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Comparison of the Effectiveness of Parental Involvement Training in Academic Affairs and Academic Self-Regulation Training for Students on Academic Engagement among Junior High School Students

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ABSTRACT

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Purpose: This study aimed to compare the effectiveness of parental involvement training in academic affairs with academic self-regulation training for students in improving academic engagement among junior high school students.

Methods and Materials: This study employed a quasi-experimental design with pretest, posttest, and follow-up assessments, involving two experimental groups and one control group. The statistical population consisted of all male junior high school students studying in Famenin County, Hamadan Province, during the 2023–2024 academic year. The study sample comprised three groups of 15 students each, who were selected from Shahid Modarres School through convenience and voluntary sampling and were then randomly assigned to the three groups. Data were collected using Reeve's Academic Engagement Questionnaire (2013) and analyzed using mixed-design analysis of variance (mixed ANOVA).

Findings: The results showed no significant difference between the effectiveness of parental involvement training in academic affairs and academic self-regulation training in improving students' overall academic engagement. However, parental involvement training had significant effects on behavioral, agentic, cognitive, and emotional engagement that were maintained through the follow-up assessment, whereas academic self-regulation training had sustained effects on agentic and emotional engagement through the follow-up stage.

Conclusion: Parental involvement training influenced a broader range of dimensions of academic engagement, whereas academic self-regulation training was primarily associated with agentic and emotional engagement. These findings indicate that both approaches can be employed as complementary interventions to enhance the quality of learning and students' academic investment.

Keywords: parental involvement training in academic affairs, academic self-regulation training, academic engagement.

1. Introduction

Academic engagement is one of the central constructs in contemporary educational psychology because it

reflects the extent to which students actively participate in, invest effort in, and psychologically connect with learning activities. Academic engagement is not limited to observable classroom participation; rather, it encompasses behavioral,

emotional, cognitive, and agentic dimensions that jointly shape the quality of students' involvement in learning. Behavioral engagement includes effort, persistence, attention, and participation in academic tasks, whereas emotional engagement reflects students' affective reactions toward teachers, classmates, school, and learning activities. Cognitive engagement refers to the use of strategic, thoughtful, and self-directed approaches to learning, while agentic engagement describes students' constructive contribution to the instructional process through expressing preferences, asking questions, seeking clarification, and actively influencing the conditions of their learning. Accordingly, academic engagement is increasingly regarded as a multidimensional indicator of the quality of students' educational experiences rather than merely the amount of time they spend completing academic tasks. A substantial body of evidence has shown that higher levels of student engagement are associated with better academic achievement and greater subjective well-being, indicating that engagement is simultaneously relevant to educational performance and psychological adjustment (Wong et al., 2023). Consistent with this perspective, research among secondary school students has identified a positive relationship between academic engagement and academic achievement, emphasizing the importance of strengthening students' active involvement in learning during adolescence (Abid & Akhtar, 2020). Student engagement and connectedness are therefore important targets for preventive and educational interventions designed to improve persistence, participation, learning quality, and adjustment within school settings (Pinzone & Reschly, 2021).

The importance of academic engagement becomes particularly evident during junior high school, when students experience considerable developmental, social, and academic transitions. Adolescence is characterized by increasing demands for independence, greater complexity of academic tasks, changes in social relationships, and heightened expectations regarding personal responsibility for learning. At the same time, students are required to develop increasingly sophisticated motivational, cognitive, and behavioral strategies to meet academic demands. Research on adolescent learning suggests that self-regulated and externally regulated learning follow meaningful developmental trajectories and are associated with both academic achievement and the behavior of significant adults, including teachers and parents (Bardach et al., 2023). This finding is important because it indicates that students' academic functioning is shaped not only by individual

abilities but also by environmental regulation and interpersonal support. In this context, school engagement can be viewed as the product of an interaction between students' internal regulatory capacities and the external resources available within their family and educational environments. Studies examining school climate, quality of life, and self-regulation similarly suggest that self-regulation plays an important mediating role in explaining students' academic enthusiasm and engagement (Tajalli et al., 2021). Thus, understanding academic engagement requires attention to both intrapersonal mechanisms, such as self-regulation, and contextual mechanisms, particularly parental involvement.

One of the most influential contextual factors in students' academic development is parental involvement. Parental involvement in academic affairs refers to the range of behaviors through which parents support, monitor, encourage, structure, and participate in their children's educational experiences. These behaviors may include helping establish study routines, discussing school activities, communicating with teachers, monitoring homework, supporting educational decision-making, encouraging autonomy, and creating an appropriate learning environment at home. Evidence suggests that parental involvement can contribute to students' academic performance through both direct and indirect pathways. Studies conducted across different educational settings have reported associations between parental involvement and academic achievement, emphasizing the role of family participation in students' educational success (Asumadu & Sika-Bright, 2021). Similar findings have been reported in secondary-school contexts, where the quality of the parent-child relationship has been related to academic achievement (Rathee & Kumari, 2022). Moreover, parental involvement has been associated with students' academic motivation, suggesting that active and supportive parental participation may influence not only performance outcomes but also the motivational processes underlying sustained academic effort (Elahi et al., 2020). Evidence from primary school populations has likewise shown that parental involvement is meaningfully associated with students' academic motivation (Yousefi Goharian et al., 2023).

The mechanisms through which parental involvement affects academic engagement are likely to be multidimensional. Supportive parental behavior may help students interpret academic demands as manageable, strengthen perceptions of competence, increase confidence in their ability to succeed, and provide motivational and

emotional resources that facilitate persistence. Research has shown that the parent–child relationship may influence adolescents’ learning engagement through sequential effects on learning motivation and academic self-efficacy (Shao & Kang, 2022). This suggests that parental involvement is not simply an external supervisory mechanism; rather, it may affect the psychological processes through which students become motivated, confident, and actively engaged in academic activities. Similarly, studies of parent–adolescent interaction indicate that self-regulated learning can mediate the association between parent–adolescent relationships and academic engagement (Mohammadi Baghmollaei & Yousefi, 2022). This finding provides an important theoretical connection between the two intervention approaches examined in the present study because parental involvement may partly operate by strengthening students’ capacity for autonomous and self-regulated learning. Parenting styles and family relationships have also been linked to academic engagement through emotional intelligence and self-regulation, further demonstrating that parental behavior may influence engagement through multiple psychological pathways (Besharati et al., 2022).

Intervention research provides additional support for the educational value of parental involvement. Programs designed to increase parental participation have been shown to influence children’s academic and socioemotional outcomes, although the magnitude and form of these effects can vary depending on the characteristics of the intervention, child age, and target outcome (Cosso et al., 2022). Parental involvement may be especially valuable when it is structured around responsive support rather than excessive control, because developmentally appropriate involvement can simultaneously provide guidance and preserve the student’s emerging autonomy. Training parents in how to participate effectively in homework and academic affairs has been associated with improvements in achievement motivation and reductions in school-related anxiety, suggesting that the quality of parental involvement may be modified through systematic educational programs (Rahimi et al., 2019). During periods of disrupted or technology-mediated learning, parental involvement has also been identified as a meaningful factor in supporting students’ academic performance, as demonstrated in studies of online learning during the COVID-19 period (Qasim et al., 2022). More recent studies continue to emphasize the relevance of parental involvement in educational outcomes within contemporary digital environments (Dianawati et al., 2025). In addition, school-based parental involvement has been

linked to students’ mathematics performance through academic self-efficacy, further illustrating the indirect motivational pathways through which parents may influence learning outcomes (Djekourmane et al., 2025).

The importance of parental involvement is not restricted to direct academic supervision. Contemporary research increasingly emphasizes the need to create meaningful interaction spaces between families and educational institutions. Effective parental participation often depends on communication quality, accessibility, and the extent to which teachers and schools encourage constructive parent engagement. Studies of home–school engagement have highlighted differences and similarities in teachers’ and parents’ perspectives regarding family involvement and children’s learning, demonstrating that collaboration between home and school can shape educational experiences, particularly in disadvantaged settings (Lynch, 2021). More recent work has examined strategies used by teachers to design interactive spaces that promote parental involvement, suggesting that educational institutions can actively structure conditions that facilitate family participation rather than treating parental involvement as an exclusively home-based responsibility (Guo, 2025). Parental roles may also influence broader aspects of students’ personal and developmental functioning beyond academic performance, indicating that family involvement has implications for holistic student development (Murdiani & Wulandari, 2025). Therefore, parental involvement training may represent a potentially powerful intervention because it targets the environmental context in which students’ academic behavior develops.

Alongside parental involvement, academic self-regulation represents another major determinant of students’ engagement and educational functioning. Self-regulated learning refers to the processes through which learners proactively plan, monitor, control, and evaluate their cognition, motivation, emotion, and behavior in relation to academic goals. Self-regulated learners are not passive recipients of instruction; they establish goals, select learning strategies, monitor their progress, manage distractions, regulate effort, seek assistance when necessary, and adapt their behavior according to feedback and task demands. The ability to self-regulate is therefore directly relevant to academic engagement because students who regulate their learning effectively are more likely to sustain attention, persist in difficult tasks, employ deeper cognitive strategies, and maintain active involvement in learning. Studies among high school students have demonstrated meaningful

relationships between self-regulated learning strategies, metacognitive awareness, intelligence beliefs, deep cognitive engagement, and academic vitality (Jabbari et al., 2022). These findings suggest that self-regulation may support not only academic performance but also the depth and quality of students' cognitive involvement.

Research on self-regulated learning further indicates that students' implicit beliefs about their capacity to regulate learning are associated with achievement goals, learning strategies, and metacognition (Hertel & Karlen, 2021). Such findings reinforce the idea that self-regulation includes both skill-based and belief-based components. Students must possess regulatory strategies, but they must also perceive themselves as capable of applying these strategies effectively. Moreover, emotional regulation is closely related to learning motivation and academic functioning. Students who can manage negative emotions, frustration, anxiety, and motivational fluctuations may be better able to remain engaged in academic tasks despite obstacles. Research in higher education has shown that regulation of emotions and learning motivation are interconnected processes that contribute to adaptive academic functioning (Alonso-Tapia et al., 2020). Although such research has frequently focused on older students, these processes are highly relevant during adolescence, when emotional reactivity and increasing academic demands may challenge students' ability to maintain consistent engagement.

The effectiveness of self-regulation can also be strengthened through direct educational interventions. Self-regulation training typically incorporates goal setting, planning, self-monitoring, inhibitory control, attention regulation, emotional regulation, self-evaluation, and strategic help-seeking. Experimental evidence suggests that self-regulation training can improve educationally relevant outcomes such as perceived teaching quality, critical thinking, and school belonging among high school students (Ghodsi & Amanzadeh, 2022). Earlier intervention research has also demonstrated that self-regulation skills can be taught systematically and can improve broader cognitive and behavioral competencies (Jelvehgar et al., 2014). In technology-mediated learning contexts, structured self-regulation supports, including planning tools, have also been associated with improved academic performance, reinforcing the importance of explicit mechanisms for planning and monitoring learning activities (Jarmillo et al., 2022). Recent research employing process-mining approaches has further demonstrated the complex and dynamic nature of self-regulated learning among secondary

school students, highlighting the value of examining regulation as a sequence of learning behaviors rather than as a static personality characteristic (Cheng et al., 2024).

The relationship between self-regulation and engagement may also help explain why students differ in their response to similar educational environments. Two students may receive the same instruction but show very different levels of persistence, strategy use, emotional investment, and active participation because they differ in their capacity to regulate attention, motivation, and behavior. Self-regulated learning enables students to transform external educational demands into internally organized action. This perspective is particularly relevant to agentic engagement, because students who monitor their learning and recognize their needs may be more likely to ask questions, seek clarification, request support, and constructively influence their learning environment. It is also relevant to cognitive engagement, as regulatory skills support deeper information processing and strategic learning. Similarly, behavioral and emotional engagement may benefit from enhanced inhibitory control, goal commitment, and emotion regulation. Studies linking self-regulation to academic enthusiasm and engagement support this multidimensional relationship (Tajalli et al., 2021). Furthermore, the relationship between parent-adolescent interaction and academic engagement through self-regulated learning indicates that self-regulation may represent a central mechanism connecting family support to students' active participation in education (Mohammadi Baghmollaei & Yousefi, 2022).

Although parental involvement and academic self-regulation have each been extensively discussed in the educational literature, relatively fewer studies have directly compared interventions targeting these two levels of influence. This comparison is theoretically important because the two approaches operate through different but potentially complementary pathways. Parental involvement training primarily modifies the student's interpersonal and environmental context by improving parental support, structure, communication, monitoring, and responsiveness. In contrast, academic self-regulation training primarily targets students' internal learning processes by strengthening goal setting, cognitive regulation, emotional regulation, self-monitoring, planning, and self-evaluation. Existing evidence suggests that both pathways may contribute to academic engagement. Parental involvement can facilitate motivation, achievement, and engagement (Naite, 2021), while self-regulation can promote strategic learning and deeper academic involvement (Hertel &

Karlen, 2021). At the same time, parental behavior and self-regulated learning appear to interact developmentally, such that supportive parent behavior may facilitate the development of stronger self-regulatory capacities (Bardach et al., 2023). Consequently, a direct comparison of these interventions can clarify whether changing the family context or directly training student self-regulation produces broader or more persistent changes across the dimensions of academic engagement.

This issue is especially important because contemporary educational environments have become increasingly complex. Students are expected to operate across traditional classroom settings, digital platforms, independent learning tasks, and collaborative activities, making both family support and self-regulatory competence increasingly important. The expansion of digital learning has heightened the need for students to organize their own learning while also creating new forms of parental participation (Dianawati et al., 2025). Research on parental involvement in online and technology-supported learning demonstrates that family participation remains relevant even when instruction is not confined to the traditional classroom (Qasim et al., 2022). At the same time, recent research on digital and process-based learning environments indicates that self-regulated learning is increasingly central to understanding how students navigate complex educational tasks (Cheng et al., 2024). These developments suggest that interventions targeting both external and internal regulation may have considerable relevance for current educational practice.

Another important consideration is that academic engagement is multidimensional, and interventions may not influence all dimensions equally. An intervention that strengthens parental structure and responsiveness may produce broad changes across behavioral, emotional, cognitive, and agentic engagement, while an intervention centered on self-regulation may have more pronounced effects on dimensions closely linked to goal-directed agency and emotional control. Meta-analytic evidence indicates that engagement itself is heterogeneous and that different components may relate differently to achievement and well-being (Wong et al., 2023). Likewise, family-based intervention research suggests that parental involvement programs can generate diverse academic and socioemotional effects depending on their specific components (Cosso et al., 2022). Therefore, evaluating only an overall engagement score may obscure meaningful differences in how interventions operate. Examination of behavioral, agentic, cognitive, and emotional engagement separately may

provide a more precise understanding of intervention effectiveness.

Despite the growing literature on parental involvement and self-regulated learning, several gaps remain. Much of the existing research has been correlational, limiting conclusions about whether modifying parental behavior or students' self-regulation directly produces changes in academic engagement. Studies have documented relationships among parent-child interaction, self-regulation, motivation, self-efficacy, and engagement (Besharati et al., 2022; Shao & Kang, 2022), but fewer intervention studies have directly contrasted parent-focused and student-focused approaches within the same experimental design. Furthermore, intervention effects need to be evaluated beyond immediate posttest assessment because educational change is meaningful only when improvements are maintained over time. The inclusion of a follow-up assessment provides evidence regarding the durability of intervention effects and allows researchers to distinguish temporary changes from more stable improvements. In addition, evidence from different educational and cultural contexts underscores the need for context-specific studies. Findings regarding parental involvement have been reported across Ghana (Asumadu & Sika-Bright, 2021), Thailand (Naite, 2021), online learning contexts (Qasim et al., 2022), and Southeast Asian educational systems (Djekourmane et al., 2025), while Iranian studies have highlighted the relevance of parental involvement, self-regulation, and academic engagement in local student populations (Elahi et al., 2020; Ghodsi & Amanzadeh, 2022; Rahimi et al., 2019). Such evidence supports the value of examining these interventions among Iranian junior high school students under controlled conditions.

Accordingly, the present study aimed to compare the effectiveness of parental involvement training in academic affairs and academic self-regulation training on academic engagement and its behavioral, agentic, cognitive, and emotional dimensions among junior high school students.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quasi-experimental pretest-posttest-follow-up design with two experimental groups and one control group. One experimental group consisted of parents who received parental involvement training in academic affairs, while the second experimental group

consisted of students who received academic self-regulation training; the control group received no intervention during the main study period. All three groups completed the academic engagement measure at the pretest and posttest stages, and follow-up assessment was conducted to examine the maintenance of intervention effects. The statistical population consisted of all 836 male junior high school students enrolled in schools in Famenin County, Hamadan Province, Iran, during the 2023–2024 academic year. Given that an appropriate size for group-based educational sessions is generally considered to range from 6 to 15 participants (Corey et al., 2013), three groups of 15 participants each were formed, yielding a total sample of 45 students. Participants were recruited through convenience and voluntary sampling because eligible students and their parents needed to be screened according to the predefined inclusion and exclusion criteria and to possess the physical and psychological conditions required for participation in the educational sessions. The sample was selected from seventh-, eighth-, and ninth-grade students and their parents at Shahid Modarres Boarding School in Tajarak Village. After recruitment and eligibility screening, the students were randomly allocated to the three study groups using random numbers. The inclusion criteria were enrollment in junior high school, student age between 13 and 16 years, and willingness of both the selected student and his parents to participate in the study. The exclusion criteria included withdrawal of consent by the student or his parents, a history of disabling physical illness, a diagnosed psychiatric disorder, parental substance-related or psychotropic drug-related disorders, the student's concurrent participation in other educational classes or psychological interventions, and incomplete responses to the study questionnaire. All ethical principles governing research involving human participants were observed throughout the study. Permission to conduct the research was obtained from the General Directorate of Education of Hamadan Province, the Famenin County Department of Education, and the Research Deputy of Islamic Azad University, Qom Branch, and ethical approval was obtained from the relevant ethics committee under the code IR.IAU.QOM.REC.1403.023. Because the participants were junior high school students and therefore minors, written informed consent was obtained from their parents or legal guardians. The purpose, procedures, potential benefits, and possible risks of the study were explained in understandable language to both students and their parents to ensure informed participation. Participation was entirely voluntary, and students and parents were informed that they

could withdraw from the study at any stage without any adverse consequences. Personal information and questionnaire data were collected, stored, and analyzed confidentially, and no identifying information concerning students or parents was disclosed in any report or publication. The educational sessions were designed to minimize the possibility of psychological or physical harm, and referral to a counselor or psychologist was available if any difficulty arose. Research data were used solely for scientific purposes, and all stages of the study were conducted in accordance with principles of scientific integrity and confidentiality. To ensure ethical fairness, after completion of the study, the educational content provided to the intervention groups was also offered to the control group.

2.2. Data Collection Tool

Academic engagement was assessed using the Academic Engagement Questionnaire developed by Reeve (2013). The questionnaire was designed to measure students' academic engagement and consists of 17 items rated on a seven-point Likert-type scale. Items assess the extent to which learners actively, cognitively, emotionally, behaviorally, and agentically participate in learning activities; an example item is, "When I study, I try to put different ideas together to derive an overall meaning." The instrument reflects four dimensions of academic engagement, namely behavioral engagement, emotional engagement, cognitive engagement, and agentic engagement. Reeve (2013) evaluated the psychometric properties of the questionnaire in a sample of 271 students enrolled in six different courses at an engineering college in a South Korean city. Reliability and construct validity were investigated using Cronbach's alpha coefficients as well as exploratory and confirmatory factor analyses. Exploratory factor analysis using principal-factor extraction with oblique rotation and eigenvalues greater than 1 supported a four-factor structure. Reliability coefficients for the dimensions ranged from .84 to .90, indicating satisfactory internal consistency. In an Iranian validation study, Ramezani and Khamsan (2017) reported satisfactory content, face, and criterion-related validity for the questionnaire. Their confirmatory factor analysis further demonstrated that the proposed four-factor structure had an acceptable fit to the data, with the goodness-of-fit indices supporting the underlying dimensional structure of the instrument. The overall Cronbach's alpha coefficient reported in that study was .92, indicating excellent internal consistency. In the present study, this questionnaire was

administered at the designated assessment stages to evaluate changes in overall academic engagement and its behavioral, emotional, cognitive, and agentic dimensions.

2.3. Interventions

The parental involvement training program consisted of eight 45-minute sessions delivered once weekly over eight consecutive weeks. The intervention package was developed by Rahimi et al. (2019) through a review of research on parental involvement and was theoretically grounded in the self-determination framework of Deci and Ryan (1985, 1987), particularly the dimensions of control, responsiveness, and structure. The first session introduced the intervention, established initial communication with parents, and emphasized the importance of parental participation in students' academic affairs. The second session focused on parenting styles, including the characteristics, advantages, and disadvantages of different parenting approaches and their potential effects on achievement motivation, and introduced parents to more adaptive parenting practices. The third session addressed parental involvement in the home environment and effective methods of parental monitoring, with particular emphasis on strategies for supporting students' autonomy in completing academic assignments. The fourth session extended these topics by focusing on indirect parental assistance with academic planning and appropriate guidance during homework and study activities without undermining students' independence. The fifth session concentrated on parental responsiveness, teaching parents how to identify and respond to their children's educational needs, strengthen their sense of competence, and thereby enhance academic motivation. The sixth session addressed home-school interaction and highlighted the importance of maintaining regular communication with teachers and participating in parent-teacher associations and related school activities. The seventh session introduced the structural dimension of parental involvement and examined the importance of organization, prioritization, time management, and the development of academic responsibility among students. The eighth session provided recommendations for establishing an appropriate home study environment and introduced Epstein's six dimensions of parental involvement. The final portion of the session was devoted to reviewing and integrating the content covered throughout the intervention so that parents could develop a coherent and

practically applicable understanding of how to participate effectively in their children's academic affairs.

The academic self-regulation training program also consisted of eight 45-minute sessions conducted once weekly over eight consecutive weeks. The educational content was organized according to the complexity and hierarchical progression of self-regulatory skills and was developed by Jalvehgar et al. (2014) based on concepts derived from developmental models of self-regulation proposed by Wang (2004), Smith-Donald et al. (2007), and Gagné-Latham (2010), as well as theoretical perspectives on academic self-regulation proposed by Boekaerts (1999), Pintrich (2000), and Zimmerman (2008). The first session was devoted to orientation and rapport building and included the introduction of the facilitator and participants, explanation of session rules, presentation of the educational approach, and training in effective interpersonal communication. The second session focused on goal setting and the development of academic motivation. In the third session, self-awareness skills were introduced, accompanied by a review and consolidation of material covered in the previous session. The fourth session concentrated on attention and concentration as fundamental components of cognitive self-regulation. The fifth session introduced cognitive and behavioral regulation skills, including sustained attention, inhibitory control, and delay of gratification. In the sixth session, emotional regulation was taught alongside practical exercises designed to reinforce previously acquired cognitive and behavioral regulation skills. The seventh session addressed planning, goal setting, monitoring, behavioral and cognitive control, and self-evaluation, while also providing opportunities to practice and consolidate skills learned in earlier sessions. The eighth and final session reviewed the entire training program and taught students how to seek appropriate academic assistance from teachers, parents, and peers to support continued academic progress and effective self-regulated learning.

2.4. Data Analysis

The collected data were analyzed using descriptive and inferential statistical procedures. Descriptive statistics, including means and standard deviations, were used to summarize participants' scores on overall academic engagement and its behavioral, emotional, cognitive, and agentic dimensions across the pretest, posttest, and follow-up assessments. To examine changes in academic engagement over time and compare the effectiveness of

parental involvement training, academic self-regulation training, and the control condition, mixed-design analysis of variance was employed, with assessment time treated as the within-subjects factor and study group as the between-subjects factor. The analysis evaluated the main effect of time, the main effect of group, and the time-by-group interaction, with particular attention to whether the effects observed at posttest were maintained at follow-up. Prior to conducting the inferential analyses, the relevant statistical assumptions for mixed-design analysis of variance were assessed. Statistical significance was evaluated at the .05 level, and the results were interpreted by comparing patterns of change across the three groups and across the different dimensions of academic engagement.

3. Findings and Results

All 45 participants were male junior high school students in Grades 7, 8, and 9. The participants were equally allocated to the control group, parental involvement training group, and academic self-regulation training group, with 15 students in each group. The three groups were comparable in terms of sex and educational grade, and students from the three grade levels were distributed across the study groups. Thus, no substantial demographic imbalance was observed among the groups with respect to the demographic characteristics considered in the study.

Table 1

Descriptive Statistics for Academic Engagement Scores at Pretest, Posttest, and Follow-Up by Study Group

Group	Variable/Assessment	n	Minimum	Maximum	Mean	SD
Control	Total academic engagement – Pretest	15	57	113	88.80	16.07
	Total academic engagement – Posttest	15	58	111	88.40	14.92
	Total academic engagement – Follow-up	15	57	111	89.33	15.45
	Behavioral engagement – Pretest	15	57	113	88.80	16.07
	Behavioral engagement – Posttest	15	58	111	88.40	14.92
	Behavioral engagement – Follow-up	15	57	111	89.33	15.45
	Agentic engagement – Pretest	15	13	27	22.47	4.36
	Agentic engagement – Posttest	15	13	27	22.20	4.18
	Agentic engagement – Follow-up	15	13	27	22.33	4.45
	Cognitive engagement – Pretest	15	16	31	24.47	5.08
	Cognitive engagement – Posttest	15	17	31	24.33	4.55
	Cognitive engagement – Follow-up	15	19	32	25.07	4.51
	Emotional engagement – Pretest	15	13	28	20.93	4.54
	Emotional engagement – Posttest	15	13	27	20.80	4.30
	Emotional engagement – Follow-up	15	13	27	20.87	4.29
Parental involvement training	Total academic engagement – Pretest	15	36	106	82.07	20.09
	Total academic engagement – Posttest	15	59	109	88.93	13.77
	Total academic engagement – Follow-up	15	58	112	90.73	14.36
	Behavioral engagement – Pretest	15	36	106	82.07	20.09
	Behavioral engagement – Posttest	15	59	109	88.93	13.77
	Behavioral engagement – Follow-up	15	58	112	90.73	14.36
	Agentic engagement – Pretest	15	8	28	20.27	5.80
	Agentic engagement – Posttest	15	4	26	20.53	5.68
	Agentic engagement – Follow-up	15	15	28	22.27	3.73
	Cognitive engagement – Pretest	15	11	32	23.60	6.13
	Cognitive engagement – Posttest	15	19	33	26.87	4.19
	Cognitive engagement – Follow-up	15	19	33	26.67	4.20
	Emotional engagement – Pretest	15	7	24	17.73	5.70
	Emotional engagement – Posttest	15	9	25	19.40	4.69
	Emotional engagement – Follow-up	15	9	26	19.60	4.53
Academic self-regulation training	Total academic engagement – Pretest	15	28	117	85.40	24.17
	Total academic engagement – Posttest	15	41	117	89.27	20.50
	Total academic engagement – Follow-up	15	43	117	89.47	20.31
	Behavioral engagement – Pretest	15	28	117	85.40	24.17
	Behavioral engagement – Posttest	15	41	117	89.27	20.50
	Behavioral engagement – Follow-up	15	43	117	89.47	20.31

Agentic engagement – Pretest	15	8	28	21.27	5.34
Agentic engagement – Posttest	15	13	28	22.47	3.91
Agentic engagement – Follow-up	15	13	28	22.40	3.89
Cognitive engagement – Pretest	15	6	35	24.93	8.14
Cognitive engagement – Posttest	15	10	35	26.73	6.49
Cognitive engagement – Follow-up	15	10	35	26.67	6.51
Emotional engagement – Pretest	15	4	28	19.20	6.35
Emotional engagement – Posttest	15	6	28	19.27	6.05
Emotional engagement – Follow-up	15	8	28	19.53	5.79

As shown in Table 1, the mean total academic engagement score in the control group remained relatively stable from pretest ($M = 88.80$, $SD = 16.07$) to posttest ($M = 88.40$, $SD = 14.92$) and follow-up ($M = 89.33$, $SD = 15.45$). In contrast, the parental involvement training group showed an increase in the mean total academic engagement score from 82.07 ($SD = 20.09$) at pretest to 88.93 ($SD = 13.77$) at posttest and 90.73 ($SD = 14.36$) at follow-up. Similarly, the academic self-regulation training group showed an increase from 85.40 ($SD = 24.17$) at pretest to 89.27 ($SD = 20.50$) at posttest and 89.47 ($SD = 20.31$) at follow-up. At the dimensional level, the parental involvement group generally demonstrated increases in agentic, cognitive, and emotional engagement across the assessment occasions, whereas the academic self-regulation group demonstrated particularly evident improvements in agentic engagement and smaller changes in the other dimensions. Descriptively, the control group showed comparatively little change across the three assessment occasions.

Before conducting the mixed-design repeated-measures analysis of variance, the statistical assumptions underlying

the analysis were examined. The normality of the score distributions was assessed using the Shapiro–Wilk test, homogeneity of regression slopes was examined using univariate covariance procedures, and equivalence of the groups at pretest was examined using one-way analysis of variance. The adequacy of correlations among the dependent variables was evaluated using Bartlett’s test, while linearity of the relationships among the dependent variables was examined using scatterplots. Homogeneity of the covariance matrices was assessed using Box’s M test, and homogeneity of variances was evaluated using Levene’s test. The relevant assumptions were considered satisfactory for conducting the principal analyses. However, Mauchly’s test of sphericity indicated violation of the sphericity assumption for the repeated-measures analyses. Accordingly, Greenhouse–Geisser-adjusted degrees of freedom were used when reporting the univariate repeated-measures effects. In addition, Bonferroni-adjusted pairwise comparisons were employed for significant within-subject and interaction effects.

Table 2

Mixed-Design Repeated-Measures ANOVA for the Dimensions of Academic Engagement

Outcome	Effect	Correction	SS	df	MS	F	p	η^2
Behavioral engagement	Time	Greenhouse–Geisser	23.126	1.430	16.167	4.600	.024	.099
	Time $\times$ Group	Greenhouse–Geisser	21.052	2.861	7.359	2.094	.113	.091
Agentic engagement	Time	Greenhouse–Geisser	89.526	1.419	63.091	28.144	<.001	.401
	Time $\times$ Group	Greenhouse–Geisser	46.874	2.838	16.517	7.368	<.001	.260
Cognitive engagement	Time	Greenhouse–Geisser	12.326	1.383	8.915	12.498	<.001	.229
	Time $\times$ Group	Greenhouse–Geisser	20.252	2.765	7.324	10.267	<.001	.328
Emotional engagement	Time	Greenhouse–Geisser	16.178	1.710	9.459	16.874	<.001	.287
	Time $\times$ Group	Greenhouse–Geisser	6.222	3.421	1.819	3.245	.022	.134

The multivariate repeated-measures analysis initially demonstrated a significant overall main effect of time, Wilks’ $\Lambda = .479$, $F(8, 162) = 9.014$, $p < .001$, $\eta^2 = .308$, indicating that academic engagement scores changed significantly across the pretest, posttest, and follow-up measurements irrespective of group membership. A

significant multivariate Time $\times$ Group interaction was also observed, Wilks’ $\Lambda = .510$, $F(16, 248.097) = 3.820$, $p < .001$, $\eta^2 = .155$, indicating that the pattern of change over time differed among the parental involvement, academic self-regulation, and control groups. Following Greenhouse–Geisser correction, the main effect of time was significant

for behavioral engagement, $F(1.430, 60.06) = 4.600$, $p = .024$, $\eta^2 = .099$; agentic engagement, $F(1.419, 59.60) = 28.144$, $p < .001$, $\eta^2 = .401$; cognitive engagement, $F(1.383, 58.09) = 12.498$, $p < .001$, $\eta^2 = .229$; and emotional engagement, $F(1.710, 71.82) = 16.874$, $p < .001$, $\eta^2 = .287$. The Time $\times$ Group interaction was significant for agentic engagement, $F(2.838, 59.60) = 7.368$, $p < .001$, $\eta^2 = .260$; cognitive engagement, $F(2.765, 58.07) = 10.267$, $p < .001$, $\eta^2 = .328$; and emotional engagement, $F(3.421, 71.84) = 3.245$, $p = .022$, $\eta^2 = .134$. However, the Time $\times$ Group interaction for behavioral engagement was not statistically significant, $F(2.861, 60.08) = 2.094$, $p = .113$, $\eta^2 = .091$. The

between-group main effects were also nonsignificant for behavioral engagement, $F(2, 42) = 0.254$, $p = .777$, $\eta^2 = .012$; agentic engagement, $F(2, 42) = 0.286$, $p = .753$, $\eta^2 = .013$; cognitive engagement, $F(2, 42) = 0.595$, $p = .556$, $\eta^2 = .028$; and emotional engagement, $F(2, 42) = 0.243$, $p = .785$, $\eta^2 = .011$. Accordingly, there was no overall significant difference among the three groups when scores were averaged across measurement occasions, whereas the significant Time $\times$ Group interactions for agentic, cognitive, and emotional engagement indicated differential longitudinal patterns among the groups.

Table 3

Bonferroni-Adjusted Pairwise Comparisons Across Measurement Occasions Within Each Study Group

Group	Outcome	Comparison	Mean Difference	SE	p	95% CI
Control	Behavioral engagement	Pretest vs. Posttest	0.267	0.182	.493	-0.227, 0.760
		Pretest vs. Follow-up	0.133	0.192	1.000	-0.388, 0.655
		Posttest vs. Follow-up	-0.133	0.215	1.000	-0.718, 0.452
	Agentic engagement	Pretest vs. Posttest	0.133	0.533	1.000	-1.316, 1.583
		Pretest vs. Follow-up	-0.600	0.306	.209	-1.430, 0.230
		Posttest vs. Follow-up	-0.733	0.463	.406	-1.990, 0.524
	Cognitive engagement	Pretest vs. Posttest	0.133	0.192	1.000	-0.388, 0.655
		Pretest vs. Follow-up	0.067	0.206	1.000	-0.494, 0.627
		Posttest vs. Follow-up	-0.067	0.118	1.000	-0.388, 0.255
Parental involvement training	Emotional engagement	Pretest vs. Posttest	-0.133	0.165	1.000	-0.582, 0.316
		Pretest vs. Follow-up	-0.133	0.192	1.000	-0.655, 0.388
		Posttest vs. Follow-up	0.000	0.098	1.000	-0.265, 0.265
	Behavioral engagement	Pretest vs. Posttest	-1.000	1.175	1.000	-4.194, 2.194
		Pretest vs. Follow-up	-2.000	0.586	.013	-3.591, -0.409
		Posttest vs. Follow-up	-1.000	0.867	.805	-3.357, 1.357
	Agentic engagement	Pretest vs. Posttest	-3.267	0.573	<.001	-4.824, -1.710
		Pretest vs. Follow-up	-3.067	0.565	<.001	-4.601, -1.532
		Posttest vs. Follow-up	0.200	0.175	.813	-0.274, 0.674
	Cognitive engagement	Pretest vs. Posttest	-1.667	0.361	.001	-2.647, -0.686
		Pretest vs. Follow-up	-1.867	0.435	.002	-3.049, -0.685
		Posttest vs. Follow-up	-0.200	0.175	.813	-0.674, 0.274
	Emotional engagement	Pretest vs. Posttest	-1.200	0.341	.010	-2.126, -0.274
		Pretest vs. Follow-up	-1.267	0.371	.013	-2.275, -0.258
		Posttest vs. Follow-up	-0.067	0.182	1.000	-0.560, 0.427
Academic self-regulation training	Behavioral engagement	Pretest vs. Posttest	-1.200	0.460	.062	-2.450, 0.050
		Pretest vs. Follow-up	-1.133	0.446	.070	-2.345, 0.078
		Posttest vs. Follow-up	0.067	0.118	1.000	-0.255, 0.388
	Agentic engagement	Pretest vs. Posttest	-1.800	0.571	.021	-3.351, -0.249
		Pretest vs. Follow-up	-1.733	0.556	.023	-3.245, -0.222
		Posttest vs. Follow-up	0.067	0.067	1.000	-0.115, 0.248
	Cognitive engagement	Pretest vs. Posttest	-0.067	0.206	1.000	-0.627, 0.494
		Pretest vs. Follow-up	-0.333	0.270	.713	-1.068, 0.401
		Posttest vs. Follow-up	-0.267	0.182	.493	-0.760, 0.227
	Emotional engagement	Pretest vs. Posttest	-0.800	0.312	.067	-1.647, 0.047
		Pretest vs. Follow-up	-0.867	0.215	.004	-1.452, -0.282
		Posttest vs. Follow-up	-0.067	0.267	1.000	-0.791, 0.658

As shown in Table 3, none of the pairwise comparisons across pretest, posttest, and follow-up were statistically significant in the control group for any dimension of academic engagement (all $p > .05$), indicating stability of academic engagement in the absence of intervention. In the parental involvement training group, behavioral engagement differed significantly between pretest and follow-up ($MD = -2.000$, $p = .013$), whereas the pretest–posttest and posttest–follow-up differences were nonsignificant. Agentic engagement increased significantly from pretest to posttest ($MD = -3.267$, $p < .001$) and from pretest to follow-up ($MD = -3.067$, $p < .001$), with no significant difference between posttest and follow-up ($p = .813$), indicating maintenance of the improvement. Cognitive engagement similarly increased significantly from pretest to posttest ($MD = -1.667$, $p = .001$) and from pretest to follow-up ($MD = -1.867$, $p = .002$), while posttest and follow-up did not differ significantly. Emotional engagement also showed significant pretest–posttest ($MD = -1.200$, $p = .010$) and pretest–follow-up differences ($MD = -1.267$, $p = .013$), with no significant posttest–follow-up difference. In the academic self-regulation training group, behavioral and cognitive engagement did not differ significantly across assessment occasions. Agentic engagement significantly increased from pretest to posttest ($MD = -1.800$, $p = .021$) and from pretest to follow-up ($MD = -1.733$, $p = .023$), whereas posttest and follow-up did not differ significantly, suggesting maintenance of the intervention effect. For emotional engagement, the pretest–follow-up difference was significant ($MD = -0.867$, $p = .004$), although the pretest–posttest ($p = .067$) and posttest–follow-up ($p = 1.000$) differences were not significant. Bonferroni-adjusted between-group pairwise comparisons further showed no statistically significant differences between the control and parental involvement groups, between the control and academic self-regulation groups, or between the two intervention groups for behavioral, agentic, cognitive, or emotional engagement (all $p > .05$). Therefore, although the two interventions showed different within-group patterns of change over time, the direct pairwise differences between the intervention conditions were not statistically significant.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of parental involvement training in academic affairs and academic self-regulation training on academic engagement among junior high school students. The findings showed

that, although the overall between-group differences among the parental involvement training group, academic self-regulation training group, and control group were not statistically significant, meaningful changes occurred over time in several dimensions of academic engagement. The main effect of time was significant for behavioral, agentic, cognitive, and emotional engagement, indicating that students' engagement scores changed across the pretest, posttest, and follow-up assessments. More importantly, the interaction between time and group was significant for agentic, cognitive, and emotional engagement, suggesting that the pattern of change differed according to the type of intervention. Pairwise comparisons showed that parental involvement training produced significant improvements in behavioral engagement from pretest to follow-up and significant improvements in agentic, cognitive, and emotional engagement from pretest to posttest and from pretest to follow-up. In contrast, academic self-regulation training was associated with significant improvements in agentic engagement at posttest and follow-up and with a significant improvement in emotional engagement from pretest to follow-up. No significant changes were observed in the control group. Therefore, the findings suggest that both interventions were capable of influencing students' engagement over time, but parental involvement training appeared to affect a broader range of engagement dimensions, whereas academic self-regulation training demonstrated more specific effects on agentic and emotional engagement.

The finding that parental involvement training improved several dimensions of academic engagement is consistent with previous evidence emphasizing the importance of family participation in students' educational functioning. Parental involvement can influence academic engagement through multiple mechanisms, including emotional support, monitoring, academic structure, communication with teachers, assistance with learning routines, and encouragement of students' autonomy. Previous studies have shown that parental involvement is associated with higher levels of academic motivation and stronger academic outcomes (Elahi et al., 2020; Yousefi Goharian et al., 2023). These findings are compatible with the present results because motivation is one of the psychological processes through which parental support can be translated into greater persistence, participation, and investment in school activities. Similarly, evidence concerning the association between parental involvement and academic performance indicates that students benefit when parents actively and

appropriately participate in their education (Asumadu & Sika-Bright, 2021; Naite, 2021). The current findings extend this body of research by suggesting that the effects of parental involvement may not be limited to academic achievement but may also encompass behavioral, cognitive, emotional, and agentic forms of engagement.

The effectiveness of parental involvement training may also be explained by changes in the quality of parent-child interaction. When parents receive structured training regarding supportive monitoring, responsiveness, academic structure, autonomy support, communication, and the creation of an appropriate home learning environment, their involvement may become less controlling and more facilitative. This distinction is important because not all forms of parental involvement are equally beneficial. Supportive parental behaviors can strengthen students' perceptions of competence and security while simultaneously encouraging independent academic functioning. Previous research has shown that the quality of the parent-child relationship is associated with academic achievement (Rathee & Kumari, 2022), and that the relationship between parents and adolescents may influence learning engagement through learning motivation and academic self-efficacy (Shao & Kang, 2022). Accordingly, the present intervention may have enhanced engagement by improving the relational context in which students approached their academic responsibilities. Greater emotional support may have facilitated emotional engagement, clearer structure may have contributed to behavioral engagement, and autonomy-supportive practices may have enhanced agentic engagement.

The improvement in agentic engagement following parental involvement training is particularly noteworthy. Agentic engagement refers to the student's proactive contribution to the instructional process, including asking questions, expressing preferences, seeking clarification, and communicating learning needs. At first glance, this dimension might appear to depend primarily on student characteristics; however, the family environment can play an important role in cultivating the confidence and autonomy required for agentic behavior. Parents who respond to students' needs, encourage decision-making, and avoid excessive control may create conditions in which students feel more capable of expressing themselves and taking initiative in learning situations. This interpretation is consistent with research showing that parental behavior is related to adolescents' self-regulated learning and academic development (Bardach et al., 2023). It is also consistent with

evidence indicating that self-regulated learning mediates the relationship between parent-adolescent interaction and academic engagement (Mohammadi Baghmollaei & Yousefi, 2022). Therefore, parental involvement training may have influenced agentic engagement indirectly by strengthening students' autonomy and self-regulatory capacities.

The significant improvement in cognitive engagement in the parental involvement group can also be interpreted in light of the structure provided by parents. Cognitive engagement involves strategic learning, thoughtful processing of information, persistence in complex tasks, and investment in understanding rather than superficial task completion. Parents who learn how to support homework without directly taking over the task, organize learning conditions, encourage planning, and guide students toward independent problem solving may help students adopt deeper approaches to learning. Previous findings have demonstrated associations between parenting styles, self-regulation, and academic engagement (Besharati et al., 2022), suggesting that the family environment may contribute to the development of cognitive strategies. Moreover, parental participation programs have been shown to affect both academic and socioemotional outcomes, supporting the view that structured parental interventions can influence multiple domains of student functioning (Cosso et al., 2022). The sustained difference between pretest and follow-up observed in the present study may indicate that changes in family routines and parental behaviors created a relatively stable context for deeper cognitive involvement in schoolwork.

The improvement in emotional engagement among students whose parents received training may be explained by the emotional and motivational climate created within the home. Emotional engagement reflects students' interest, enjoyment, sense of belonging, and positive affect toward learning and school. When parents respond constructively to academic difficulties, provide encouragement, recognize effort, and communicate realistic expectations, students may experience fewer negative emotions and greater confidence in relation to school tasks. The effectiveness of parental participation training in reducing school anxiety and increasing achievement motivation has been documented previously (Rahimi et al., 2019). This is highly relevant to the current findings because lower anxiety and stronger academic motivation can facilitate more positive emotional involvement in learning. Furthermore, research examining home-school engagement emphasizes the importance of

coordinated support between parents and teachers for children's educational experiences (Lynch, 2021). In the present intervention, encouraging parents to communicate with teachers and become more effectively involved in school-related activities may have enhanced students' perception that home and school were working together to support their progress.

The finding that academic self-regulation training significantly improved agentic engagement is also theoretically coherent. Self-regulation training directly targets processes such as goal setting, planning, monitoring, attention control, inhibition, self-evaluation, and strategic help-seeking. These capacities are closely related to agentic engagement because students who can monitor their learning and recognize difficulties are better able to identify when assistance is required, ask questions, communicate preferences, and actively shape their learning environment. Previous research has shown that self-regulated learning strategies are related to deep cognitive engagement and academic vitality among high school students (Jabbari et al., 2022). Other evidence indicates that students' beliefs about self-regulated learning are associated with learning strategies, metacognition, and achievement goals (Hertel & Karlen, 2021). The present findings therefore support the view that strengthening self-regulatory competencies can help adolescents become more proactive participants in their education rather than passive recipients of instruction.

The maintenance of improvement in agentic engagement at follow-up is particularly important because it suggests that the effects of self-regulation training were not restricted to the immediate intervention period. Once students acquire skills in goal setting, self-monitoring, and help-seeking, these strategies can potentially become integrated into their regular learning behavior. This interpretation is supported by studies demonstrating that self-regulation can be strengthened through systematic educational interventions (Jelvehgar et al., 2014). Similarly, self-regulation training has been shown to improve variables such as critical thinking and school belonging, both of which require active cognitive and motivational participation in learning (Ghodsi & Amanzadeh, 2022). Research in digital and virtual learning environments has likewise shown that planning and self-regulatory supports can improve students' academic functioning (Jarmillo et al., 2022). Taken together, these studies suggest that self-regulation training may promote durable changes in how students approach learning tasks and interact with their educational environment.

The significant pretest-to-follow-up improvement in emotional engagement in the academic self-regulation group may be explained by the intervention's emphasis on emotional regulation. Students were taught not only planning and cognitive control but also ways of managing emotions that arise during academic activities. Academic learning commonly involves frustration, boredom, anxiety, uncertainty, and perceived failure, particularly during adolescence. Students who are better able to recognize and regulate these emotional responses may remain psychologically involved in academic tasks rather than withdrawing from them. Previous research has shown that emotion regulation and learning motivation are closely connected in educational settings (Alonso-Tapia et al., 2020). The present findings are therefore consistent with the proposition that self-regulation training can improve emotional engagement by equipping students with skills for managing negative affect and maintaining motivation in challenging academic situations.

However, academic self-regulation training did not produce statistically significant changes in behavioral or cognitive engagement in the within-group pairwise comparisons. One possible explanation is that eight sessions may have been sufficient to influence students' awareness, agency, and emotional control but not long enough to produce pronounced changes in stable behavioral routines or deeper cognitive learning strategies. Behavioral engagement may require repeated opportunities for practice within actual classroom contexts, reinforcement by teachers and parents, and sustained environmental support. Similarly, cognitive engagement may develop gradually as students learn to apply metacognitive and strategic learning skills consistently across different academic subjects. Research on self-regulated learning increasingly conceptualizes it as a dynamic process that unfolds across multiple phases of planning, performance, monitoring, and reflection (Cheng et al., 2024). This suggests that brief interventions may initiate self-regulatory change without necessarily producing immediate improvements across all dimensions of academic engagement.

The absence of significant overall between-group effects and nonsignificant Bonferroni comparisons between the two intervention groups should also be interpreted carefully. These results indicate that neither parental involvement training nor academic self-regulation training was statistically superior to the other when the groups were compared directly. This finding is consistent with the possibility that both interventions address different

components of the same broader motivational and regulatory system. Parent-focused interventions act primarily through environmental support, while self-regulation training acts primarily through students' internal cognitive, motivational, and emotional processes. These mechanisms may converge on similar educational outcomes, which can reduce direct between-group differences. Previous studies have highlighted the interdependence of parental behavior and self-regulation (Bardach et al., 2023; Mohammadi Baghmollaei & Yousefi, 2022). Therefore, the lack of a statistically significant direct difference between the two intervention groups should not be interpreted as indicating that the interventions were ineffective; rather, the significant time-related and interaction effects suggest that their influence was expressed through different patterns of change across engagement dimensions.

The nonsignificant changes observed in the control group further support the interpretation that the improvements in the intervention groups were related to the educational programs rather than merely to repeated measurement or passage of time. Scores in the control group remained relatively stable across the three assessment occasions. This pattern is consistent with research showing that engagement does not necessarily improve spontaneously and may require targeted support from families, teachers, or structured student-focused interventions (Pinzone & Reschly, 2021). The broader literature also demonstrates that engagement is associated with academic achievement and well-being (Wong et al., 2023), highlighting the importance of interventions capable of preventing disengagement during adolescence. The current results therefore provide additional evidence that both family-based and student-focused approaches may contribute to maintaining or strengthening academic involvement.

The findings are also relevant in contemporary educational environments, where students increasingly need to function independently across traditional, blended, and digital learning contexts. Parental involvement remains important in such settings, but the nature of effective involvement may change as students become older and more autonomous. Research during online learning has shown that parental involvement can support academic outcomes under conditions requiring greater home-based learning (Qasim et al., 2022). More recent studies have emphasized parental participation within digital educational environments and its relationship with learning achievement (Dianawati et al., 2025), while school-based parental involvement has also been linked to academic performance through self-efficacy

(Djekourmane et al., 2025). Furthermore, strategies that create interactive spaces for communication between teachers and parents may promote more meaningful forms of parental participation (Guo, 2025). These findings support the broader implication of the present study that effective engagement interventions should consider both the student's self-regulatory capacity and the quality of the educational support provided by the family.

Overall, the present findings indicate that parental involvement training and academic self-regulation training can both contribute to changes in academic engagement, but they appear to operate through somewhat different patterns. Parental involvement training was associated with improvement across a broader range of engagement dimensions, including behavioral, agentic, cognitive, and emotional engagement, whereas academic self-regulation training showed its clearest effects on agentic and emotional engagement. This pattern is consistent with the broader conceptualization of academic engagement as a multidimensional phenomenon shaped by both contextual and personal factors. Recent evidence emphasizing the continuing developmental importance of parental roles (Murdiani & Wulandari, 2025) and the growing importance of structured family-school interaction (Guo, 2025) further reinforces the relevance of combining environmental and individual approaches. Therefore, the findings suggest that parental involvement and self-regulation should not necessarily be regarded as competing explanations or interventions, but rather as complementary components of a comprehensive approach to strengthening students' academic engagement.

The present study had several limitations that should be considered when interpreting the findings. First, the sample consisted of only 45 male junior high school students from one boarding school in Famenin County, which restricts the generalizability of the findings to female students, students in other geographical regions, other educational levels, and schools with different socioeconomic or organizational characteristics. Second, the relatively small sample size may have reduced statistical power for detecting between-group differences, particularly when comparing the two active interventions directly. Third, academic engagement was measured through a self-report questionnaire, which may be affected by response bias, social desirability, or students' subjective interpretation of the items. Fourth, the follow-up period was relatively limited, and therefore the long-term stability of the observed changes remains uncertain. Fifth, potential contextual variables such as parental education,

socioeconomic status, prior academic achievement, teacher behavior, classroom climate, family functioning, and students' baseline motivation were not explicitly controlled. Finally, although the intervention protocols were standardized, individual differences in parental attendance, implementation of learned strategies at home, and students' adherence to self-regulation exercises may have influenced the magnitude of the observed effects.

Future studies should replicate the present investigation using larger and more diverse samples, including both male and female students from different schools, regions, educational levels, and socioeconomic backgrounds. Randomized controlled trials with larger sample sizes would provide stronger evidence regarding the comparative effectiveness of parental involvement and academic self-regulation interventions. Future research could also employ longer follow-up periods to determine whether intervention effects are maintained across an academic semester or school year. It would be valuable to combine self-report measures with teacher ratings, parent reports, classroom observations, academic records, and behavioral indicators of engagement. Researchers should also investigate potential mediators and moderators of intervention effectiveness, including academic self-efficacy, achievement motivation, emotion regulation, family functioning, parenting style, perceived autonomy support, school climate, and teacher support. In addition, future studies could examine whether a combined intervention integrating parental involvement training with student self-regulation training produces stronger or more comprehensive effects than either approach alone. More detailed process evaluations could also determine which specific components of each intervention are most strongly associated with changes in behavioral, emotional, cognitive, and agentic engagement.

Schools, counselors, educational psychologists, and teachers can use the findings of this study to design multidimensional programs for strengthening students' academic engagement. Parent education programs can focus on supportive monitoring, appropriate academic structure, effective communication, autonomy support, constructive involvement in homework, and regular home-school communication. At the same time, students can be trained in goal setting, planning, attention control, emotional regulation, self-monitoring, self-evaluation, and adaptive help-seeking. Because parental involvement training influenced a broader range of engagement dimensions while self-regulation training showed specific benefits for agentic and emotional engagement, educational practitioners may

benefit from integrating both approaches within school-based prevention and support programs. Such programs should avoid excessive parental control and instead emphasize developmentally appropriate support that strengthens students' independence. Teachers can also reinforce self-regulatory strategies during classroom instruction and communicate regularly with parents regarding students' academic needs. A coordinated approach involving students, families, teachers, and school counselors may therefore provide a more comprehensive framework for promoting sustained academic engagement throughout adolescence.

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

All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

References

- Abid, N., & Akhtar, M. (2020). Relationship between Academic Engagement and Academic Achievement: An Empirical Evidence of Secondary School Students. (Vol. 23).
- Alonso-Tapia, J., Abello, D. M., & Panadero, E. (2020). Regulating Emotions and Learning Motivation in Higher Education Students. *The International Journal of Emotional Education*, 12(2), 73-89.
- Asumadu, D., & Sika-Bright, S. (2021). Parental Involvement and Pupils' Academic Performance in the Cape Coast Metropolis, Ghana. (pp. 97-109): De Gruyter.
- Bardach, L., Yanagida, T., Goetz, T., Jach, H., & Pekrun, R. (2023). Self-Regulated and Externally Regulated Learning in Adolescence: Developmental Trajectories and Relations with Teacher Behavior, Parent Behavior, and Academic Achievement. *Developmental Psychology*, 59(7), 1327-1345. <https://doi.org/10.1037/dev0001537>
- Besharati, F., Aryanpour, H., & Mohammadpanah, A. (2022). *Investigating the Mediating Role of Emotional Intelligence and Self-Regulation in the Relationship between Parental Parenting Styles and Children's Academic Engagement* Ardakan University].
- Cheng, Y., Chen, H., Chen, J., & Ding, C. (2024). Unveiling Self-Regulated Learning in Secondary School Students: A Process Mining Approach on Trace Data.
- Cosso, J., von Suchodoletz, A., & Yoshikawa, H. (2022). Effects of Parental Involvement Programs on Young Children's Academic and Social-Emotional Outcomes: A Meta-Analysis. *Journal of Family Psychology*, 36(8), 1329-1339. <https://doi.org/10.1037/fam0000992>
- Dianawati, D., Rohman, N., & Mujahidin, A. (2025). The Effect of Parental Involvement and Digital Financial Literacy on Student Learning Achievement of Grade Xi in the Digital Era at SMKN 1 Bojonegoro. *Santhet (Jurnal Sejarah Pendidikan Humaniora)*, 9(4), 1433-1442. <https://doi.org/10.36526/santhet.v9i4.5484>
- Djekourmane, D., Zhang, Y., Zhang, X., & Wang, Z. (2025). The Mediating Role of Math Self-Efficacy Between School-Based Parental Involvement and Math Performance Among Students in Southeast Asia: Evidence From PISA 2022. *Frontiers in psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1594131>
- Elahi, Z., Haji-Tabar Firoozjaei, M., & Abedini, M. (2020). The Role of Parental Involvement Dimensions in Academic Motivation of Sixth-Grade Primary School Students. *Family and Research*, 17(1), 103-126.
- Ghods, F., & Amanzadeh, A. (2022). The Effectiveness of Self-Regulation Training on Perception of Teachers' Teaching Quality, Critical Thinking, and School Belonging in Female High School Students. *Sociology of Education*, 8(2), 285-295.
- Guo, D. (2025). Design of Interactive Spaces for Promoting Parental Involvement: Strategies Used by EFL Teachers. *Online Learning*, 29(2). <https://doi.org/10.24059/olj.v29i2.4683>
- Hertel, S., & Karlen, Y. (2021). Implicit Theories of Self-Regulated Learning: Interplay with Students' Achievement Goals, Learning Strategies, and Metacognition. *British Journal of Educational Psychology*, 91(3), 972-996. <https://doi.org/10.1111/bjep.12402>
- Jabbari, B., Shabanlou, K. S., & Khezri Azar, H. (2022). *The Relationship between Self-Regulated Learning Strategies, Metacognitive Awareness, and Intelligence Beliefs with Deep Cognitive Engagement and Academic Vitality of High School Students in Silvana Afagh Higher Education Institute*].
- Jarmillo, A., Salines-Cerda, J., & Fuentes, P. (2022). Self-Regulated Learning and Academic Performance in Chilean University Students in Virtual Mode during the Pandemic: Effect of the 4Planning App. *Educational Psychology*(13), 23-56. <https://doi.org/10.3389/fpsyg.2022.890395>
- Jelvehgar, A., Kareshki, H., & Asghari Ebrahimabad, M. (2014). The Effect of Self-Regulation Training on Social Problem Solving of Preschool Girls and Boys. *Cognitive and Behavioral Sciences Research*, 4(1), 155-166.
- Lynch, J. (2021). Elementary School Teachers' and Parents' Perspectives of Home-School Engagement and Children's Literacy Learning in a Low-Income Area. *The School Community Journal*, 31(1), 127-148.
- Mohammadi Baghmollaei, H., & Yousefi, F. (2022). The Relationship between Parent-Adolescent Interaction and Academic Engagement: The Mediating Role of Self-Regulated Learning. *Family and Research*, 19(4), 23-46.
- Murdiani, J., & Wulandari, M. D. (2025). The Implications of Parental Role Involvement on the Development of Primary School Students' Spiritual Intelligence. *Jurnal Elementaria Edukasia*, 9(2), 3704-3715. <https://doi.org/10.31949/jee.v9i2.13650>
- Naite, I. (2021). Impact of Parental Involvement on Children's Academic Performance at Crescent International School, Bangkok, Thailand.
- Pinzone, C., & Reschly, A. L. (2021). Cultivating Student Engagement and Connectedness. In (pp. 163-182). Oxford University Press. <https://doi.org/10.1093/med-psych/9780190918873.003.0009>
- Qasim, M., Saleem, A., & Hafeez, M. (2022). Parental Involvement in Online Learning and Academic Achievements of Their Children under COVID-19 Conditions. (pp. 1-12).
- Rahimi, M., Rasouli Fathabad, F., & Zare, M. (2019). The Effect of Parent Participation Training in Homework on Achievement Motivation and School Anxiety of Students. *Journal of School and Educational Psychology*, 8(4), 92-111.
- Rathee, N., & Kumari, P. (2022). Parent-Child Relationship and Academic Achievement: An Exploratory Study on Secondary School Students. *International journal of health sciences*, 6267-6275. <https://doi.org/10.53730/ijhs.v6nS3.7381>
- Shao, Y., & Kang, S. (2022). The Link between Parent-Child Relationship and Learning Engagement among Adolescents: The Chain Mediating Roles of Learning Motivation and Academic Self-Efficacy. *Frontiers in Education*(22), 18. <https://doi.org/10.3389/feduc.2022.854549>
- Tajalli, P., Taghizadeh Shideh, Z., & Sadeghi Afjeh, Z. (2021). Modeling Academic Enthusiasm Based on School Climate and Quality of Life with the Mediation of Self-Regulation in Students. *Sociology of Education*, 7(1), 101-110.
- Wong, Z. Y., Liem, G. A. D., Chan, M., & Datu, J. A. D. (2023). Student Engagement and Its Association with Academic Achievement and Subjective Well-Being: A Systematic Review and Meta-Analysis. *Journal of Educational Psychology*. <https://doi.org/10.1037/edu0000833>
- Yousefi Goharian, Y., Yousefi Goharian, S., & Yousefi Goharian, S. (2023). Investigation of Parental Involvement in Academic Motivation of Fifth-Grade Primary School Students in Basht City. *Ormazd Research Journal*(62), 164-175.