

A Comparison of the Effectiveness of Positive Youth Development Program Training and Social-Cognitive Problem-Solving Skills Training on Attitudes Toward Problem Solving Among Female Students

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ABSTRACT

Attitude toward problem solving is one of the most fundamental competencies adolescents require when confronting academic and social challenges. A negative problem-solving orientation is associated with the ineffective application of problem-solving skills and the adoption of an avoidant problem-solving style. This study aimed to compare the effectiveness of Positive Youth Development Program training and social-cognitive problem-solving skills training in improving attitudes toward problem solving among female students. The study was applied in purpose and employed a quasi-experimental pretest-posttest-follow-up design with a control group. The statistical population consisted of all female upper-secondary school students in Qaem Shahr during the 2022–2023 academic year. Using purposive sampling and based on pretest scores, 45 students were selected and randomly assigned to two experimental groups and one control group, with 15 participants in each group. The first experimental group received Positive Youth Development Program training, whereas the second experimental group received social-cognitive problem-solving skills training. Each intervention consisted of 12 two-hour sessions. Data were collected using the Cassidy and Long Problem-Solving Attitude Questionnaire and analyzed using repeated-measures analysis of variance and the Bonferroni post hoc test. The main effects of group and time, as well as the Time $\times$ Group interaction effect, were significant for attitudes toward problem solving ($p < .001$). Compared with the control group, both experimental interventions significantly improved attitudes toward problem solving ($p < .05$). A significant difference was also observed between the two experimental groups, such that social-cognitive problem-solving skills training produced a 2.622-point greater improvement in attitudes toward problem solving than the Positive Youth Development Program. Both programs were effective in improving attitudes toward problem solving among female students; however, social-cognitive problem-solving skills training demonstrated greater effectiveness because of its emphasis on cognitive restructuring and goal-directed strategies. Therefore, it may be employed as an effective intervention in academic counseling.

Keywords: Positive Youth Development Program, social-cognitive problem-solving skills, attitude toward problem solving, female students.

1. Introduction

Adolescence is a critical developmental period characterized by rapid biological maturation, cognitive expansion, emotional reorganization, identity formation, and increasing exposure to complex academic and interpersonal demands. During this period, young people gradually move from dependence on family-based decision making toward greater autonomy, while simultaneously facing intensified expectations concerning educational achievement, peer relationships, future planning, and social responsibility. These developmental transitions may create substantial opportunities for growth, but they may also increase vulnerability to emotional instability, maladaptive coping, interpersonal conflict, and academic difficulties when adolescents lack adequate psychological and social competencies. Adolescence has therefore been described as a turbulent stage in psychological and educational development in which effective support is necessary to transform developmental challenges into opportunities for competence and maturity (Uzun, 2022). Differences in lifestyle, health behavior, and developmental needs across early, middle, and late adolescence further indicate that adolescent interventions should be sensitive to the specific cognitive, emotional, and social characteristics of this age group (Joshi et al., 2023). In particular, female students may encounter intersecting academic, familial, interpersonal, and sociocultural pressures that influence their emotional well-being and their ability to respond constructively to everyday problems. Accordingly, strengthening adaptive cognitive and social competencies during adolescence is a central objective of school psychology, counseling, and preventive mental health programs.

Among the competencies required for successful adolescent development, problem solving occupies a fundamental position because nearly all developmental tasks involve the perception, interpretation, evaluation, and management of problems. Academic underachievement, examination stress, interpersonal disagreement, peer pressure, family conflict, career uncertainty, and emotional distress all require adolescents to define difficulties accurately, generate alternative responses, anticipate consequences, and select effective courses of action. Problem solving is therefore not merely a discrete cognitive skill but a multidimensional self-regulatory process involving cognition, emotion, motivation, behavior, social understanding, and confidence in one's ability to influence

outcomes. Social-cognitive perspectives similarly emphasize that learning performance and sustained adaptive functioning are shaped by reciprocal interactions among personal beliefs, environmental conditions, critical thinking, and problem-solving competencies (Almulla & Al-Rahmi, 2023). Research on collaborative learning has also shown that problem-solving skills can contribute to cognitive learning outcomes when students actively communicate, exchange perspectives, and participate in shared learning activities (A'Raafi et al., 2024). Written communication, interest, and the capacity to represent a problem clearly are likewise associated with successful performance on realistic academic problems (Amany et al., 2023). Thus, adolescents' ability to solve problems is closely connected to both educational functioning and broader psychosocial adaptation.

A particularly important determinant of effective problem solving is the individual's attitude or orientation toward problems. Problem-solving attitude refers to the relatively stable beliefs, expectations, emotional reactions, and motivational tendencies that shape how a person approaches challenging situations. An adaptive orientation is characterized by recognizing problems as normal and potentially manageable aspects of life, believing that effective solutions can be developed, accepting personal responsibility for taking action, and persisting despite uncertainty or temporary failure. In contrast, a negative problem orientation involves perceiving problems as threats, doubting one's competence, anticipating failure, becoming emotionally overwhelmed, and responding through avoidance, impulsivity, or helplessness. Evidence suggests that negative problem orientation may undermine social problem solving partly through reduced cognitive flexibility, thereby limiting the capacity to reconsider assumptions and shift among alternative strategies (Kilci et al., 2025). Conversely, educational environments that explicitly teach students to analyze and solve problems can strengthen creativity and improve attitudes toward instructional strategies (Wang, 2021). Problem-based educational approaches have similarly been associated with improvements in students' critical-thinking tendencies and perceived problem-solving competence (Topsakal et al., 2022). Therefore, an adolescent's attitude toward problem solving may determine whether existing skills are mobilized effectively or remain unused under stress.

Problem-solving attitudes have important implications for adolescent mental health. When young people interpret difficult situations as uncontrollable, permanent, or

personally threatening, they may experience stronger negative affect, diminished self-efficacy, and greater reliance on maladaptive coping. Social problem solving and coping efficacy have been identified as mechanisms linking cumulative risk exposure with adolescent mental health, suggesting that adolescents who can address social challenges effectively may be better protected against the psychological consequences of adversity (Xiong et al., 2021). Hope also appears to function as a motivational engine through which secure parental attachment contributes to stronger social problem-solving skills (Hu & Jiang, 2022). In contrast, psychological distress and behavioral problems are closely intertwined with adolescents' life satisfaction and may vary according to gender and contextual vulnerability (Li et al., 2024). Broader investigations of risk and protective factors indicate that well-being, psychological adjustment, and social connectedness may also reduce adolescents' vulnerability to destructive or extremist patterns of thought and behavior (Haghish et al., 2023). Accordingly, problem-solving attitudes can be viewed as both cognitive resources and protective psychological factors that influence how adolescents interpret risks, regulate emotional responses, and maintain adaptive functioning.

The social context in which adolescents develop is also strongly related to their problem-solving orientation. Family relationships provide the earliest setting in which young people observe negotiation, conflict management, emotional expression, and decision making. Persistent parent-adolescent conflict may increase depressive symptoms and problematic behavior, particularly when the broader school climate fails to provide sufficient support (Chen et al., 2024). Longitudinal evidence further indicates that patterns of parent-child conflict change from adolescence into young adulthood and remain relevant to developmental adjustment across this transition (Son et al., 2024). Parenting interventions designed to prevent adolescent substance use consequently emphasize communication, monitoring, relationship quality, and constructive family problem solving (Meyer et al., 2023). Collaborative problem solving is also essential when adolescents and caregivers must manage complex health-related or functional challenges, as illustrated by research involving adolescents with spinal cord injury and their families (Clark et al., 2023). These findings suggest that attitudes toward problems are developed not in isolation but through repeated interactions with parents, teachers, peers, and other significant social agents.

School is another central developmental environment in which attitudes toward problem solving can either be reinforced or weakened. Students encounter recurring demands involving learning difficulties, examinations, classroom participation, peer relationships, and educational decision making. Supportive instructional practices can help students regard difficulties as opportunities for inquiry rather than as evidence of incompetence. Lesson-study approaches that assist teachers in teaching mathematics through problem solving have been shown to enhance the quality of opportunities students receive to engage in analytical reasoning (Roorda et al., 2024). Reciprocal and socially supported learning models may likewise foster self-confidence, social attitudes, and mathematical problem-solving ability (Sihite et al., 2024). Training courses based on problem-solving learning have also been developed to strengthen non-cognitive competencies relevant to technical and applied educational settings (Padunggun et al., 2024). At the same time, accurate assessment of school and family environments and students' special educational needs is essential for selecting appropriate support strategies (Pieńkowska, 2024). These studies collectively support the view that problem solving should be cultivated systematically within educational settings rather than assumed to emerge automatically with age.

Problem-solving attitudes are also associated with broader academic strengths, including reflective thinking, academic buoyancy, emotional regulation, and persistence. Academic buoyancy enables students to recover from ordinary educational setbacks and may interact with enjoyment, self-assessment, and reflective thinking in the management of test anxiety (Nurjamin et al., 2023). Academic emotion regulation, grit, and the pursuit of personal bests also contribute to adaptive functioning in demanding educational contexts (Alazemi et al., 2023). Educational games and interactive learning activities may create cognitive, behavioral, and social flow experiences that support engagement and active learning (Alizadeh et al., 2022). In addition, participation in structured activities such as sports may strengthen self-regulation, perceived competence, and socially learned behavior through mechanisms described by social cognitive theory (Zhao, 2024). These findings imply that interventions targeting problem-solving attitudes may produce benefits extending beyond isolated decision-making tasks by strengthening students' broader engagement, confidence, and capacity to persist when facing academic challenges.

One direct approach to improving adolescents' functioning is social-cognitive problem-solving skills training. This form of intervention generally combines the modification of dysfunctional beliefs about problems with systematic instruction in problem definition, goal clarification, generation of alternative solutions, decision making, implementation, and evaluation. Its social-cognitive foundation recognizes that adolescents' behavior is influenced not only by objective circumstances but also by their interpretations, expectancies, emotional responses, and beliefs about personal efficacy. Training therefore seeks to replace avoidance, helplessness, and impulsivity with positive problem orientation, rational analysis, and goal-directed action. Empirical evidence indicates that structured problem-solving and assertiveness training can improve self-esteem and mental health among female adolescents (Golshiri et al., 2023). Emotion-regulation training has also been found to enhance social problem-solving skills and reduce social anxiety among female students, demonstrating the close relationship between emotional regulation and constructive interpersonal problem solving (Akbari & Hosseini, 2025). Furthermore, social problem-solving training has shown beneficial effects on depression among individuals with chronic medical conditions (Omidi et al., 2023), psychological empowerment among secondary-school teachers (Karimi, 2022), and occupational functioning among people with psychiatric disabilities when integrated with social-cognitive training (Kern et al., 2022). Although these populations differ from school students, the findings support the adaptability and potential efficacy of social-cognitive problem-solving interventions across developmental and clinical contexts.

The probable effectiveness of social-cognitive problem-solving training can be explained through several mechanisms. First, accurate problem definition reduces ambiguity and helps individuals distinguish between objective circumstances, assumptions, and emotional interpretations. Second, generating multiple alternatives counteracts rigid thinking and increases cognitive flexibility. Third, systematic decision making encourages the evaluation of short- and long-term consequences rather than impulsive responding. Fourth, successful practice experiences strengthen self-efficacy and reduce anticipatory helplessness. Fifth, monitoring the outcomes of selected solutions promotes metacognition and allows ineffective strategies to be revised. Such mechanisms are especially relevant during adolescence, when cognitive capacities are expanding but emotional arousal and social sensitivity may

still interfere with judgment. Studies of self-management education for adolescents with chronic health conditions similarly show that structured programs can help young people understand their difficulties, assume active roles, and develop practical self-management competencies (Flora et al., 2025). Programs addressing emotional aggression have also demonstrated that positive, structured training can improve emotional functioning in adolescents when competencies are taught through developmentally appropriate activities (Junsomang et al., 2025). Consequently, social-cognitive problem-solving training may directly improve students' problem orientation by altering both cognitive appraisals and behavioral response patterns.

A broader preventive approach is represented by Positive Youth Development. Unlike deficit-oriented models that focus primarily on correcting maladaptive behavior or reducing symptoms, Positive Youth Development emphasizes adolescents' strengths, resources, developmental potential, and constructive relationships with their environments. This perspective assumes that all young people possess capacities that can be cultivated through supportive contexts, meaningful participation, skill-building opportunities, and positive relationships. Positive Youth Development programs commonly address competence, confidence, connection, character, caring, self-regulation, social responsibility, and contribution. An Iranian model of Positive Youth Development has been developed and validated to reflect the cultural and developmental characteristics of Iranian adolescents (Pahlavanneshan et al., 2022). Research among upper-secondary students has also suggested that Positive Youth Development may mediate the associations among social competence, academic well-being, and academic vitality (Shojaei et al., 2023). Moreover, Positive Youth Development and self-compassion have been associated with lower aggression tendencies among female upper-secondary students (Fotouhi et al., 2023). These findings indicate that Positive Youth Development may provide an integrative framework for strengthening the personal and interpersonal resources that support constructive approaches to problems.

The potential influence of Positive Youth Development on problem-solving attitudes may occur indirectly through the enhancement of self-efficacy, optimism, emotional regulation, self-esteem, social connection, and purposeful behavior. Adolescents who recognize their strengths and experience supportive relationships may be more likely to interpret difficulties as manageable and to persist in seeking

solutions. Positive Youth Development training has been reported to improve psychological capital and reduce anxiety among adolescents, suggesting that it can simultaneously strengthen positive internal resources and reduce emotional barriers to adaptive functioning (Soheili Salek et al., 2022). Group-based health-promotion programs for adolescents likewise emphasize active participation, peer interaction, experiential learning, and developmental appropriateness as key conditions for effectiveness (Peron & Neufeld, 2022). Virtues and positive character attributes may serve as protective factors for adolescent mental health by shaping how young people understand themselves, relate to others, and respond to adversity (McLoughlin & Kristjánsson, 2024). Psychological flexibility and self-compassion are also associated with greater well-being among adolescent girls, indicating that acceptance, flexible responding, and self-support may help young women manage difficult experiences more adaptively (Mendes et al., 2022). Thus, Positive Youth Development may improve problem-solving attitudes by creating a broad psychological foundation for confidence, engagement, and adaptive coping.

Positive developmental functioning is further related to adolescents' sense of meaning, future orientation, and attitudes toward time. Young people who experience life as meaningful and possess clear purposes may be more motivated to confront present challenges because they perceive their efforts as connected to valued future outcomes (Wang et al., 2023). Positive attitudes toward the past, present, and future are also associated with better adolescent mental health, whereas negative time-attitude profiles may correspond with poorer adjustment (Tejada-Gallardo et al., 2021). Disturbances in subjective time have been discussed across psychiatric conditions, highlighting the importance of temporal experience in motivation, emotional regulation, and psychological functioning (Kent et al., 2023). Positive Youth Development programs that incorporate goal setting, planning, self-regulation, and meaning may therefore help adolescents organize their behavior across time and approach problems as temporary, solvable obstacles rather than permanent threats. This future-oriented perspective may be particularly valuable for upper-secondary students who face consequential decisions regarding academic achievement, university entry, occupational aspirations, and emerging adult roles.

Despite the theoretical relevance of both approaches, Positive Youth Development and social-cognitive problem-solving skills training differ in scope and mechanism.

Positive Youth Development is comprehensive and strength based, seeking to improve multiple developmental assets through competence building, supportive relationships, self-care, values, communication, and self-regulation. Social-cognitive problem-solving training is more focused and procedural, directly targeting beliefs about problems and teaching a structured sequence for analyzing and resolving them. The former may improve problem-solving attitudes through broader increases in confidence, hope, social competence, and psychological capital, whereas the latter may produce more immediate changes through cognitive restructuring and repeated practice of specific problem-solving stages. Adolescents' intentions to seek psychological help are influenced by attitudes, perceived norms, and perceived behavioral control, demonstrating the importance of belief systems in whether young people engage with supportive resources (Aras & Peker, 2024). By analogy, students' attitudes toward problems may influence whether they activate available skills or withdraw from difficult situations. Comparative investigation is therefore necessary to determine whether a broad developmental intervention or a focused social-cognitive intervention produces stronger improvements in problem-solving attitudes.

The need for such comparison is especially important among female upper-secondary students, whose educational and interpersonal difficulties may be intensified by concerns about evaluation, social acceptance, future choices, and emotional relationships. Although previous studies have demonstrated the benefits of Positive Youth Development for psychological capital, academic vitality, and aggression tendencies, and the effectiveness of problem-solving training for mental health, empowerment, and social functioning, relatively limited research has directly compared these two interventions within the same quasi-experimental design. Existing findings also suggest that intervention outcomes depend on whether programs target general developmental assets or specific cognitive-behavioral mechanisms. A direct comparison can therefore clarify not only whether both approaches are effective but also which intervention produces a larger and more durable change in adolescents' attitudes toward problem solving. Such evidence can assist school counselors, psychologists, and educational planners in selecting interventions that are both developmentally appropriate and closely aligned with students' needs.

Accordingly, the present study aimed to compare the effectiveness of Positive Youth Development Program

training and social-cognitive problem-solving skills training on attitudes toward problem solving among female upper-secondary school students.

2. Methods and Materials

2.1. Study Design and Participants

This applied study employed a quasi-experimental pretest–posttest–follow-up design with two experimental groups and one control group. The independent variables were Positive Youth Development Program training and social-cognitive problem-solving skills training, whereas the dependent variable was attitude toward problem solving among female students. The statistical population consisted of all female upper-secondary school students enrolled in schools in Qaem Shahr during the 2022–2023 academic year. The required sample size was estimated using G*Power version 3.1. Based on a statistical power of .90, a 95% confidence level, an alpha error probability of .05, a beta error probability of .10, and the inclusion of three groups and three measurement occasions, the minimum required sample size was calculated as 45 participants. Participants were recruited through nonprobability purposive sampling based on their pretest scores and fulfillment of the eligibility criteria. Subsequently, the 45 eligible students were randomly assigned through simple randomization to three groups of 15 participants each. The first experimental group received the Positive Youth Development Program, the second experimental group received social-cognitive problem-solving skills training, and the control group was placed on a waiting list and received no intervention during the study period. The inclusion criteria were being female, being enrolled in upper-secondary school, providing informed consent to participate in the intervention, not concurrently receiving individual counseling services, and obtaining the required cutoff score on the problem-solving attitude measure. The exclusion criteria were absence from more than two intervention sessions, use of psychiatric medication, and simultaneous participation in individual or group psychotherapy sessions at counseling centers. Before the interventions began, all participants were informed about the objectives, procedures, voluntary nature, and general course of the study. They were assured that their personal information and responses would remain confidential and would be used solely for research purposes. Written informed consent was then obtained from the participants before data collection and intervention implementation.

2.2. Measures

Attitude toward problem solving was assessed using the Cassidy and Long Problem-Solving Style Questionnaire. This self-report instrument consists of 24 items and evaluates six dimensions of problem-solving attitude and style: helplessness, control, creativity, confidence, approach, and avoidance. Each item is answered using a three-option response format consisting of “yes,” “do not know,” and “no.” A response of “yes” is scored as 1, whereas “no” and “do not know” responses are scored as 0. The first four items assess the helplessness dimension, items 5 through 8 assess control, items 9 through 12 measure creativity, items 13 through 16 evaluate problem-solving confidence, items 17 through 20 assess avoidance, and items 21 through 24 measure approach orientation. Higher scores on the adaptive dimensions indicate a more constructive orientation toward problem solving, whereas higher scores on helplessness and avoidance reflect less adaptive problem-solving tendencies. In the original psychometric evaluation of the instrument, internal consistency coefficients for the helplessness, control, avoidance, confidence, and creativity subscales were reported as .86, .66, .71, .52, and .65, respectively. Previous validation studies conducted in Iran reported a test–retest reliability coefficient of .89, while Cronbach’s alpha coefficients for the questionnaire and its subscales ranged from .60 to .77. These findings indicate that the instrument has acceptable temporal stability and internal consistency for assessing problem-solving attitudes and styles in student populations.

2.3. Interventions

After the required administrative permissions had been obtained and eligible participants had been selected, the first experimental group received the Positive Youth Development Program in 12 two-hour sessions conducted twice weekly. The intervention was designed to promote personal, interpersonal, cognitive, emotional, and behavioral competencies associated with healthy adolescent development. The initial session introduced the concept, objectives, and principles of positive youth development and familiarized participants with the structure and expectations of the program. Subsequent sessions addressed socialization skills and constructive participation in social environments, spiritual competencies and the development of meaning and personal values, goal setting and systematic planning, creative thinking, critical thinking, and the evaluation of alternative perspectives. The program also included training

in physical self-care, recognition of health-promoting behaviors, empathy, emotional understanding, intimacy, and the establishment of supportive interpersonal relationships. Additional sessions focused on effective communication, assertive expression, active listening, constructive interaction with peers and family members, and the enhancement of self-esteem. The final components of the intervention emphasized self-regulation, behavioral monitoring, emotional control, persistence, and self-efficacy. Throughout the sessions, instructional explanations were combined with group discussions, practical exercises, role-playing activities, behavioral assignments, and review of participants' experiences. Students were encouraged to apply the acquired competencies to real academic and social problems between sessions and to discuss the outcomes of these applications during subsequent meetings.

The second experimental group received Chang's social-cognitive problem-solving skills training in 12 two-hour sessions held twice weekly. This intervention was based on the assumption that effective problem solving depends on both a constructive cognitive orientation toward problems and the systematic use of rational problem-solving strategies. The initial sessions introduced the concepts of a problem, problem-solving processes, and the influence of thoughts, emotions, and behavioral responses on the way individuals confront challenging situations. Participants were then trained to develop a positive problem orientation by perceiving problems as manageable challenges rather than uncontrollable threats. Particular attention was given to strengthening problem-solving self-efficacy, identifying maladaptive beliefs, and modifying negative attitudes such as helplessness, pessimism, avoidance, impulsivity, and fear of failure. The subsequent sessions focused on defining problems accurately and concretely, distinguishing facts from interpretations, identifying personal and environmental barriers, and establishing realistic and attainable goals. Participants were taught to generate multiple alternative solutions without premature judgment and to employ flexible and creative thinking when considering possible responses. Decision-making skills were subsequently addressed through the systematic evaluation of the advantages, disadvantages, feasibility, short-term consequences, and long-term consequences of each proposed solution. The later sessions focused on selecting, implementing, monitoring, and verifying the most appropriate solution, as well as revising ineffective plans when necessary. Participants repeatedly practiced all stages of the problem-solving process using hypothetical situations

and real academic, interpersonal, and social difficulties encountered in their daily lives. Homework assignments, guided practice, cognitive restructuring exercises, feedback, and review of completed problem-solving tasks were used to consolidate the skills. During the same period, the control group received no psychological or educational intervention and remained on a waiting list. All three groups completed the outcome measure at pretest, immediately after completion of the interventions, and at a two-month follow-up assessment.

2.4. Data Analysis

The collected data were analyzed using IBM SPSS Statistics version 28. Descriptive statistics, including means and standard deviations, were initially calculated to summarize participants' problem-solving attitude scores across the pretest, posttest, and two-month follow-up assessments. Repeated-measures analysis of variance was then conducted to examine changes in the dependent variable over time, differences among the two experimental groups and the control group, and the interaction between measurement time and group membership. This analytical approach made it possible to determine whether changes in attitudes toward problem solving differed significantly across the three study groups and whether the effects observed immediately after the interventions were maintained at follow-up. Before conducting the primary analysis, the relevant statistical assumptions were evaluated, including the normality of score distributions, homogeneity of variances, and sphericity of the repeated measurements. When the omnibus group effects or interaction effects were statistically significant, Bonferroni-adjusted post hoc comparisons were performed to identify specific differences between the Positive Youth Development Program group, the social-cognitive problem-solving skills group, and the control group, as well as differences across the three assessment occasions. The statistical significance level was set at $p < .05$ for all analyses.

3. Findings and Results

The demographic findings indicated that, among the 45 participating students, each of the three groups—the control group, the social-cognitive problem-solving skills training group, and the Positive Youth Development Program training group—comprised 15 participants (33.33%). Regarding age, 6 participants (13.30%) were 14 years old, 8 (17.80%) were 15 years old, 12 (26.70%) were 16 years old,

10 (22.20%) were 17 years old, and 9 (20.00%) were 18 years old. In addition, 15 participants (33.30%) were in Grade 10, 17 (37.70%) were in Grade 11, and 13 (28.90%) were in Grade 12. Table 1 presents the descriptive statistics

for attitude toward problem solving and its components across the three measurement occasions, separately by group.

Table 1

Means and Standard Deviations of Attitude Toward Problem Solving and Its Components Across the Three Measurement Occasions by Group

Variable	Group	Pretest, M (SD)	Posttest, M (SD)	Follow-Up, M (SD)
Attitude toward problem solving	Control	10.13 (1.35)	10.00 (1.25)	10.33 (1.39)
	Social-cognitive problem-solving	10.53 (0.99)	17.60 (0.63)	14.60 (0.63)
	Positive Youth Development	9.93 (1.22)	13.46 (1.18)	11.46 (0.83)
Helplessness	Control	2.00 (0.65)	1.80 (0.41)	2.06 (0.70)
	Social-cognitive problem-solving	2.33 (0.45)	1.26 (0.48)	1.46 (0.48)
	Positive Youth Development	2.13 (0.51)	1.20 (0.41)	1.06 (0.25)
Control	Control	1.73 (0.59)	1.66 (0.48)	1.66 (0.61)
	Social-cognitive problem-solving	1.60 (0.50)	3.73 (0.45)	2.66 (0.48)
	Positive Youth Development	1.46 (0.51)	2.60 (0.50)	2.13 (0.63)
Creativity	Control	1.53 (0.51)	1.60 (0.50)	1.60 (0.50)
	Social-cognitive problem-solving	1.33 (0.48)	3.86 (0.35)	3.06 (0.59)
	Positive Youth Development	1.40 (0.50)	2.93 (0.45)	2.33 (0.61)
Confidence	Control	1.40 (0.50)	1.40 (0.50)	1.53 (0.63)
	Social-cognitive problem-solving	1.40 (0.50)	3.86 (0.35)	2.86 (0.51)
	Positive Youth Development	1.46 (0.41)	2.80 (0.51)	2.46 (0.48)
Approach	Control	1.73 (0.70)	1.73 (0.70)	1.73 (0.70)
	Social-cognitive problem-solving	1.53 (0.51)	3.86 (0.35)	3.06 (0.45)
	Positive Youth Development	1.33 (0.48)	2.73 (0.59)	2.40 (0.50)
Avoidance	Control	1.80 (1.01)	1.80 (1.01)	1.80 (1.01)
	Social-cognitive problem-solving	2.33 (0.48)	1.26 (0.45)	1.46 (0.63)
	Positive Youth Development	2.13 (0.51)	1.20 (0.41)	1.06 (0.25)

To verify that the assumptions underlying repeated-measures analysis of variance were satisfied, the normality of the distributions, homogeneity of variances, and sphericity were examined. The results of the Shapiro–Wilk test indicated that the test statistic was nonsignificant for attitude toward problem solving in all groups and at all assessment occasions ($p > .05$), demonstrating that the variable was normally distributed. Levene’s test was also nonsignificant for attitude toward problem solving at pretest, $F = 0.579$, $p = .565$; posttest, $F = 2.315$, $p = .111$; and follow-up, $F = 1.894$, $p = .275$, indicating that the assumption of

homogeneity of error variances was met. Furthermore, Mauchly’s test of sphericity was nonsignificant for attitude toward problem solving, $W = .895$, $\chi^2 = 1.439$, $p = .487$, confirming that the sphericity assumption was satisfied. Accordingly, repeated-measures analysis of variance was performed.

Table 2 presents the results of the repeated-measures analysis of variance for the main effects of group and time and the Time $\times$ Group interaction effect on attitude toward problem solving and its components.

Table 2

Results of Repeated-Measures Analysis of Variance for the Main and Interaction Effects on Attitude Toward Problem Solving and Its Components

Variable	Source of Variation	Mean Square	F	df	p	Effect Size	Observed Power
Attitude toward problem solving	Group effect	193.096	67.136	2	< .001	.762	1.00
	Time effect	153.946	390.129	1.786	< .001	.903	1.00
	Time $\times$ Group	55.277	140.084	3.572	< .001	.870	1.00

Helplessness	Group effect	2.696	4.341	2	< .001	.171	1.00
	Time effect	8.767	71.048	1.604	< .001	.628	1.00
	Time × Group	1.963	15.909	3.207	< .001	.431	1.00
Control	Group effect	10.941	17.376	2	< .001	.453	1.00
	Time effect	17.742	106.634	1.444	< .001	.717	1.00
	Time × Group	6.336	38.084	2.888	< .001	.645	1.00
Creativity	Group effect	15.652	2.224	2	< .001	.605	1.00
	Time effect	24.886	149.685	1.776	< .001	.781	1.00
	Time × Group	6.778	40.771	3.552	< .001	.660	1.00
Confidence	Group effect	18.467	36.356	2	< .001	.634	1.00
	Time effect	21.237	150.456	1.777	< .001	.782	1.00
	Time × Group	6.491	45.987	3.554	< .001	.687	1.00
Approach	Group effect	13.563	17.462	2	< .001	.457	1.00
	Time effect	23.021	182.221	1.591	< .001	.813	1.00
	Time × Group	6.782	53.679	3.183	< .001	.719	1.00
Avoidance	Group effect	1.296	0.971	2	.387	.044	1.00
	Time effect	9.629	87.100	1.340	< .001	.675	1.00
	Time × Group	2.565	23.200	2.680	< .001	.525	1.00

As shown in Table 2, the main effect of time was statistically significant for attitude toward problem solving and all of its components ($p < .001$). The main effect of group was also significant for attitude toward problem solving and all components except avoidance ($p < .001$). In addition, the Time × Group interaction effect was statistically significant for attitude toward problem solving and all of its components ($p < .001$). The effect sizes indicated that 76% of the variance in attitudes toward problem solving was attributable to group membership, 90% was attributable to changes over time, and 87% was attributable to differential changes over time across at least one of the group levels. Therefore, the research hypothesis was supported, indicating that the Positive Youth

Development Program and social-cognitive problem-solving skills training differed in their effectiveness in improving attitudes toward problem solving among female students.

To examine pairwise differences in the adjusted mean scores for attitude toward problem solving and its components across the groups, Bonferroni post hoc comparisons were conducted. The adjusted mean score for attitude toward problem solving was 10.156 in the control group, 14.244 in the social-cognitive problem-solving skills training group, and 11.622 in the Positive Youth Development Program group. Table 3 presents the results of the Bonferroni comparisons among the groups.

Table 3

Results of Bonferroni Comparisons of Adjusted Mean Attitude Toward Problem-Solving Scores Across the Study Groups

Variable	Group (I)	Group (J)	Mean Difference (I – J)	p
Attitude toward problem solving	Control	Social-cognitive problem-solving	-4.089	.001
	Control	Positive Youth Development	-1.467	.001
	Social-cognitive problem-solving	Positive Youth Development	2.622	.001

As shown in Table 3, both experimental groups differed significantly from the control group ($p < .05$), indicating that both interventions improved attitudes toward problem solving. Relative to the control group, the increase was 4.089 points in the social-cognitive problem-solving skills training group and 1.467 points in the Positive Youth Development Program group. A significant difference was also found between the two experimental groups ($p < .05$), such that social-cognitive problem-solving skills training produced a 2.622-point greater improvement in attitudes toward

problem solving than the Positive Youth Development Program. At the component level, significant differences were found for control, creativity, confidence, and approach between both experimental groups and the control group, as well as between the two experimental groups. Social-cognitive problem-solving skills training produced respective increases of 0.600, 0.533, 0.467, and 0.667 points greater than those produced by the Positive Youth Development Program. However, for helplessness, only the Positive Youth Development Program group differed

significantly from the control group, whereas no significant between-group difference was observed for avoidance ($p > .05$).

Bonferroni comparisons of the adjusted means were also conducted to examine differences in attitude toward problem

solving across the three assessment occasions. The adjusted mean score for attitude toward problem solving was 10.200 at pretest, 13.689 at posttest, and 12.133 at follow-up. Table 4 presents the results of the comparisons across assessment occasions.

Table 4

Results of Bonferroni Comparisons of Adjusted Mean Attitude Toward Problem-Solving Scores Across Assessment Occasions

Variable	Reference Occasion	Comparison Occasion	Mean Difference	p
Attitude toward problem solving	Pretest	Posttest	-3.489	.001
	Pretest	Follow-up	-1.933	.001
	Posttest	Follow-up	1.556	.001

As shown in Table 4, the difference in attitude toward problem solving between pretest and posttest was statistically significant ($p < .001$), with scores increasing from pretest to posttest. The difference between posttest and follow-up was also significant ($p < .001$), indicating that scores declined slightly at follow-up but remained significantly higher than the pretest scores. This pattern demonstrates the relative maintenance of the effects of both interventions at the follow-up assessment.

4. Discussion

The present study compared the effectiveness of Positive Youth Development Program training and social-cognitive problem-solving skills training in improving attitudes toward problem solving among female upper-secondary school students. The findings demonstrated significant main effects of time and group, as well as a significant Time $\times$ Group interaction, indicating that changes in problem-solving attitudes differed across the three groups and assessment occasions. Both interventions significantly improved the overall attitude toward problem solving compared with the control condition, and these improvements remained significantly higher than baseline at the two-month follow-up. However, social-cognitive problem-solving skills training produced a significantly greater overall improvement than the Positive Youth Development Program. At the component level, both interventions improved control, creativity, confidence, and approach orientation, with the social-cognitive problem-solving intervention producing greater changes in these dimensions. The Positive Youth Development Program demonstrated a particularly favorable effect on helplessness, whereas no statistically significant overall group effect was observed for avoidance. Although some reduction occurred

between posttest and follow-up, the follow-up scores remained significantly better than the pretest scores, indicating the relative durability of both interventions.

The finding that both programs improved attitudes toward problem solving supports the broader assumption that adolescents' responses to difficulties can be modified through systematic psychological and educational training. Problem-solving attitudes are not merely fixed personality tendencies; rather, they include beliefs, emotional reactions, expectations, and behavioral preferences that can be reconstructed through guided learning and repeated practice. Adolescents who initially interpret problems as threatening, uncontrollable, or indicative of personal inadequacy may gradually learn to regard them as manageable situations requiring analysis and purposeful action. This interpretation is compatible with evidence showing that problem-solving ability develops in interaction with critical thinking, communication, collaboration, motivation, and social-cognitive beliefs (A'Raafi et al., 2024; Almulla & Al-Rahmi, 2023). It also corresponds with studies indicating that active instructional methods based on problem solving enhance students' perceived competence, creativity, and critical-thinking tendencies (Roorda et al., 2024; Topsakal et al., 2022; Wang, 2021). Therefore, the improvement observed in both experimental groups can be attributed to the replacement of passive or maladaptive responses with more active, flexible, and confident approaches to academic and interpersonal difficulties.

The superior effectiveness of social-cognitive problem-solving skills training can be explained by the direct correspondence between the content of the intervention and the dependent variable. This intervention explicitly targeted positive problem orientation, problem definition, generation of alternative solutions, decision making, implementation, and evaluation. Consequently, students repeatedly practiced

the precise cognitive and behavioral processes assessed by the problem-solving attitude questionnaire. The training also directly addressed beliefs such as helplessness, low self-efficacy, fear of failure, and the tendency to perceive problems as threats. Negative problem orientation has been associated with poorer social problem solving, partly because it restricts cognitive flexibility and prevents individuals from shifting between interpretations and possible responses (Kilci et al., 2025). By identifying dysfunctional appraisals and replacing them with more realistic and constructive beliefs, social-cognitive training likely increased the participants' willingness to engage with problems rather than react emotionally or withdraw. Its greater effectiveness is therefore understandable because it modified both the cognitive appraisal of problems and the procedural strategies used to resolve them.

The improvement produced by social-cognitive problem-solving training is consistent with research showing that structured problem-solving interventions can enhance psychological and social functioning. Problem-solving and assertiveness training has been reported to improve self-esteem and mental health among female adolescents, suggesting that the mastery of effective strategies generates a broader sense of competence and psychological control (Golshiri et al., 2023). Emotion-regulation training has likewise improved social problem-solving skills and reduced social anxiety among female students, demonstrating that effective problem solving depends partly on the capacity to regulate emotional arousal during difficult interpersonal situations (Akbari & Hosseini, 2025). Social problem-solving skills training has also reduced depression in individuals with systolic heart failure and enhanced psychological empowerment among secondary-school teachers, with effects that remained stable over time (Karimi, 2022; Omid et al., 2023). Furthermore, the integration of social cognition and social problem-solving training has improved occupational functioning among adults with psychiatric disabilities (Kern et al., 2022). Although these studies involved different populations, they collectively indicate that systematic problem-solving instruction strengthens perceived agency, reduces maladaptive emotional responses, and promotes more effective functioning across contexts.

The larger changes observed in the control, confidence, creativity, and approach components in the social-cognitive problem-solving group further clarify the mechanisms underlying its effectiveness. Training in accurate problem definition may have increased perceived control by helping

students divide complex or ambiguous situations into manageable elements. Adolescents often experience academic and social difficulties as diffuse and overwhelming; transforming these experiences into clearly stated problems can reduce uncertainty and establish a practical starting point for action. The generation of multiple alternative solutions may also have strengthened creativity because students were encouraged to suspend premature judgment and consider responses beyond their habitual patterns. Decision-making exercises and successful completion of problem-solving assignments likely increased confidence by providing mastery experiences. Finally, repeated encouragement to confront rather than postpone difficulties may have strengthened approach orientation. Research on problem-solving learning similarly demonstrates that instructional environments requiring active exploration can improve self-confidence, social attitudes, and non-cognitive competencies (Padunggun et al., 2024; Sihite et al., 2024). Collaborative and learner-centered activities can also support the development of flexible reasoning and sustained learning performance (A'Raafi et al., 2024; Nurjain et al., 2023).

The Positive Youth Development Program also significantly improved the students' attitudes toward problem solving, although its effect was smaller than that of the focused social-cognitive intervention. Positive Youth Development does not teach problem solving solely as a sequence of cognitive operations; instead, it strengthens broad developmental assets such as self-regulation, self-efficacy, self-esteem, empathy, communication, planning, critical thinking, social competence, and positive relationships. These resources can indirectly improve problem-solving attitudes by enabling adolescents to approach difficulties with greater emotional stability, social support, optimism, and confidence. The positive effect found in this study is consistent with evidence that Positive Youth Development contributes to academic well-being and vitality through the enhancement of social and personal competencies (Shojaei et al., 2023). It is also compatible with research indicating that Positive Youth Development and self-compassion are associated with lower aggression among female upper-secondary students (Fotouhi et al., 2023). The validated Iranian Positive Youth Development model further supports the cultural relevance of strengthening integrated developmental capacities among Iranian adolescents (Pahlavanneshan et al., 2022).

The impact of Positive Youth Development may also be explained by its emphasis on psychological capital and

adaptive personal strengths. Training adolescents in goal setting, planning, self-regulation, interpersonal communication, and self-efficacy may increase their expectation that personal effort can lead to desirable outcomes. Previous research has shown that Positive Youth Development training can increase psychological capital and reduce adolescent anxiety (Soheili Salek et al., 2022). Reduced anxiety may facilitate problem solving because students can allocate greater attentional and cognitive resources to understanding a situation rather than reacting primarily to its emotional threat. Positive character attributes and virtues have similarly been identified as protective factors for adolescent mental health (McLoughlin & Kristjánsson, 2024). In addition, self-compassion and psychological flexibility are related to greater psychological well-being among adolescent girls (Mendes et al., 2022). These qualities may allow students to tolerate mistakes, revise unsuccessful strategies, and continue working toward solutions without interpreting temporary failure as evidence of personal inadequacy.

The favorable effect of Positive Youth Development on helplessness is particularly noteworthy. In the pairwise comparisons, the Positive Youth Development group differed significantly from the control group in helplessness, whereas the pattern was less pronounced for the social-cognitive intervention. Helplessness involves the belief that one has little capacity to influence difficult circumstances and that efforts to solve problems are unlikely to succeed. The broad strength-based orientation of Positive Youth Development may be especially effective in modifying this belief because it helps adolescents identify internal capabilities, supportive relationships, values, and opportunities for meaningful contribution. Instead of concentrating only on how a specific problem should be solved, the program encourages adolescents to view themselves as competent and developing individuals who possess multiple personal and social resources. Hope has been shown to mediate the relationship between parental attachment and adolescents' social problem-solving skills, indicating that positive future expectations energize active engagement with difficulties (Hu & Jiang, 2022). Meaning in life and purpose orientation are also related to more constructive attitudes toward life among young people (Wang et al., 2023). Thus, the reduction in helplessness may reflect a broader change in how students perceived their capacities and future possibilities.

The effectiveness of both interventions may also be understood in light of adolescence as a period of heightened

developmental plasticity. Adolescents are acquiring advanced reasoning skills while continuing to develop emotional regulation, impulse control, social perspective taking, and identity. This combination creates both vulnerability and responsiveness to intervention. Without adequate support, academic stress, interpersonal conflict, and family tension may intensify negative emotional states and problematic behavior. Parent-adolescent conflict, for example, has been associated with depression and problematic internet use, with school climate influencing the strength of these associations (Chen et al., 2024). Conflict patterns can also extend from adolescence into young adulthood, illustrating the developmental importance of constructive communication and problem management (Son et al., 2024). Both interventions in the present study provided structured opportunities to discuss experiences, practice alternative responses, and receive feedback. Such processes may be especially effective during adolescence because cognitive and social schemas remain open to reorganization.

The finding that avoidance did not show a significant overall group effect, despite significant effects of time and the Time $\times$ Group interaction, requires careful interpretation. Avoidance may be more resistant to change than other components because it is often reinforced by immediate reductions in anxiety or discomfort. When adolescents postpone or escape a problem, they may experience temporary emotional relief, which strengthens the avoidant response even when it produces negative long-term consequences. A 12-session intervention may improve knowledge, confidence, and stated willingness to confront problems before it fully changes habitual avoidance across real-life situations. Avoidance may also be affected by contextual factors beyond individual skill, including family control, school expectations, peer evaluation, and limited decision-making autonomy. Adolescents' help-seeking intentions are influenced by attitudes, perceived norms, and perceived behavioral control, demonstrating that willingness to act depends partly on the surrounding social environment (Aras & Peker, 2024). Accordingly, sustained changes in avoidance may require longer behavioral practice, environmental support, and repeated exposure to personally meaningful problems.

The significant decline from posttest to follow-up suggests that the effects of both interventions weakened to some extent after the formal sessions ended. This pattern is common in psychological and educational interventions because the structured support, feedback, group reinforcement, and regular practice provided during

treatment are reduced after program completion. Nevertheless, follow-up scores remained significantly higher than pretest scores, showing that the benefits were not temporary or entirely dependent on session attendance. The persistence of improvement may reflect the acquisition of transferable strategies that students continued to use in daily life. Structured self-management programs have similarly demonstrated that adolescents can incorporate educational experiences into their understanding and management of ongoing challenges (Flora et al., 2025). Group programs may also promote maintenance through peer learning, normalization of difficulties, shared practice, and mutual encouragement (Peron & Neufeld, 2022). However, the partial reduction in scores indicates that booster sessions and continued opportunities for practice may be needed to consolidate the gains.

The results also have implications for understanding the relationship between broad developmental programs and targeted skills training. Positive Youth Development may be especially useful when the objective is to enhance multiple dimensions of adolescent functioning simultaneously, including identity, emotional competence, interpersonal relationships, psychological capital, and social responsibility. In contrast, social-cognitive problem-solving training may be preferable when a specific and rapid improvement in problem orientation and problem-management skills is required. The greater effect of the latter intervention does not imply that Positive Youth Development is ineffective; rather, it reflects the principle of intervention specificity. Because the outcome variable directly measured attitudes and styles related to problem solving, a program explicitly designed around those constructs would be expected to show the strongest effect. At the same time, the reduction in helplessness and broader developmental benefits associated with Positive Youth Development suggest that it may address underlying vulnerabilities that focused skills training does not fully encompass.

The findings can also be situated within a broader framework of adolescent resilience and mental health promotion. Effective problem solving may interrupt pathways from cumulative risk to psychological distress by increasing coping efficacy and reducing the perception that adverse circumstances are uncontrollable (Xiong et al., 2021). Life satisfaction, behavioral problems, and psychological distress are closely associated in vulnerable adolescent populations, suggesting that interventions promoting effective coping may have effects beyond the

specific outcome assessed in this study (Li et al., 2024). Academic buoyancy, reflective thinking, grit, and emotion regulation similarly help students recover from ordinary setbacks and maintain engagement (Alazemi et al., 2023; Nurjain et al., 2023). Positive time attitudes are also associated with better adolescent mental health, possibly because young people who maintain a constructive future orientation interpret current difficulties as temporary and manageable (Tejada-Gallardo et al., 2021). Both interventions may therefore contribute to resilience by strengthening the cognitive, motivational, and emotional resources required to remain engaged with challenges.

5. Conclusion

Overall, the study indicates that both Positive Youth Development Program training and social-cognitive problem-solving skills training are effective methods for improving attitudes toward problem solving among female upper-secondary school students. The social-cognitive intervention produced the larger overall effect, particularly in perceived control, creativity, confidence, and approach orientation, most likely because its content directly targeted the beliefs and procedures involved in problem solving. The Positive Youth Development Program nevertheless produced meaningful improvements and appeared particularly relevant to reducing helplessness through the enhancement of strengths, self-efficacy, hope, and developmental resources. The maintenance of gains at follow-up confirms that both interventions can generate relatively durable change, although the decline after posttest highlights the importance of continued reinforcement.

The present study had several limitations. The sample consisted exclusively of female upper-secondary school students from Qaem Shahr, which limits the generalizability of the findings to male students, adolescents from other educational levels, and populations living in different geographical, cultural, or socioeconomic contexts. Participants were initially selected through purposive sampling, and the relatively small sample size may have limited the precision of subgroup comparisons. The dependent variable was assessed using a self-report questionnaire, making the findings potentially vulnerable to response bias, social desirability, and participants' subjective interpretations of the items. The follow-up period was limited to two months and therefore did not establish whether the observed improvements would be maintained over longer intervals. In addition, the control group was

placed on a waiting list and did not receive an active comparison intervention, so nonspecific effects such as attention, group participation, and interaction with the facilitator could not be ruled out. The study also did not assess treatment fidelity, homework adherence, facilitator effects, or contextual variables such as family support, academic performance, and school climate that might have influenced the outcomes.

Future studies should replicate the research with larger and more diverse samples, including male students, mixed-gender groups, adolescents from different educational levels, and participants from various regions and socioeconomic backgrounds. Longer follow-up assessments at six months and one year would clarify the durability of the intervention effects and identify when booster sessions might be necessary. Researchers should use multimethod assessments, including teacher and parent reports, behavioral problem-solving tasks, classroom observations, and qualitative interviews, to complement self-report data. Active control groups and comparisons with other established interventions would allow more precise conclusions about the specific mechanisms of change. Future research could also examine mediating variables such as cognitive flexibility, self-efficacy, hope, emotion regulation, psychological capital, and academic buoyancy, as well as moderating variables such as age, baseline problem orientation, family conflict, and school climate. It may also be useful to evaluate an integrated intervention that combines the broad strength-based components of Positive Youth Development with the structured procedural techniques of social-cognitive problem solving.

School counselors and educational psychologists should incorporate structured problem-solving instruction into preventive and developmental services for adolescents, particularly for students who display helplessness, low confidence, indecision, or avoidance when facing academic and interpersonal difficulties. Social-cognitive problem-solving training can be delivered in small groups and integrated into school counseling, life-skills courses, or academic support programs. Positive Youth Development activities should also be used to strengthen self-regulation, communication, planning, self-efficacy, empathy, and supportive peer relationships. To improve maintenance, schools should provide periodic booster sessions, supervised practice, and opportunities for students to apply the skills to real educational and social situations. Teachers and parents should be informed about the language and stages of constructive problem solving so that they can reinforce the

same approach in classrooms and at home. Because the focused problem-solving program produced the stronger immediate effect while Positive Youth Development appeared beneficial for broader strengths and helplessness, practitioners may select either intervention according to students' needs or combine both in a sequenced school-based program.

Authors' Contributions

Authors equally contributed to this article.

Declaration

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

Transparency Statement

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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