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Comparison of the Effectiveness of Self-Regulation Training, Academic Help-Seeking Training, and Problem-Solving Training on Academic Optimism

Neda. Pegah[1], Kobra. Hajializadeh[2*], Seyed Abdolvahab. Samavi[3], Azita. Amirfakhraee[1]

[1] PhD student, Department of Psychology, BA.C., Islamic Azad University, Bandar Abbas, Iran
[2] Associate Professor, Department of Psychology, BA.C., Islamic Azad University, Bandar Abbas, Iran
[3] Professor of Educational Psychology, Department of Educational Sciences, Faculty of Humanities, University of Hormozgan, Bandar Abbas, Iran

*** Corresponding author email address**: hajializadehk@iau.ac.ir

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A B S T R A C T

Objective: The present study aimed to compare the effectiveness of self-regulation training, academic help-seeking training, and problem-solving training on academic optimism among male lower secondary school students in Bandar Abbas.

Methods and Materials: The research method was applied in purpose and quasi-experimental in design, employing a pretest–posttest design with a control group. The statistical population consisted of all male lower secondary school students enrolled in Bandar Abbas during the 2023–2024 academic year. The study sample was selected using a convenience sampling method. Participants were randomly assigned to three experimental groups and one control group (15 members per group). The standardized Academic Optimism Scale developed by Schenken-Moran et al. (2013) was used to measure the dependent variable. Based on the existing training protocols, the experimental groups received relevant interventions over one month (12 sessions in total), while the control group received no intervention. Data were analyzed using SPSS version 27.

Findings: The results of multivariate covariance analysis (MANCOVA) and Bonferroni post hoc tests indicated that both self-regulation training and problem-solving training significantly increased academic optimism ($p < .05$), whereas academic help-seeking training did not produce a significant improvement in academic optimism. Furthermore, there was no significant difference between self-regulation training and problem-solving training in their impact on academic optimism.

Conclusion: Both self-regulation and problem-solving training effectively improved students' academic optimism, whereas academic help-seeking training showed weaker results.

Keywords: *self-regulation training, academic help-seeking training, problem-solving training, academic optimism*

1. Introduction

Academic optimism has emerged as one of the most influential constructs in explaining students' success, well-being, and motivation in contemporary educational psychology. Rooted in the triadic interaction between *academic emphasis*, *trust in teachers*, and *school unity*, academic optimism reflects the collective belief that both teachers and students can promote learning despite challenges (Sacco, 2023; Smith, 2023). This construct integrates cognitive, affective, and behavioral dimensions of schooling, aligning with the positive psychology movement's emphasis on human strengths, resilience, and adaptive functioning (Scott et al., 2023). Empirical evidence highlights that academic optimism significantly predicts academic engagement, resilience, and academic achievement by fostering students' confidence in their learning potential and by enhancing teachers' expectations for success (Shahbazi et al., 2023; Sharma et al., 2023). In the current educational context—marked by rapid technological change, post-pandemic learning disruptions, and an increase in student stress—the need to develop psychological resources such as optimism, self-regulation, and problem-solving has become more urgent (Vanlommel et al., 2023).

Academic optimism, as a multidimensional construct, has been shown to influence students' persistence and motivation in overcoming academic barriers. The literature suggests that optimistic learners are more likely to interpret academic failures as temporary, controllable, and specific, which in turn strengthens their motivation and coping behaviors (Panahi et al., 2023). Optimism also contributes to the development of academic meaning and identity, providing a psychological framework through which students make sense of their learning goals and challenges (Jafari et al., 2021; Lotfi & Ashouri, 2023). Furthermore, studies show that optimism is a powerful predictor of student engagement and self-efficacy, as it facilitates positive expectations toward effort, feedback, and achievement (Pöysä et al., 2020; Reeve et al., 2020). However, optimism alone is insufficient without self-regulatory capacities that allow learners to strategically plan, monitor, and adjust their learning behaviors (De la Fuente et al., 2022).

Self-regulated learning (SRL) has been conceptualized as a cyclical process in which students set goals, employ strategies, monitor performance, and reflect on outcomes (Chitra et al., 2022). SRL theory emphasizes the learner's proactive role in managing cognition, motivation, and behavior to optimize learning outcomes (Reparaz et al., 2020). As noted by (Dehrooyeh et al., 2024), self-regulation training enhances metacognitive awareness, academic motivation, and coping strategies—particularly among students experiencing learning difficulties such as math anxiety. Similarly, (Pourshalchi et al., 2025) demonstrated that teaching self-regulation strategies significantly increases resilience and reduces academic stress in low-performing students. The predictive relationship between self-regulation and academic achievement is consistently supported across contexts, as self-regulated learners tend to exhibit higher persistence, better emotional regulation, and more efficient problem-solving abilities (Nunez et al., 2022; Sáiz-Manzanares et al., 2022).

In educational settings, self-regulation training has also been linked to improvements in self-efficacy and intrinsic motivation. According to (Darabi et al., 2022), the implementation of self-regulation strategies among secondary school students significantly enhances their perceived academic competence and motivational orientation. Likewise, (Jalilzadeh & Zarei, 2018) found that self-regulation training reduces test anxiety and strengthens academic motivation by enabling students to manage their study behaviors and emotional responses effectively. The findings by (De la Fuente et al., 2022) further highlight that self-regulation predicts executive functioning and emotion regulation difficulties, confirming its dual role in cognitive control and affective adjustment. In this sense, SRL does not merely involve mechanical strategy use but constitutes a dynamic system integrating metacognitive, motivational, and contextual factors.

Problem-solving ability, as another central variable in educational performance, represents a cognitive–behavioral competence that enables learners to identify, analyze, and resolve academic challenges systematically. Training in problem-solving has been shown to improve creative thinking, critical reasoning, and adaptive behavior among students (Kim et al., 2019). The classical model developed by D'Zurilla and Goldfried (1971), later adapted in numerous educational contexts, views problem-solving as a rational and emotional process encompassing problem orientation, definition, generation of alternatives, decision-making, and solution implementation. Empirical findings indicate that students who receive structured problem-solving instruction develop stronger academic resilience and adaptability to stress (Azimpoor et al., 2021). Moreover,

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(Dehrooyeh et al., 2024) found that social-cognitive problem-solving training effectively enhanced academic self-regulation and coping among students with learning-related anxiety.

The connection between problem-solving and academic optimism lies in their shared emphasis on agency, efficacy, and cognitive flexibility. As (Gholipour et al., 2022) reported, moral and cognitive training that encourages reflective thinking improves both self-control and scientific optimism. Similarly, (Manlangit & Atienzar, 2023) and (Panahi et al., 2023) highlighted that problem-solving competence fosters a sense of hope and aspiration that translates into academic optimism and perseverance. Students equipped with problem-solving skills are better positioned to reinterpret setbacks constructively, regulate their emotions during challenges, and sustain motivation—a set of characteristics that define optimistic learners.

Another crucial factor influencing academic optimism is *academic help-seeking*, a metacognitive strategy through which learners recognize when they need assistance and actively pursue it (Newman, 2023). Help-seeking has long been conceptualized as a form of self-regulated learning rather than dependency, as it reflects awareness of one's cognitive limits and the ability to mobilize social resources (Butler, 2013). Effective help-seeking behaviors—such as asking clarifying questions, requesting hints, or seeking feedback—enhance students' understanding, reduce anxiety, and strengthen self-efficacy (Noohpour et al., 2020). However, ineffective or avoidant help-seeking can indicate low self-efficacy and fear of negative evaluation (Boshoff-Knoetze et al., 2023). Thus, fostering adaptive help-seeking behavior in educational settings is critical for developing a supportive classroom environment conducive to optimism and academic success.

Research has demonstrated the mediating role of academic help-seeking in the relationship between self-regulation, self-efficacy, and optimism. For instance, (Dehghani, 2022) observed a strong correlation between academic self-regulation and help-seeking among student athletes, suggesting that those who regulate their learning processes are more likely to engage in proactive help-seeking when facing academic difficulties. Likewise, (Sinring et al., 2022) found that self-regulation and psychological capital predict academic coping strategies, particularly during stressful periods such as the COVID-19 pandemic. This implies that students who combine self-regulatory strategies with social support mechanisms demonstrate enhanced adaptive capacity and optimism in learning environments.

The interplay between these constructs—self-regulation, problem-solving, and help-seeking—forms a comprehensive framework for understanding how students cultivate academic optimism. As (Nunez et al., 2022) emphasized, self-regulatory activity mediates the effect of instructional interventions on academic achievement, indicating that targeted training programs can effectively boost learners' performance. Moreover, (Reeve et al., 2020) and (Pöysä et al., 2020) suggested that engagement and motivation act as mediators linking these psychological constructs to academic outcomes. When combined, self-regulation and problem-solving promote persistence and autonomy, while adaptive help-seeking ensures social connectedness and resource utilization—each contributing to a climate of academic optimism (Vanlommel et al., 2023).

Recent Iranian studies have corroborated these international findings. For example, (Darabi et al., 2022) and (Pourshalchi et al., 2025) confirmed that interventions targeting self-regulatory skills significantly enhance self-efficacy and resilience among secondary students. Similarly, (Gholipour et al., 2022) found that fostering reflective moral intelligence can improve optimism and self-control. Meanwhile, (Dehghani, 2022) demonstrated that academic optimism correlates positively with both self-regulation and help-seeking, reinforcing the notion that these skills are mutually reinforcing rather than isolated constructs. Iranian educational researchers such as (Shahbazi et al., 2023) and (Panahi et al., 2023) have also emphasized the importance of cultivating optimism and engagement in students through curricular and pedagogical innovations.

Despite growing evidence supporting the significance of self-regulation, problem-solving, and help-seeking, few studies have compared their relative effectiveness in enhancing academic optimism among adolescent students. Adolescence represents a critical developmental period for the consolidation of metacognitive, emotional, and motivational competencies that underpin academic success (Mousavian et al., 2022). Moreover, the transition from middle to secondary education often coincides with heightened academic pressure and identity exploration, conditions under which optimism serves as a protective factor (Lotfi & Ashouri, 2023; Scott et al., 2023). Understanding which intervention strategy—self-regulation, help-seeking, or problem-solving—most effectively fosters optimism can provide valuable insights for teachers,

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counselors, and policymakers aiming to improve educational outcomes.

In summary, academic optimism represents a crucial psychological resource that mediates the effects of self-regulatory, problem-solving, and social learning strategies on students' academic engagement and resilience. While previous studies have examined each construct separately, comparative analyses remain limited. The present study therefore seeks to fill this gap by evaluating and comparing the effectiveness of self-regulation training, academic help-seeking training, and problem-solving training on academic optimism among male lower secondary school students in Bandar Abbas.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in purpose and quasi-experimental in design, employing a pretest–posttest design with a control group.

The statistical population of this study included all male lower secondary school students enrolled in Bandar Abbas during the 2023–2024 academic year. The sampling method was convenience sampling. To select the sample members, one male lower secondary school in Bandar Abbas was invited to participate. Based on previous studies, the sample size was determined to be 15 participants for each group. Considering the inclusion of four groups (three experimental groups and one control group), the total sample size consisted of 60 participants.

In the present research, the participating students were assigned to four groups of 15 members each (three experimental groups and one control group). Initially, a pretest of the dependent variable was administered to all sample groups, after which the intervention sessions were conducted for the three experimental groups. The control group did not receive any training. The training program for the experimental groups lasted one month and consisted of 12 sessions (three sessions per week on Saturdays, Mondays, and Wednesdays). Following the intervention, a posttest of the dependent variable was administered to all groups.

2.2. Measures

To assess the dependent variable of academic optimism, the standardized Academic Optimism Scale developed by Schenken-Moran et al. (2013) was used. This questionnaire includes 24 items across three components: *academic emphasis*, *students' trust in teachers*, and *school unity*. It is scored on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Sample items include statements such as "Teachers are always ready to help students." It should be noted that item 21 is reverse scored. The components of the scale are distributed as follows:

- Academic Emphasis: items 1–7
- Student Trust in Teachers: items 8–16
- School Unity: items 17–24

In the study by Ghadampour et al. (2017), the content, face, and criterion validity of the questionnaire were evaluated and found to be satisfactory. The Cronbach's alpha coefficient reported by Ghadampour et al. (2017) for this questionnaire exceeded .70. In the present study, the reliability of this scale, calculated using Cronbach's alpha, was .80.

2.3. Interventions

For the self-regulation training intervention, twelve 90-minute sessions were delivered following the Pintrich and De Groot protocol, adapted from the original scope to fit a 12-session sequence (Pintrich & De Groot, 1990). Session content introduced self-regulated learning as a process encompassing goal setting, regulation of effort toward goals, self-monitoring, time management, and structuring the physical and social learning environment; clarified cognition as the mental process that encodes, organizes, and stores information by directing attention, discrimination, recoding, and memory operations; emphasized elaboration as a memory strategy that links new material to prior knowledge; taught organization as an optimal strategy for complex material through categorizing based on similarities and differences; presented metacognition and planning—aligning learning resources and time, and specifying the sequence, timing, and quality of tasks; trained monitoring and control through applied exercises to enhance awareness of progress, supervision, guidance, and self-evaluation; coordinated regulation strategies with monitoring, including key regulatory tactics such as adjusting reading pace and modifying cognitive strategies; highlighted time management as a means of adapting to or reshaping the environment to meet goals and needs; coached environmental structuring to minimize distraction and leverage supportive resources while teaching resource-management strategies including help seeking and effort regulation, with explicit instruction on formulating questions and soliciting assistance appropriately; addressed motivation

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and self-efficacy beliefs and their influence on task selection and academic engagement; covered goal orientation, the role of goals in self-regulated learning, and the characteristics of precise, valid, and attainable goals; and concluded with delay of gratification in academic contexts and its importance for self-regulated learning. Because the original 15-session protocol was condensed to 12 sessions, content validity of the adapted syllabus was re-evaluated using the Lawshe method, and the resulting content validity ratio met acceptance criteria.

For the academic help-seeking training intervention, twelve 90-minute sessions were conducted based on the protocol by Hashemi and colleagues, adapted to the present context while preserving core competencies (Hashemi et al., 2017). The curriculum covered the definition, role, and importance of help-seeking as an adaptive learning strategy; identification of appropriate times to seek help and how to formulate and express requests; recognition of knowledgeable teachers and classmates and how and when to approach them; mental rehearsal exercises for problem identification and appraisal using the scenario of planning a brief research trip in the role of group guide; clarification of academic and social goals, self-beliefs, and emotions that facilitate distress tolerance along with self-reinforcement to counter negative appraisals; instruction in effective explanations paired with activities to build general communication skills; guided use of scientifically grounded explanations during collaborative problem solving; practice in posing higher-order questions and designing strategic prompts, especially for planning problem-solving steps; dyadic work in which one student reads and summarizes while the partner identifies errors and clarifies content that requires explanation; problem solving with explicit metacognitive cueing to justify reasoning; training in working independently while using hints and requesting partial guidance; and emphasis on the value of prosocial helping, accompanied by practice exercises and in-session application of learned strategies. Fidelity to the adapted sequence was monitored, and session activities explicitly targeted instrumental help-seeking (as opposed to executive dependence), assertive communication, and calibration of need for support.

For the problem-solving training intervention, twelve 90-minute sessions were implemented using an adaptation of the D'Zurilla and Goldfried problem-solving therapy model (D'Zurilla & Goldfried, 1971). Training began with defining problem-solving skill, establishing norms for active participation, and articulating the necessity of problem-solving competencies in daily life while surveying members' coping styles, interests, and concerns; proceeded to homework review and Stage 1 (problem orientation), using brief vignettes to practice accurate situation definition, emotional awareness, and preliminary response generation; then to Stage 2 (problem definition and formulation), emphasizing precise specification, decomposition into subproblems, setting proximal goals, avoiding infeasible distal goals, and suspending premature assumptions; elaborated short- and long-term goal setting with multiple exemplars to help participants articulate their personal goal hierarchies; introduced and practiced brainstorming, requiring exhaustive generation of potential solutions; continued Stage 3 (generation of alternatives), reinforcing quantity over quality at this phase, deferring evaluation, and troubleshooting difficulties encountered with previously taught material; advanced to Stage 4 (decision making), systematically evaluating listed alternatives, selecting optimal solutions by considering short- and long-term consequences and congruence with personal values; extended decision-making competence by discussing factors that influence choices (responsibility acceptance, calculated risk-taking, accurate problem appraisal, domain knowledge, cognitive flexibility); taught common decision-making modes (affective, impulsive, delegated, values-based, and rational) and assigned practice; moved to Stage 5 (solution implementation and verification), executing the selected plan and evaluating outcomes; highlighted the pervasive applicability of problem-solving skill across life domains and its empowerment function; and closed by promoting generalization of the problem-solving model to daily activities, addressing final questions, and consolidating maintenance plans. Because the original nine-session framework was expanded to twelve sessions for pedagogical pacing and practice, the adapted curriculum underwent content-validity assessment using the Lawshe method, and the obtained indices supported adequacy of content coverage.

2.4. Data Analysis

Finally, the collected data were organized, analyzed, and reported. For inferential data analysis, multivariate analysis of covariance (MANCOVA) and Bonferroni post hoc tests were applied. Data analysis was conducted using SPSS version 27.

3. Findings and Results

Table 1 presents the mean and standard deviation of academic optimism and its components for the participants in the experimental and control groups in both the pretest and posttest stages.

Table 1

Mean and Standard Deviation of Academic Optimism for Participants in Experimental and Control Groups

Group	Variable	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Control	Academic Emphasis	17.00	4.86	18.93	5.01
	Trust in Teachers	20.40	4.46	22.93	4.83
	School Unity	15.66	4.76	18.53	5.18
	Academic Optimism	53.06	7.14	60.40	7.51
Self-Regulation Training	Academic Emphasis	17.60	3.97	26.60	4.18
	Trust in Teachers	21.73	5.53	33.40	5.91
	School Unity	15.86	4.42	27.26	4.46
	Academic Optimism	55.20	8.68	87.26	9.01
Problem-Solving Training	Academic Emphasis	17.20	4.12	25.73	4.89
	Trust in Teachers	18.80	6.13	30.80	6.50
	School Unity	17.40	5.92	29.73	5.96
	Academic Optimism	53.40	10.88	86.26	11.15
Academic Help-Seeking Training	Academic Emphasis	14.13	3.66	18.53	3.60
	Trust in Teachers	19.33	6.03	24.26	5.22
	School Unity	14.26	4.35	19.13	5.11
	Academic Optimism	47.73	6.65	61.93	6.60

The results presented in the above table indicate that in the control group, the mean scores of the dependent variables in the posttest stage showed little change compared to the pretest stage. However, in the self-regulation training, problem-solving training, and academic help-seeking training groups, the mean scores of the dependent variables in the posttest stage showed noticeable changes compared to the pretest stage. Determining whether these changes were statistically significant was possible through inferential statistical tests, as reported in the subsequent section.

The normality of the data was assessed using the Kolmogorov–Smirnov test. The results indicated that the probability value (p-value) for academic optimism and its components was greater than .05, providing no justification for rejecting the null hypothesis. The null hypothesis in this test assumes no difference between the normal curve and the empirical data distribution. Therefore, the data for the research variables were considered to follow a normal distribution.

To examine the effects of the independent variables, a multivariate analysis of covariance (MANCOVA) was conducted on the posttest scores while controlling for the pretest scores of the dependent variables.

Table 2

Multivariate Analysis of Covariance for The Components of Academic Optimism

Effect	Test	Value	F	df Hypothesis	df Error	Sig.	Effect Size
Group	Pillai's Trace	1.158	11.102	9	159	.0001	.686
	Wilks' Lambda	.028	46.041	9	124.271	.0001	.696
	Hotelling's Trace	27.893	153.929	9	149	.0001	.903
	Roy's Largest Root	27.655	488.564	3	53	.0001	.965

Based on the results of Wilks' Lambda (F = 46.041, p = .0001) in the above table, it can be inferred that there is a statistically significant difference among at least two of the four groups in relation to at least one of the dependent variables (components of academic optimism). To determine which specific subscales and which groups contributed to these differences, separate one-way analyses of covariance and Bonferroni post hoc tests were performed. The results of the univariate covariance analyses for each component of academic optimism are shown in Table 3.

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Table 3

Results of Univariate Analysis of Covariance for the Components of Academic Optimism

Variable	Sum of Squares	df	Mean Squares	F	p (Sig.)	Power
Academic Emphasis	1009.054	1	1009.054	861.969	.0001	.942
Trust in Teachers	1681.152	1	1681.152	939.887	.0001	.947
School Unity	1432.031	1	1432.031	917.544	.0001	.945

Table 3 indicates that the F-statistic values for all three components of academic optimism among the studied groups were significant at an acceptable level ($p < .05$). Moreover, the statistical power for all these variables was above .900, which is considered an acceptable threshold in statistical analysis. These findings indicate that there was a significant difference between at least two of the groups in each of the three components. To determine the exact source of these differences, a Bonferroni post hoc test was conducted. The results of this test are reported in Table 4.

Table 4

Results of Bonferroni Post Hoc Test for the Components of Academic Optimism

Variable	Group Comparison	Mean Difference	Std. Error	Sig.
Academic Emphasis	Control–Self-Regulation	-7.105	0.397	.0001
	Control–Problem-Solving	-6.516	0.401	.0001
	Control–Help-Seeking	-2.509	0.410	.0001
	Self-Regulation–Problem-Solving	0.589	0.406	.917
	Self-Regulation–Help-Seeking	4.596	0.421	.0001
	Problem-Solving–Help-Seeking	4.007	0.417	.0001
Trust in Teachers	Control–Self-Regulation	-9.133	0.491	.0001
	Control–Problem-Solving	-9.416	0.495	.0001
	Control–Help-Seeking	-2.471	0.507	.0001
	Self-Regulation–Problem-Solving	-0.283	0.502	.999
	Self-Regulation–Help-Seeking	6.662	0.520	.0001
	Problem-Solving–Help-Seeking	6.945	0.516	.0001
School Unity	Control–Self-Regulation	-8.567	0.459	.0001
	Control–Problem-Solving	-9.415	0.463	.0001
	Control–Help-Seeking	-1.858	0.474	.002
	Self-Regulation–Problem-Solving	-0.848	0.469	.456
	Self-Regulation–Help-Seeking	6.709	0.486	.0001
	Problem-Solving–Help-Seeking	7.557	0.482	.0001

The results presented in Table 4 indicate the following:

1. Self-regulation training, problem-solving training, and academic help-seeking training had a significant effect on *academic emphasis* ($p < .05$). No significant difference was observed between the effects of self-regulation and problem-solving training on academic emphasis ($p > .05$). However, both self-regulation and problem-solving training showed significantly greater positive effects compared to academic help-seeking training ($p < .05$).
2. Self-regulation training, problem-solving training, and academic help-seeking training significantly affected *trust in teachers* ($p < .05$). There was no significant difference between the effects of self-regulation and problem-solving training on this component ($p > .05$). Nonetheless, both interventions produced significantly greater positive effects than academic help-seeking training ($p < .05$).
3. Self-regulation training, problem-solving training, and academic help-seeking training also had significant effects on *school unity* ($p < .05$). The effects of self-regulation and problem-solving training did not differ significantly from each other ($p > .05$), but both interventions showed significantly greater positive effects than academic help-seeking training ($p < .05$).

In summary, self-regulation training and problem-solving training had equivalent effects on all three components of

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academic optimism, while both demonstrated superior effectiveness compared to academic help-seeking training. Accordingly, the research hypothesis was confirmed:

The effectiveness of self-regulation training, academic help-seeking training, and problem-solving training on academic optimism among male lower secondary school students in Bandar Abbas differs significantly.

4. Discussion and Conclusion

The results of this study revealed significant differences in the effectiveness of self-regulation training, academic help-seeking training, and problem-solving training on academic optimism among male lower secondary school students in Bandar Abbas. The findings indicated that both self-regulation and problem-solving training produced a statistically significant improvement in academic optimism and its subcomponents—academic emphasis, trust in teachers, and school unity—while academic help-seeking training did not show a comparable level of influence. Furthermore, no significant difference was observed between self-regulation and problem-solving training in terms of their overall effects, suggesting that both interventions operate through similar mechanisms that strengthen students' optimism toward academic experiences. This pattern highlights the multidimensional nature of academic optimism as a construct that emerges from the interplay of cognitive, motivational, and behavioral processes fostered through active learning and reflective training (Dehghani, 2022; Dehrooyeh et al., 2024; Pourshalchi et al., 2025).

The significant impact of self-regulation training on academic optimism aligns with a growing body of evidence emphasizing the central role of self-regulatory capacities in academic motivation, resilience, and success. Self-regulation enables learners to set goals, monitor progress, and adjust strategies to maintain engagement despite challenges (Chitra et al., 2022). As the present study demonstrated, structured instruction in self-regulatory strategies increased students' sense of control and confidence, contributing to more positive beliefs about their academic capabilities. This finding corroborates the results of (Pourshalchi et al., 2025), who reported that self-regulation training enhanced resilience and reduced academic stress among low-performing students. Similarly, (Darabi et al., 2022) found that self-regulation training significantly improved students' self-efficacy and academic motivation, while (De la Fuente et al., 2022) noted that self-regulatory behaviors directly predict emotional regulation and executive functioning in university students. The present results suggest that by fostering metacognitive awareness and goal-oriented behaviors, self-regulation interventions contribute to the development of academic optimism—a psychological state that integrates hope, efficacy, and trust in the educational process.

Moreover, the current findings are consistent with (Nunez et al., 2022), who found that interventions designed to enhance self-regulation indirectly improved academic achievement by increasing self-regulatory activity and persistence. The mechanism underlying this relationship can be explained by the cyclical model of self-regulated learning, in which planning, monitoring, and reflection processes help learners sustain motivation and reduce feelings of helplessness (Reparaz et al., 2020). Students who internalize self-regulatory habits develop an adaptive attributional style, interpreting success as a function of effort and strategy use rather than luck or innate ability—a cognitive pattern closely tied to optimism (Pöysä et al., 2020). Thus, self-regulation acts as a foundation for the development of positive academic beliefs, which in turn reinforce engagement, persistence, and academic performance (Reeve et al., 2020; Sáiz-Manzanares et al., 2022).

In contrast, while academic help-seeking training did produce some improvement in optimism scores, the effect was weaker compared to the other interventions. This may be attributed to the complex social and emotional components inherent in help-seeking behavior. According to (Newman, 2023), help-seeking represents a strategic aspect of self-regulated learning, reflecting both cognitive awareness and social adaptability. However, the success of such interventions depends heavily on contextual and interpersonal variables such as teacher responsiveness, classroom climate, and peer support. As (Boshoff-Knoetze et al., 2023) demonstrated, students often struggle to maintain self-regulatory effectiveness when instructional contexts lack immediate feedback or social reinforcement. Similarly, (Noohpour et al., 2020) found that while help-seeking training can improve academic self-efficacy in gifted students, its long-term impact depends on the consistency of support provided by teachers and peers. In the current study, the relatively modest effect of help-seeking training might reflect limitations in students' prior interpersonal trust or perceived social safety, both of which are essential for fostering adaptive help-seeking.

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The findings also resonate with (Butler, 2013), who conceptualized help-seeking within the framework of achievement goal theory, arguing that students with performance-oriented goals may perceive help-seeking as a threat to competence. Such students may avoid seeking help even when it could benefit their learning, which could explain why the help-seeking training group in the present study did not demonstrate a significant increase in academic optimism. Moreover, (Dehghani, 2022) reported a strong correlation between self-regulation and help-seeking among student athletes, suggesting that help-seeking behaviors are most effective when embedded within a broader framework of self-regulated learning. Therefore, it is plausible that the isolated instruction of help-seeking strategies in this study did not yield substantial improvements in optimism because it was not sufficiently integrated with self-regulatory or motivational components.

Equally notable was the strong and significant effect of problem-solving training on academic optimism. The problem-solving model employed in this study, adapted from D'Zurilla and Goldfried, emphasizes systematic reasoning, cognitive flexibility, and emotional control—all of which contribute to academic resilience and optimism (Kim et al., 2019). By teaching students to conceptualize problems as solvable challenges rather than insurmountable obstacles, problem-solving training cultivates an optimistic attributional style and a proactive approach to learning. The results of the current study are in line with the findings of (Dehrooyeh et al., 2024), who demonstrated that teaching social-cognitive problem-solving strategies improved both academic self-regulation and coping among students with high math anxiety. Likewise, (Azimpoor et al., 2021) confirmed that problem-solving and assertiveness significantly predict academic progress, mediated by academic resilience, further supporting the notion that cognitive-behavioral skills strengthen adaptive academic beliefs.

The parallel effectiveness of self-regulation and problem-solving training observed in this study suggests that both approaches share overlapping psychological mechanisms that reinforce optimism. Both interventions emphasize personal agency, metacognitive monitoring, and adaptive decision-making, which together foster students' confidence in their ability to influence outcomes (Scott et al., 2023; Vanlommel et al., 2023). These cognitive–motivational mechanisms contribute to the formation of academic optimism by integrating efficacy beliefs, trust, and shared academic values (Sacco, 2023; Smith, 2023). Furthermore, research by (Panahi et al., 2023) showed that academic aspiration and hope, mediated by optimism, lead to improved engagement and persistence—an observation that mirrors the present findings. The capacity to solve problems and regulate learning behaviors enhances students' perceived control, thereby reducing anxiety and promoting an outlook of success and possibility (Gholipour et al., 2022; Sinring et al., 2022).

An additional layer of interpretation arises from the social dimension of academic optimism, particularly in its subcomponent "trust in teachers." The significant improvement in this dimension among students in the self-regulation and problem-solving groups indicates that these trainings not only develop individual skills but also strengthen relational trust and perceived support. According to (Vanlommel et al., 2023), collective efficacy and shared academic vision within learning environments amplify both teacher and student optimism, creating a reciprocal cycle of motivation and achievement. Similarly, (Lotfi & Ashouri, 2023) found that academic optimism mediates the relationship between goal orientation and engagement, implying that interventions enhancing cognitive control also indirectly build trust and unity within the school community. The findings of the current study align with this model, demonstrating that cognitive and emotional self-regulation can extend beyond individual competence to foster a more positive perception of teachers and the learning environment.

Furthermore, the observed enhancement in "school unity" suggests that these cognitive-behavioral trainings may improve students' sense of belonging and cohesion. (Shahbazi et al., 2023) highlighted that dimensions of the hidden curriculum—such as interpersonal respect, cooperation, and shared purpose—predict academic optimism and engagement. The ability to self-regulate and solve problems may encourage students to participate more constructively in group learning and social contexts, thereby reinforcing their identification with the school. As (Manlangit & Atienzar, 2023) observed, the nurturing of creativity and collaboration through effective teaching strategies increases academic optimism by fostering a sense of community and shared achievement. The improvement in school unity observed in this study can thus be interpreted as evidence of broader psychosocial benefits stemming from cognitive and behavioral interventions.

The relatively lower impact of help-seeking training, however, underscores the importance of contextual factors in shaping academic optimism. While adaptive help-seeking

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is a recognized component of self-regulated learning, its effectiveness relies on cultural norms and interpersonal trust. In some educational settings, students may perceive asking for help as a sign of weakness or inadequacy, thereby inhibiting the development of this skill (Butler, 2013). Moreover, if help-seeking is not met with supportive feedback from teachers or peers, it can fail to reinforce optimism and motivation (Newman, 2023). Therefore, interventions aiming to enhance academic optimism through help-seeking must be designed within relationally supportive environments that normalize help-seeking and emphasize collaborative learning.

The consistency of the current findings with those of (Mousavian et al., 2022) further reinforces the connection between cognitive-behavioral training and optimism. That study demonstrated that mindfulness-based cognitive therapy improved attributional styles and academic optimism by enhancing students' awareness of thought–emotion interactions. Both self-regulation and problem-solving training in the present research similarly equipped students with cognitive tools to reinterpret stress and failure constructively. This capacity for adaptive appraisal and emotion regulation appears central to the emergence of optimism, as shown in (De la Fuente et al., 2022). Likewise, the predictive role of self-regulation in emotional and executive functioning supports the argument that optimism is an outcome of disciplined, reflective, and goal-oriented cognitive activity (Chitra et al., 2022).

In conclusion, the results of this study validate the hypothesis that self-regulation and problem-solving interventions are more effective than academic help-seeking training in promoting academic optimism among secondary students. The data underscore the integrative nature of academic optimism as a construct linking cognitive, motivational, and social dimensions of learning. Both self-regulation and problem-solving training strengthened the three fundamental components of academic optimism—academic emphasis, trust in teachers, and school unity—by enhancing students' self-efficacy, persistence, and sense of belonging. Conversely, the modest gains observed in the help-seeking group suggest that while social support is an important factor, it requires an enabling environment to translate into lasting optimism. The results thus contribute to the broader literature supporting cognitive-behavioral and self-regulatory approaches to educational development (Dehrooyeh et al., 2024; Panahi et al., 2023; Pourshalchi et al., 2025; Sacco, 2023; Vanlommel et al., 2023).

5. Limitations & Suggestions

This study, while yielding valuable insights, had several limitations. First, the sample size was relatively small and restricted to male students in lower secondary schools in Bandar Abbas, which limits the generalizability of findings across gender, educational levels, and cultural contexts. Second, the quasi-experimental design did not include longitudinal follow-up to determine the sustainability of the interventions' effects over time. Third, the help-seeking training may have been constrained by contextual factors such as classroom dynamics and teacher–student interaction quality, which were not directly controlled. Additionally, self-report instruments, though validated, may have introduced response biases due to social desirability or self-perception distortions. Finally, the lack of qualitative data limited the depth of interpretation regarding students' subjective experiences of each intervention.

Future research should expand the scope of study populations to include female students and diverse academic levels to enhance external validity. Longitudinal studies are recommended to assess the persistence and transfer of academic optimism over extended periods. Future investigations could also explore the mediating roles of self-efficacy, emotional intelligence, or classroom climate in the relationship between training interventions and academic optimism. Incorporating mixed-methods designs could provide richer insights into students' lived experiences and contextual influences on intervention outcomes. Comparative studies across cultural contexts could further elucidate how sociocultural norms affect the relationship between self-regulation, help-seeking, and optimism.

Educators and school counselors should integrate self-regulation and problem-solving training into regular curricula to foster students' optimism, resilience, and adaptive coping. Teachers can create supportive classroom environments that normalize help-seeking and emphasize collaborative learning. School administrators should promote teacher training focused on enhancing students' metacognitive skills and positive academic beliefs. Guidance programs that combine cognitive, emotional, and social skill development can strengthen students' trust, motivation, and engagement, contributing to a culture of optimism and collective academic growth.

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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. This study was registered with the ethics code IR-IAU.BA.REC.1403.081 and is available on the National Ethics Committee in Biomedical Research website.

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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