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Comparison of the Effectiveness of Educational Packages on Time Management, Motivational Strategy, and Self-Regulation Strategies on Academic Achievement Motivation in Female Students

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A B S T R A C T

Objective: The present research aimed to compare the effectiveness of educational packages on time management, motivational strategies, and self-regulation strategies on academic achievement motivation in female elementary school students in the second stage of elementary education.

Methods and Materials: The research design was quasi-experimental with a pre-test, post-test, and a two-month follow-up. The statistical population included all students with test anxiety in the academic year 2022-2023 in the second stage of elementary education in Chadegan city. After administering the Test Anxiety Questionnaire by Abolghasemi et al. (1996), 72 students with test anxiety were purposefully selected and randomly assigned to 3 experimental groups and 1 control group, with 18 students in each group. For the experimental groups, the time management and motivational strategy training were each conducted in 8 sessions of 60 minutes, while the self-regulation strategy was implemented over 8 sessions of 90 minutes. The control group received no intervention. All four groups responded to the Achievement Motivation Questionnaire by Ali and McInerney (2001) at three stages: pre-test, post-test, and follow-up. The data were analyzed using repeated measures analysis of variance (ANOVA).

Findings: The results showed that the educational packages on time management, motivational strategies, and self-regulation strategies effectively increased academic achievement motivation ($p<0.05$). According to the Bonferroni test, there was no significant difference between the effectiveness of the packages in both post-test and follow-up stages ($p>0.05$).

Conclusion: Based on the results of the present research, it can be recommended to managers, teachers, and counselors to use these three educational packages to enhance academic achievement motivation and improve students' academic performance.

Keywords: *Educational achievement motivation, Motivational strategies, Self-regulated strategies, Time management.*

1. Introduction

Today, education is one of the most important institutions responsible for preparing the necessary human resources for each country. Therefore, examining issues related to student education and learning is of great significance (Yusefi & Nobakht, 2020). As a result, it is essential to identify the factors that reduce students' learning problems so that educational activities can be effectively developed and implemented (Nuari et al., 2019). Psychologists believe that achievement motivation is a crucial factor for academic success and serves as the driving force behind behaviors that lead to better and more effective learning (Sohrabi et al., 2016; Yusefi & Nobakht, 2020), and it is considered one of the key determinants of students' success and failure in school (Nazemi et al., 2020).

Academic achievement motivation is a set of internal and external factors that help an individual achieve learning goals (Vahidi-Nejad et al., 2020). In other words, academic achievement motivation is a comprehensive tendency to evaluate one's own performance, defined as striving for success in performance based on the highest standards and experiencing the pleasure associated with success in performance. Studies show that students with high achievement motivation succeed in school tasks (Pakdaman-Savji et al.), perform better academically, and experience more academic progress (Hosseinmardi et al., 2021; Zebing, 2019). Motivation, by creating interest in activities and increasing the sense of efficacy, also protects individuals from the pressures of education, leading to greater academic success (Vahidi-Nejad et al., 2020). In other words, it is a powerful determinant of success and failure in learning (Hosseini Sadr et al., 2022).

Time management skills are one of the criteria that students use to strive for success and improve their performance (Omidvar et al.). Time management is one of the most important skills necessary for success and refers to planning how to divide time for specific activities (Mercanlioglu, 2020). Additionally, time management is considered a skill for controlling and making better use of time (Ajdari et al., 2022). Empowering students with time management skills helps them maintain consistency in studying, which is the same as achievement motivation, and consequently impacts their performance (Khiat, 2022). Since most elementary students do not possess proper time management skills, the need for teaching this skill in this educational stage is felt, and by learning time management, they demonstrate better performance in educational activities and leisure time (Annisa et al., 2022; Mugianti et al., 2022).

Another effective strategy for students' academic success is the motivational strategy. Motivational strategies can be considered a set of individual and social criteria that people refer to before undertaking a task or avoiding an action (YousefiAfrashteh & Rezaei, 2022). Instead of relying on teacher and parent instruction to gain knowledge, students personally initiate, guide, plan, decide, and choose their efforts (Nazemi et al., 2020). Using a combination of two dimensions of motivation, namely personal (internal) and environmental (external), guides students toward specific goals and activities (Wei et al., 2023). Research indicates that there is not only a significant relationship between motivational strategy and peer learning, but it can also be considered one of the factors contributing to the improvement of academic engagement, achievement motivation, and learning strategies. It seems that improving learning orientation has a positive impact on academic engagement and learning (Alonso-Tapia et al., 2023). Therefore, through an intervention program that increases achievement motivation and individual capacities, it is possible to increase students' academic success (Nazemi et al., 2020).

One other aspect of achieving success in learning is striving for independence in learning so that students can manage their own learning processes, both cognitive and metacognitive. Self-regulation is the capacity of an individual to adjust behavior according to external and internal conditions and developments, and it includes the ability to organize and self-manage one's behaviors to achieve various goals (Ahmadi, 2020). Research emphasizes the importance of improving elementary students' self-regulation strategies and highlights its positive impact on different stages of students' lives (Dignath & Veenman, 2021). Self-regulation is a skill that helps learners actively take control of their learning process and dynamically use their cognitive skills (Cheshm Azar et al., 2022). This skill encourages them to strive for their goals, effectively seek academic support from teachers, parents, and classmates when needed, and, most importantly, take responsibility for their own learning (Ozan & Kıncal, 2018). Self-regulation strategies enable students to carry out school tasks and daily activities in a more task-oriented manner by planning, organizing, and self-reviewing (Abdolmaleki et al., 2023). Researchers believe that students' beliefs about knowledge and the possession of self-regulation learning strategies play a significant role in academic success and motivation

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(Khoshesteh-Abbasi et al., 2023; Yasemi-Nejad et al., 2013). These beliefs can increase achievement motivation in learners (Finch et al., 2023; Karami et al., 2013; Zheng et al., 2021).

Given the low prevalence of academic achievement motivation among elementary students and the foundational and fundamental importance of this stage in the educational system, providing psychological services in the form of educational strategies for time management, motivational strategies, and self-regulation strategies can effectively address this issue. Based on a review of credible scientific sources, no research was found that simultaneously examined the effectiveness and comparison of these strategies in addressing the problem of academic achievement motivation at this educational level. Most existing studies related to these variables are conducted at other educational levels or separately investigate the direct or indirect effectiveness of these packages on academic achievement motivation. However, no research has compared the effectiveness of these packages with each other. Additionally, the lack of practical knowledge in this area and the issues related to time management, motivation, and the application and regulation of cognitive and metacognitive skills highlight the need for this research. Thus, the present study aims to compare the effectiveness of educational packages on time management, motivational strategy, and self-regulation strategies on academic achievement motivation in female elementary school students in the second stage of elementary education.

2. Methods and Materials

2.1. Study Design and Participants

The research method was quasi-experimental with a pre-test, post-test design, including a control group. The statistical population of this study consisted of all female students in the second stage of elementary education in Chadegan city during the academic year 2022-2023. Seventy-two students with high test anxiety scores, as determined by a research questionnaire, were selected through purposeful sampling, with the condition for inclusion being a high score on the Test Anxiety Questionnaire by Abolghasemi et al. (1996). The students were randomly assigned to three experimental groups (18 students each) and one control group (18 students). The necessary sample size, considering a 95% confidence level and an expected dropout rate, was determined to be 15 students per group. The inclusion criteria included a higher-than-average test anxiety score in the Test Anxiety Questionnaire by Abolghasemi et al. (1996), the student's willingness and informed consent (in accordance with the rules of the Ministry of Education and their parents) to participate in the research, active enrollment in the second stage of elementary education, and no psychological disorders or other factors that could interfere with the study. The exclusion criteria included withdrawal from participation, more than two absences from educational sessions, failure to complete assignments, and undergoing other psychological treatments or training. The ethical considerations of this research included the following: a) obtaining an ethics code; b) voluntary participation in the study by all participants; c) maintaining confidentiality and anonymity of the participants and research information; and d) allowing participants to freely withdraw from the study at any time.

2.2. Measures

2.2.1. Academic Achievement Motivation

To measure academic achievement motivation, the questionnaire by Ali and McInerney (2001) was used, which consists of 43 Likert-scale questions (ranging from 1 to 5, from strongly disagree to strongly agree). The total questionnaire score was calculated from 1 to 5, with a higher score indicating better performance in this scale. The reliability of this tool has been estimated by various researchers (McInerney, Yeung, & McInerney, 2001), and the Cronbach's alpha coefficient has been reported between 0.67 and 0.82, with an average of 0.76 (McInerney & Sinclair, 1992). In the study by Yousefi, Qasemi, and Firooziya (2009), the Cronbach's alpha coefficient for the questionnaire was reported as 0.93. In this research, the Cronbach's alpha coefficient was 0.927.

2.3. Interventions

2.3.1. Time Management Training

The time management training program was based on Brian Tracy's systematic and structured time management program (Ajdari et al., 2022; Annisa et al., 2022; Tracy, 2016). This educational intervention was designed to be conducted over eight 60-minute sessions with the experimental group, while no intervention was performed on the control group.

Session 1: Importance and Benefits of Time Management

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In this session, students are introduced to the concept of time management and its importance in both academic and personal life. The session highlights how effectively managing time leads to increased productivity, reduced stress, and better educational outcomes. Students are encouraged to recognize the benefits of time management in their learning process.

Session 2: Cognitive Errors

This session focuses on the cognitive errors that individuals may experience regarding themselves and their environment. These errors often lead to procrastination and poor time management. Students learn about common cognitive distortions, such as overgeneralization and all-or-nothing thinking, which contribute to time-wasting behaviors.

Session 3: Exercises on Cognitive Errors

Students practice identifying cognitive errors in various situations. Through role-playing and situational exercises, they are encouraged to recognize how their thoughts and beliefs about time management can lead to procrastination and ineffective use of time.

Session 4: Identifying Time-Wasting Factors

This session provides students with information on the factors that contribute to time loss. Students identify their own time-wasting habits and discuss strategies to minimize distractions. Real-life examples are used to illustrate how poor time management leads to reduced academic performance.

Session 5: Improving Time Management Skills

Building on previous sessions, students learn strategies to improve their time management skills, such as breaking tasks into smaller, manageable steps, setting clear goals, and creating realistic schedules. Previous sessions are reviewed to reinforce these skills.

Session 6: Planning and Prioritization

In this session, students learn the importance of prioritizing tasks based on their impact and urgency. They practice creating to-do lists and organizing tasks in order of priority. The session teaches them to focus on high-impact activities first to maximize their effectiveness.

Session 7: Setting and Prioritizing Goals

Students are introduced to the concept of setting short-term and long-term goals. The session emphasizes the importance of clearly defining goals and prioritizing them according to their relevance and time frame. Strategies for setting SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals are covered.

Session 8: Summary and Post-Test

In the final session, students review the factors that contribute to improved time management. A summary of all the sessions is provided, and students are given practical plans to apply their time management skills in academic and personal settings. A post-test is conducted to measure improvements in time management skills.

2.3.2. Motivational Strategy Training

The motivational strategy protocol was developed based on the approach by Lepper and Hoddell (1989), and other internal and external research articles and projects (Mehqani Jamaladdin & Jena-Abadi, 2019; Nazemi et al., 2020). It was implemented as an educational intervention over eight 1-hour sessions with the experimental group, while no intervention was performed on the control group.

Session 1: Introduction to Motivational Strategies

Students are introduced to the concept of motivational strategies, including a detailed explanation of intrinsic and extrinsic motivation. The session explains how motivation influences learning and academic performance. Examples of both types of motivation are provided to help students understand the distinction.

Session 2: Sources of Intrinsic and Extrinsic Motivation

This session covers the sources of both intrinsic and extrinsic motivation. Students learn to challenge themselves through engaging activities and are introduced to tasks that stimulate their interest and curiosity. An assignment is given to practice applying these sources of motivation.

Session 3: Dealing with Conflicting Information

Students are introduced to the role of surprising or conflicting information in enhancing motivation. The session includes exercises on how to use this type of information to motivate oneself during study sessions. Correct study techniques are taught to encourage deeper engagement with learning materials.

Session 4: Choice in Learning and Attribution Styles

This session explores the concept of autonomy in learning, where students are encouraged to take control of their learning process. Different attribution styles are introduced, and students practice identifying their own attribution styles. An assignment is given to explore these concepts further.

Session 5: Controlling Learning Outcomes

Students review the previous session's assignments and learn about controlling the outcomes of their learning. They practice various attribution styles to increase their sense of

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control over academic results. An assignment is provided for further practice.

Session 6: Imagination and Its Role in Learning

This session focuses on the role of imagination in enhancing motivation. Students learn how to use visualization techniques and mental simulations to boost their motivation for learning. Exercises are included to practice using imagination in academic settings.

Session 7: Importance of Games in Learning

The role of games and playful activities in learning is discussed. Students engage in imaginative role-play and learn how games can aid memory retention and increase motivation for subjects they find difficult. Assignments involve applying these techniques in their studies.

Session 8: Summary and Review

In the final session, students review their assignments and reflect on their experiences with the motivational strategies learned. The session provides feedback from the participants, allowing them to share how the strategies have influenced their learning and motivation.

2.3.3. Self-Regulation Strategy Training

The self-regulated learning training package was a self-regulated learning strategy course consisting of eight 90-minute sessions, developed by Dansereau and colleagues (1979). In these sessions, self-regulated learning strategies, including cognitive and metacognitive strategies, were taught in groups (Vahidi-Nejad et al., 2020).

Session 1: Introduction to the Program and Goals

This session provides an overview of self-regulated learning strategies. Students are introduced to the concept of self-directed learning and are familiarized with the goals of the program. They are encouraged to reflect on their current learning habits and identify areas for improvement.

Session 2: Rehearsal and Repetition Strategies

In this session, students learn basic rehearsal and repetition techniques, such as rephrasing materials, summarizing key points, highlighting critical information, and taking notes. These strategies help students reinforce what they have learned and retain difficult concepts by practicing them regularly.

Session 3: Elaboration and Expansion Strategies

Students are introduced to elaboration techniques, where they integrate new information by relating it to prior knowledge. They practice summarizing, creating analogies, and using algorithms to enhance understanding. Students also explore how connecting information from different disciplines can improve retention.

Session 4: Organization Strategies

This session covers organizational techniques, such as coding, categorizing, networking, and creating mind maps. Students practice highlighting main ideas and building conceptual diagrams to better organize information and see relationships between different concepts.

Session 5: Planning

Students are taught how to set specific learning goals, manage time, allocate resources, and apply prior knowledge. They learn selective attention techniques and practice sequencing and timing their study sessions. The importance of aligning learning strategies with personal goals is emphasized.

Session 6: Self-Monitoring

This session introduces techniques for monitoring learning performance. Students learn to reflect on their progress, evaluate their understanding, and adjust strategies as needed. Exercises include observing their own learning activities and correcting mistakes in real-time.

Session 7: Self-Evaluation

Students learn to evaluate the quality of their learning outcomes and the effectiveness of the strategies they use. The session includes exercises on reviewing learning processes, revisiting goals, assessing progress, and revising methods based on self-assessment.

Session 8: Review and Summary of Assignments

In the final session, students review the assignments from previous sessions and reflect on the impact of the self-regulation strategies on their learning. A summary of the program is provided, and students discuss how they can continue applying these strategies to their future academic challenges.

2.4. Data analysis

Data were analyzed using repeated measures ANOVA in SPSS version 23.

3. Findings and Results

The participants in the study included 60 female students. In the time management training group, there were 15 participants with a mean age and standard deviation of 11.07 ± 0.79; in the motivational strategy training group, 15 participants with a mean age and standard deviation of 10.93 ± 0.78; in the self-regulation strategy training group, 15 participants with a mean age and standard deviation of 10.8

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± 0.77; and in the control group, 15 participants with a mean age and standard deviation of 11 ± 0.84. This indicates that the groups were homogeneous in terms of age and gender. The mean and standard deviation of test anxiety in the time management training group were 102.33 ± 15.96, in the motivational strategy training group were 104.33 ± 10.99, in the self-regulation training group were 99.53 ± 14.23, and in the control group were 99.33 ± 10.47.

Table 1

Descriptive Indices of Academic Achievement Motivation Scores Across Four Groups

Variable	Group	Pre-test Mean (SD)	Post-test Mean (SD)	Follow-up Mean (SD)
Academic Achievement Motivation	Self-regulation Strategy	125.4 (42.87)	179 (38.75)	173.87 (26.47)
	Motivational Strategy	126.8 (45.55)	169.33 (28.96)	166.27 (28.57)
	Time Management Training	127.07 (45.31)	174.6 (28.92)	168.93 (32.04)
	Control	120.2 (39.19)	120.87 (32.82)	120.33 (35.85)

According to Table 1, the mean scores of academic achievement motivation in the experimental groups increased more significantly in the post-test and follow-up stages compared to the pre-test, while the control group did not show much change.

The use of parametric tests for repeated measures requires adherence to certain primary assumptions, including the normality of scores, equality of variances, and sphericity of covariances, which, once validated, allow the use of these tests. The purpose of examining the normality assumption is to ensure that the distribution of scores is consistent with the population. This assumption suggests that the observed difference between the sample group's score distribution and the normal distribution in the population is zero. For this purpose, the Shapiro-Wilk test was used. The results of this assumption for the scores of the study variables indicated that the null hypothesis of normal score distribution remained in all three stages of pre-test, post-test, and follow-up in all four groups (all significance levels were greater than 0.05). To examine the assumption of equality of variances, Levene's test was used, and this assumption was confirmed (the significance level was greater than 0.05).

Next, the Mauchly's test (examining the assumption of sphericity or equality of covariances) was conducted for the variable, with results of 0.078 and P = 0.999, which were greater than 0.05. Therefore, the assumption of sphericity was rejected using Mauchly's test for academic achievement motivation ($p < 0.05$).

Table 2

Results of Within-Subjects Effects Analysis in Repeated Measures ANOVA for Academic Achievement Motivation

Source	Test	Sum of Squares	df	Mean Square	F	Significance	Effect Size	Power
Time	Sphericity Assumed	47402.678	2	23701.339	35.09	0.001	0.385	1.000
	Greenhouse-Geisser	47402.678	1.04	45553.067	35.09	0.001	0.385	1.000
	Huynh-Feldt	47402.678	1.1	43106.984	35.09	0.001	0.385	1.000
	Lower-bound	47402.678	1	47402.678	35.09	0.001	0.385	1.000
Time × Group	Sphericity Assumed	15944.967	6	2657.494	3.93	0.01	0.174	0.833
	Greenhouse-Geisser	15944.967	3.12	5107.603	3.93	0.01	0.174	0.833
	Huynh-Feldt	15944.967	3.29	4833.338	3.93	0.01	0.174	0.833
	Lower-bound	15944.967	3	5314.989	3.93	0.01	0.174	0.833

The results in Table 2 show a significant difference in the mean scores of academic achievement motivation across the research stages ($p < 0.001$). Additionally, the interaction of time and group membership in these variables was also found to be significant ($p < 0.01$). In other words, the difference in academic achievement motivation scores in the three stages of pre-test, post-test, and follow-up across the entire sample is 38.5% and significant. The difference in this variable's scores across the four groups in the three stages of the research is also significant, indicating that the trend of score changes in the pre-test, post-test, and follow-up stages differed significantly across the four groups, with the group difference in academic achievement motivation across the research stages being 17.4%.

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Table 3

Between-Subjects Effects Results in State-Trait Anxiety

Variable	Source	Sum of Squares	df	Mean Square	F	Significance	Effect Size	Power
Academic Achievement Motivation	Group	45201.533	3	15067.178	5.63	0.002	0.232	0.93
	Error	149755.244	56	2674.201				

Based on the findings presented in Table 3, the mean scores of academic achievement motivation differ significantly between the experimental groups (time management training, motivational strategies, and self-regulation strategies) and the control group ($p < 0.05$). The results show that 23.2% of the individual differences in academic achievement motivation are related to the differences between the four groups.

Table 4

Bonferroni Test for Pairwise Comparison of Academic Achievement Motivation Scores in Research Groups in Post-test and Follow-up Stages

Stage	Groups	Mean Difference	Standard Error	Significance	Effect Size
Post-test	Control	Self-regulation	58.13	10.85	0.001
		Motivational	48.47	10.85	0.001
		Time Management	53.73	10.85	0.001
	Self-regulation	Motivational	-9.66	10.85	0.377
		Time Management	-4.4	10.85	0.687
	Motivational	Time Management	5.25	10.85	0.629
Follow-up	Control	Self-regulation	53.53	10.99	0.001
		Motivational	45.93	10.99	0.001
		Time Management	48.6	10.99	0.001
	Self-regulation	Motivational	-7.6	10.99	0.492
		Time Management	-4.93	10.99	0.655
	Motivational	Time Management	2.66	10.99	0.809

As shown in Table 4, in both the post-test and follow-up stages, there is a significant difference in the mean scores of academic achievement motivation between the control group and the self-regulation strategy group ($p < 0.001$), motivational strategy group ($p < 0.001$), and time management training group ($p < 0.001$). This indicates that the effect of self-regulation strategies on increasing academic achievement motivation in the post-test and follow-up stages was 33.9% and 29.8%, respectively. The effect of motivational strategies in the post-test and follow-up stages was 26.3% and 23.8%, respectively. Additionally, the effect of time management training on increasing this variable in the post-test and follow-up stages was 30.4% and 25.9%, respectively. In comparing the educational methods in the post-test and follow-up stages, the results show no significant difference between the three educational methods in increasing academic achievement motivation in either stage ($p > 0.05$).

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of time management, motivational strategy, and self-regulation educational packages on the academic achievement motivation of students. The results of this research indicated that the time management educational package was effective in enhancing students' academic achievement motivation. These findings are consistent with the prior studies (Demirdag, 2021; Omidvar et al., 2013; Vafouri, 2019; Yaghoubi et al., 2013), which demonstrated a relationship between time management and academic achievement motivation. This result can be explained by stating that time management training can increase the skills of elementary students, who are in greater need of familiarizing themselves with time management skills, leading to sustained study habits and greater academic progress (Ersoy & Peker, 2020). Additionally, time management training, by teaching decision-making, task prioritization, and managing potential interruptions (Omidvar et al., 2013), results in increased efficiency and improved academic performance, thereby allowing students to experience greater academic success and enhanced academic achievement motivation (Zampetis et al., 2010).

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Another result of this study was the effectiveness of self-regulation training on academic achievement motivation. These findings are in line with the prior results (Afshari et al., 2022; Ahmadi, 2020; Mehqani Jamaladdin & Jena-Abadi, 2019; Ostadzadeh et al., 2016; Saki & Nadari, 2018; Theobald, 2021). The effectiveness of self-regulation can be attributed to its role in improving components that influence performance and academic progress, such as memory and problem-solving. When students possess self-regulation skills, they are expected to follow learning activities effectively, achieve higher academic progress, and gain more motivation to continue their education (Ersoy & Peker, 2020). Additionally, students who use self-regulation strategies exhibit better self-efficacy, evaluate themselves more positively, and consequently experience greater academic achievement motivation (Mehqani Jamaladdin & Jena-Abadi, 2019).

This study also showed that motivational strategy training was effective in increasing academic achievement motivation. Although no direct research results were found, indirectly, these findings are consistent with prior research (Rodríguez et al., 2019), which showed the effectiveness of motivational strategies on achievement motivation. Motivational strategies help individuals manage their internal energy and resources properly, enabling them to persist in tasks and maintain sufficient motivation for learning without external rewards. It seems that interventions aimed at enhancing student motivation, such as motivational strategy training, play a crucial role in improving and managing academic achievement motivation by shifting students' motivation orientation from external to internal, shaping attribution styles, and teaching other effective strategies for managing motivation (Rodríguez et al., 2019).

In the between-group comparison, all three educational methods were effective in increasing academic achievement motivation in the post-test phase, and their effectiveness remained in the follow-up phase compared to the control group. However, no significant differences were observed in the effectiveness of the three groups, and all three educational methods had equal effectiveness. It appears that the impact of these three educational packages is stable. Based on a review of credible scientific sources, no research comparing the effectiveness of these three packages on students was found. In explaining this finding, it can be stated that one reason for the lack of differences in effectiveness may be the overlap and common concepts among the components of these protocols. For example, the concepts of organization, planning, self-evaluation, and self-monitoring in the self-regulation protocol overlap with concepts such as outcome control, simulation, and imagination in the motivational strategy, as well as cognitive errors, time-wasting prevention, micro time management skills, and planning in time management strategies (Abbasi, 2011). Studies have shown that a characteristic of students with high achievement motivation is the ability to take on more academic tasks, perform better, and have a desire for academic success (Yaghoubi et al., 2013), which seems to be directly influenced by the three strategies of time management, motivation, and self-regulation.

5. Limitations & Suggestions

The limitations of this study include the inability to use random sampling (despite the random assignment of participants to groups) and the fact that the research was conducted only in a public girls' school in Chadegan, limiting the generalizability of the findings to other students in different regions, educational levels, and groups. Therefore, caution should be taken in generalizing the results. Future research is encouraged to use random sampling methods and include larger and more diverse populations.

Based on the findings of this study, it is recommended that educational institutions and counseling centers incorporate time management training, motivational strategies, and self-regulation learning strategies into the educational content provided to students, considering the importance of academic achievement motivation in achieving success and learning.

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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. The present

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article is derived from the first author's doctoral dissertation, which was approved on April 18, 2023, with the ethics code IR.IAU.KHUISF.REC.1402.027 at Islamic Azad University, Isfahan (Khorasgan) Branch. All authors contributed equally to the design, conceptualization, methodology, data collection, analysis, editing, and finalization of the article.

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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