

Original Article



Cultivating academic self-concept and reducing test anxiety through time management training

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management, Students**Abstract****Background:** Many students struggle with academic self-concept, procrastination, and test anxiety, which can negatively impact their academic performance. This research sought to determine whether time management training could effectively improve academic self-concept, reduce procrastination, and lessen test anxiety in students.**Methods:** This study utilized a quasi-experimental, pre-test/post-test control group design. The target population comprised all female secondary school students in Ahvaz during the 2022-2023 academic year. A convenience sample of 30 students was recruited and randomly assigned to either the experimental group (n=15) or the control group (n=15). Data were collected using the Academic Self-Concept Questionnaire, the Academic Procrastination Questionnaire, and the Test Anxiety Questionnaire. The experimental group received a time management training program consisting of seven 60-minute sessions; the control group received no intervention. Data were analyzed using analysis of covariance (ANCOVA).**Results:** The results indicated that time management training was effective in improving academic self-concept ($F = 3.45$, $P = 0.034$) and reducing both academic procrastination ($F = 5.13$, $P = 0.012$) and test anxiety ($F = 29.61$, $P = 0.001$) in students.**Conclusion:** This study demonstrates that time management training effectively improves academic self-concept and reduces both procrastination and test anxiety in students. These findings suggest that such training can be a valuable tool for educators and institutions seeking to foster a positive learning environment and enhance student success.**Introduction**

The academic success of students remains a primary concern for educators and societies worldwide.¹ Although a multitude of factors influence academic achievement, encompassing family background, socioeconomic status, and school environment, individual student characteristics are of critical importance.^{2,3} Engagement in educational settings, such as schools, can elicit stress and anxiety in numerous students.⁴ This highlights the significance of positive psychological constructs, such as academic self-concept, which is indispensable for student success.⁵ Academic self-concept, defined as the perception of one's academic abilities, evolves through educational experiences and interpretations of the learning environment. It comprises an individual's knowledge and beliefs regarding their strengths and weaknesses across specific academic domains, alongside their confidence in successfully accomplishing academic tasks.⁶ Students possessing a robust academic self-concept, who perceive themselves as effective, confident, and capable learners,

are more inclined to experience academic growth and progress while attenuating negative emotional experiences. Conversely, a negative self-concept can impede academic performance and contribute to emotional distress.⁷

Adolescence, a period of significant developmental change often described as a "second birth" by psychologists, presents unique challenges.⁸ The profound physical and psychological transformations characteristic of this stage can disrupt the adolescent's equilibrium and contribute to a range of psychological and social difficulties. Two such difficulties frequently encountered in academic settings are academic procrastination and test anxiety. Academic procrastination, the act of unnecessarily postponing tasks despite the intention to complete them, can be a chronic and disruptive behavior.⁹ While the interpretation of procrastination can vary, its impact on academic performance is generally negative.¹⁰ Similarly, test anxiety, a common anxiety experienced in educational environments, can significantly impair academic performance.¹¹ Test anxiety is characterized by

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intrusive thoughts, self-doubt, difficulty concentrating, and physiological reactions, ultimately diminishing the ability to cope with exam situations and leading to academic underperformance.¹² These interconnected issues—low academic self-concept, procrastination, and test anxiety—can create a cycle of underachievement and emotional distress for students.

It is hypothesized that appropriate psychological interventions, particularly those targeting cognitive and behavioral aspects of these challenges, can be effective in promoting positive change. Time management training has emerged as a promising intervention strategy in this regard.^{13,14} Effective time management is not merely about scheduling; it involves developing skills in planning, prioritizing, and self-regulating learning behaviors. A lack of planning can contribute to stress and incomplete work, hindering academic success.^{15,16} As Lourenço and Paiva¹⁷ suggests, time management is a crucial aspect of academic self-regulation, enabling students to complete assignments on time and prepare effectively for assessments. By improving time management skills, students can potentially enhance their self-concept, reduce procrastination by structuring their work, and decrease test anxiety by increasing preparedness.¹⁸

Although the significance of academic achievement is broadly acknowledged, and substantial resources are allocated to education,¹⁹ research specifically investigating the impact of time management training on the interrelation of academic self-concept, procrastination, and test anxiety remains scarce. While prior studies have examined the influence of diverse factors, such as family dynamics, environmental conditions, and educational programs, on academic achievement, the specific contribution of time management training to these psychological constructs necessitates further inquiry. This study concentrates on three pivotal individual factors: academic self-concept, academic procrastination, and test anxiety, and explores the potential of time management training as an intervention to foster improvements in these domains and, consequently, enhance academic outcomes. To address this gap in the existing literature, this research investigates the effectiveness of time management training on academic self-concept, academic procrastination, and test anxiety in female high school students.

Methods

Design and participants

This study targeted all female secondary school students in Ahvaz during the 2022–2023 academic year. A convenience sampling method was employed, whereby one school in District 3 of Ahvaz was randomly selected. Within this school, 100 questionnaires were distributed randomly to students. From these respondents, 30 students were selected based on specific inclusion and exclusion criteria. Inclusion criteria were as follows: scores below

the mean on the Academic Self-Concept Questionnaire; scores above the mean on the Academic Procrastination and Test Anxiety Questionnaires; provision of written informed consent; absence of diagnosed mental disorders; and no concurrent participation in other relevant training programs. Exclusion criteria included absence from more than one intervention session, use of medications that could interfere with the intervention, and withdrawal of consent. To ensure blinding, participants were unaware of their group assignment (experimental or control), and data analysts were blinded to group allocations to reduce bias in outcome assessment. Participants were randomly assigned to either the experimental ($n=15$) or control ($n=15$) group using a random number generator to enhance allocation concealment. Potential confounding variables, including socioeconomic status, parental education, prior academic performance, and home environment, were assessed through a baseline demographic survey. Analysis of covariance (ANCOVA) was used to adjust for these confounders when analyzing outcome variables (academic self-concept, procrastination, and test anxiety). Intervention sessions were standardized in content, duration, and delivery by a single trained facilitator to minimize variability that could introduce confounding effects. Baseline equivalence between groups was confirmed for key demographic and outcome variables to ensure comparability.

Ethics statement

This study adhered to ethical guidelines and received approval from the university's institutional review board. As participants were minors, written informed consent was obtained from both the students and their legal guardians. Participants were informed of their autonomy, including the voluntary nature of participation and their right to withdraw from the study at any time without repercussions. To promote equitable access to the intervention, the control group was offered the opportunity to participate in the time management course following the study's conclusion, with course materials provided to all control group participants after post-test assessments. Strict confidentiality measures were implemented to protect participant information. Data were collected using coded identifiers to safeguard identities, and access was restricted to authorized research personnel. Personal information was stored securely in encrypted databases, and no identifiable details were included in study reports or publications. Participants were assured that their responses would remain confidential and be used exclusively for research purposes.

Measure

The Academic Self-Concept Questionnaire, a 15-item standardized instrument, was used to assess students' perceptions of their academic capabilities across general, institutional, and non-institutional dimensions. Responses

were recorded on a 4-point Likert scale (1 = “strongly disagree,” 4 = “strongly agree”), with total scores ranging from 15 to 60; higher scores indicate a more positive academic self-concept.²⁰ The questionnaire’s validity and reliability were established by Afsharzadeh et al²¹ who reported acceptable construct validity and a Cronbach’s alpha coefficient of 0.87, indicating good internal consistency. In the current study, the questionnaire demonstrated strong internal consistency, with a Cronbach’s alpha coefficient of 0.91.

Academic procrastination was measured using Sevari’s Academic Procrastination Questionnaire.²² This 12-item instrument assesses three dimensions of procrastination: intentional delay, procrastination due to physical and mental fatigue, and procrastination stemming from a lack of planning. Participants responded to each item using a 5-point Likert scale ranging from 0 (“never”) to 4 (“always”). Total scores ranged from 0 to 48, with higher scores indicating greater levels of academic procrastination. The questionnaire demonstrated strong internal consistency in the present study, with a Cronbach’s alpha of 0.82. This finding is consistent with the reliability reported in Sevari’s original study, where a Cronbach’s alpha of 0.85 was observed.²²

Test anxiety was assessed using a 23-item scale employing a 4-point Likert scale (0 = completely disagree, 1 = disagree, 2 = agree, 3 = completely agree). Total scores ranged from 0 to 69, with higher scores indicative of greater test anxiety. The scale comprises three subscales: fear of social derogation, cognitive obstruction, and tenseness.²³ Izadifard et al²⁴ reported acceptable internal consistency for the scale, with a Cronbach’s alpha coefficient of 0.81. In the present study, the scale demonstrated acceptable internal consistency within the local population, with a Cronbach’s alpha of 0.78, supporting its psychometric suitability for this investigation.

Intervention

Time Management Training: The time management intervention, based on Jackson’s²⁵ approach, consisted of seven 60-minute sessions conducted weekly. A summary of the session content is presented in Table 1.

Table 1. A summary of time management training sessions

Session	Objective	Content
1	Benefits and necessity of time management	Instruction on the benefits of time management and explanation of its impact on completing assignments, exams, and university entrance exams. Administration of the pre-test.
2	Cognitive distortions	Presentation of materials on cognitive distortions and the mistakes that people make about themselves and the world around them, and how these errors lead to wasting time, procrastination, and mismanagement of time.
3	Identifying time-wasting factors	Presentation of materials on time-wasting factors to students.
4	Improving time management skills	Presentation of materials on improving time management skills and review of previous sessions for recall.
5	Planning	Methods of prioritizing and planning activities and the order of scheduling matters were discussed.
6	Training in defining and prioritizing important matters	Presentation of materials on prioritizing personal and academic goals, presenting the types of goals and dividing them into short-term and long-term.
7	Summary of sessions	Presentation of materials on factors that improve the quality of time and study of lessons to increase academic self-efficacy and reduce test anxiety in students. Administration of the post-test.

Statistical analyses

Descriptive statistics, including means and standard deviations, were calculated for all study variables to provide a comprehensive description of the sample data. Data were analyzed using ANCOVA conducted in SPSS version 27.

Results

The participants in this study consisted of 30 female students with a mean age of 17.16 years ($SD = 1.88$). The age distribution was as follows: 43.33% ($n = 13$) were 16 years old, 30.0% ($n = 9$) were 17 years old, and 26.67% ($n = 8$) were 18 years old. Table 2 presents the means and standard deviations for academic self-concept, academic procrastination, and test anxiety at both pre-test and post-test assessments.

Prior to conducting the ANCOVA, its assumptions were assessed. The absence of influential outliers was confirmed using the Kolmogorov-Smirnov test, establishing the normality of the data distribution, a requirement for ANCOVA. Levene’s test was then used to examine the assumption of homogeneity of variance. The results of Levene’s test were as follows: academic self-concept ($F = 1.15$, $P = 0.667$), academic procrastination ($F = 2.79$, $P = 0.337$), and test anxiety ($F = 0.782$, $P = 0.834$). Having confirmed these assumptions, ANCOVA was employed to determine the effect of the time management training intervention on students’ academic self-concept, academic procrastination, and test anxiety.

As shown in Table 3, the univariate analysis of covariance revealed a statistically significant effect of the intervention on academic self-concept ($F = 3.45$, $P = 0.034$, partial $\eta^2 = 0.39$). Specifically, time management training resulted in a significant increase in academic self-concept in the experimental group compared to the control group at post-test. The effect size (partial $\eta^2 = 0.39$) indicates a large impact, as benchmarks suggest small (0.01), medium (0.06), and large (0.14) effects. A statistically significant effect was also observed for academic procrastination ($F = 5.13$, $P = 0.012$, partial $\eta^2 = 0.56$), with time management training leading to a significant reduction in procrastination in the experimental group relative

Table 2. Means and standard deviations (SD) of academic self-concept, academic procrastination, and test anxiety

Variable	Phase	Time management training group	Control group
		Mean \pm SD	Mean \pm SD
Academic self-concept	Pre-test	37.03 \pm 5.87	32.66 \pm 6.21
	Post-test	42.18 \pm 8.05	33.54 \pm 4.96
Academic procrastination	Pre-test	38.67 \pm 7.81	40.14 \pm 6.95
	Post-test	26.86 \pm 4.31	37.49 \pm 6.18
Test anxiety	Pre-test	49.27 \pm 9.70	47.65 \pm 10.30
	Post-test	34.60 \pm 4.33	45.88 \pm 8.20

to the control group at post-test. The effect size (partial $\eta^2 = 0.56$) reflects a large effect, well above the threshold for substantial impact. Finally, test anxiety demonstrated a statistically significant decrease in the experimental group compared to the control group at post-test ($F = 29.61$, $P = 0.001$, partial $\eta^2 = 0.75$). The effect size (partial $\eta^2 = 0.75$) signifies a very large effect, far exceeding the benchmark for a substantial influence.

Discussion

This study investigated the impact of time management training on academic self-concept, academic procrastination, and test anxiety among female high school students. The results of this study indicate that time management training is effective in improving academic self-concept, reducing academic procrastination, and mitigating test anxiety. Specifically, the findings demonstrate that time management training enhances students' academic self-concept, a result consistent with previous research.^{13,26} Bahadori Khosroshahi,²⁶ for example, found that time management skills training positively influenced students' overall self-concept, including general, school-related, and non-school-related self-concept dimensions, as well as academic persistence. Similarly, Shoaeei et al¹³ reported that time management training effectively reduced test anxiety and improved academic self-efficacy. A possible explanation for these findings lies within the cognitive-social framework of time management training. It is plausible that such training bolsters students' academic self-concept by providing them with strategies to manage the perceived threat of challenging course material and test anxiety, ultimately leading to reduced anxiety and stress, and improved social functioning. Furthermore, time management training can enhance individuals' psychological resources, thereby improving learners' general and specific abilities to effectively cope with psychological stress and life challenges.²⁶ By developing and strengthening skills such as emotional recognition and regulation, promoting academic self-concept, fostering problem-solving abilities, and enhancing stress management, time management training contributes to learners' mental well-being and creates opportunities for academic success.¹³

Table 3. Summary of ANCOVA results for academic self-concept, academic procrastination, and test anxiety

Variable	SS	df	MS	F	P	η^2
Academic self-concept	175.34	1	175.34	3.45	0.034	0.39
Academic procrastination	620.72	1	620.72	5.13	0.012	0.56
Test anxiety	1272.76	1	1272.76	29.61	0.001	0.75

A further finding of this study indicates that time management training effectively reduced academic procrastination among students. This finding is consistent with previous research.^{27,28} For example, da Silva Alves et al²⁷ explored the impact of time management skills training on procrastination and academic time management among undergraduate students, finding that such training reduced procrastination and improved academic time management. It is generally understood that many educated individuals experience procrastination, which can contribute to increased anxiety and depression, reduced self-confidence, academic decline, and other related issues, ultimately impacting overall performance. While the causes and antecedents of procrastination have been extensively studied, effective interventions remain a critical area for development. Given that procrastination is often conceptualized as a self-regulation deficit, and time management training is a key strategy for enhancing self-regulation, this intervention holds considerable promise. Key components of time management training, as highlighted by da Silva Alves et al,²⁷ include breaking down large tasks into smaller, more manageable components; clarifying task requirements; establishing recurring deadlines; providing positive reinforcement for task completion; and segmenting study materials into smaller units. Time management encompasses a range of skills, each of which can contribute to reducing procrastination. One such skill is the organization of tasks and goals, coupled with enhanced cognitive awareness. By organizing tasks and goals, the specific skills and actions required to achieve desired outcomes become more explicit, and this clarity itself can be a significant factor in mitigating procrastination.

A further finding of this study indicates that time management training effectively reduced test anxiety in students. This result is consistent with previous research.^{13,29,30} For example, Shoaeei et al¹³ demonstrated the effectiveness of time management training in reducing test anxiety and improving academic self-efficacy. Similarly, Hosseinkhanzadeh³⁰ found that such training reduced test-related stress and anxiety in students with dyslexia. Test anxiety can be conceptualized as a cluster of physiological, cognitive, and emotional reactions to the stress experienced during evaluations. These feelings can engender negative attitudes toward learning, with cognitive factors (e.g., maladaptive thoughts and exam-related worries), behavioral factors (e.g., inattention and difficulty focusing), and emotional-psychological

factors (e.g., psychophysiological reactions and physical manifestations of anxiety) all contributing to its development.¹⁶ Participants in the experimental group learned strategies for efficiently learning course content within specific timeframes. By utilizing time management techniques, they improved their time awareness and developed more accurate estimations of the time required for task completion, which, in turn, likely contributed to the reduction in test anxiety.³⁰ In summary, the stress associated with insufficient time to complete assignments and review material is a significant impediment to student success, and time management training can be a valuable tool in addressing this challenge.

While the present study offers valuable insights, it is important to acknowledge certain limitations. The use of a convenience sample may limit the generalizability of the findings to other student populations. Additionally, the exclusive focus on female students from a single district in Ahvaz narrows the scope of the findings, and future research should aim to include more diverse populations to enhance the applicability of the results. The small sample size ($n=30$) also restricts statistical power and generalizability, necessitating caution in interpreting the findings. Future research should explore the long-term effects of time management training and investigate the mechanisms through which these improvements occur. Furthermore, studies employing more rigorous sampling methods and diverse student populations are needed to further validate these findings.

Conclusion

These findings provide compelling evidence that such training can yield positive outcomes across these crucial academic domains. Specifically, the results demonstrated a significant improvement in academic self-concept following the time management intervention, suggesting that participants who received the training developed a more positive perception of their academic abilities and potential. Furthermore, the study revealed a substantial reduction in both academic procrastination and test anxiety among the training group participants. This indicates that equipping students with effective time management strategies not only facilitates better organization of academic work but also mitigates the psychological barriers that often hinder academic success. However, given the study's limitations, including a small sample size and a focus on a specific demographic, these conclusions should be interpreted with caution, and further research is needed to confirm the generalizability of these effects. The implications of these results are significant for educators and institutions seeking to support student success. By incorporating time management training programs into academic curricula or student support services, educational settings can potentially foster a more positive learning environment, enhance academic self-efficacy, and reduce the prevalence of procrastination

and test anxiety. Despite these limitations, this study contributes to the growing body of knowledge on effective strategies for promoting student well-being and academic achievement, suggesting that time management training can be a valuable tool in fostering student success.

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Authors' Contribution

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Competing Interests

The authors declare no conflict of interest.

Ethical Approval

The study was approved by the Ethical Committee of Islamic Azad University, Ahvaz branch.

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