may protect adolescents from maladaptive coping patterns (Akbarzadeh & Najafi, 2025). In addition, strengths-based longitudinal interventions have demonstrated positive effects among junior secondary students, showing that structured developmental support can enhance adaptive functioning during early adolescence (Yuen et al., 2022). Recent meta-analytic evidence has also supported the role of Positive Youth Development in improving prosocial behavior, indicating that this approach can enhance interpersonal capacities and social orientation (Meulenbeek et al., 2026). Therefore, the present study extends previous findings by showing that Positive Youth Development training may also improve attachment to mother and reduce alexithymia in male adolescents with a tendency toward addiction.


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## 5. Conclusion

Overall, the results suggest that Positive Youth Development training can be considered a useful preventive and corrective intervention for adolescents with addiction vulnerability, particularly when the goal is to strengthen emotional awareness and improve the adolescent's relationship with the mother. The intervention may work by increasing self-awareness, self-esteem, empathy, communication skills, planning ability, self-regulation, and self-efficacy. These skills can help adolescents better understand their emotions, communicate needs more effectively, and seek support from secure relational sources rather than relying on maladaptive coping or risky peer contexts. However, the findings also show that not all attachment relationships change equally through the same intervention. Attachment to father may require more intensive, longer, and family-centered approaches that include fathers as active participants in the intervention process. Therefore, while Positive Youth Development training appears promising, its relational effects may depend on the target attachment figure, family dynamics, and the extent to which the family environment responds to the adolescent's newly acquired skills.

## 6. Limitations & Suggestions

The present study had several limitations. First, the sample was limited to male lower-secondary students with a tendency toward addiction in Isfahan, which restricts the generalizability of the findings to female adolescents, adolescents from other age groups, and students from different cultural or geographical contexts. Second, the sample size was relatively small, and although the quasi-experimental design provided useful evidence, larger samples would increase statistical power and external validity. Third, the study relied on self-report questionnaires, which may be influenced by social desirability, response bias, or limited self-awareness among adolescents. Fourth, the follow-up period was limited to 60 days, so the long-term stability of the intervention effects remains unclear. Fifth, parents, especially fathers, were not directly included in the intervention, which may partly explain the non-significant finding for attachment to father.

Future studies are suggested to replicate this research with larger samples and with both male and female adolescents in different cities and educational settings. It is also recommended that future research compare Positive Youth Development training with other evidence-based interventions, such as family therapy, emotion regulation training, cognitive-behavioral interventions, and parent-adolescent communication programs. Longer follow-up periods should be used to determine whether improvements in attachment and alexithymia remain stable over time. Future studies may also examine mediating variables such as self-esteem, emotional regulation, self-efficacy, peer pressure resistance, and perceived social support to clarify the mechanisms through which Positive Youth Development training affects adolescent outcomes. In addition, father-inclusive and family-based versions of the program should be designed and tested to determine whether attachment to father can be improved when fathers receive parallel relational and communication training.

In practice, counselors, school psychologists, and adolescent mental health professionals can use Positive Youth Development training as a structured group intervention for male adolescents who show early signs of addiction vulnerability. The program may be especially useful in school counseling centers, community mental health settings, and preventive education programs because it emphasizes strengths, emotional awareness, communication, empathy, planning, and self-regulation. Practitioners should pay special attention to the adolescent's family relationships and should not assume that improvement in one parental relationship will automatically generalize to the other. When father attachment is a specific intervention target, it is recommended to involve fathers directly through psychoeducation, communication-skills training, and parent-adolescent sessions. The findings also suggest that preventive programs for addiction-prone adolescents should move beyond warning-based approaches and instead strengthen the emotional and relational capacities that help adolescents make healthier choices.

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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

All authors equally contributed to this article.

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