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Design of a Problem-Solving Counseling Package for Procrastination and Comparison of Its Effectiveness with Goal-Setting Training on Improving Academic Procrastination in Students With and Without Learning Disabilities

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A B S T R A C T

Purpose: The purpose of this study was to design a problem-solving counseling package for procrastination and to compare its effectiveness with goal-setting training in improving academic procrastination among students with and without learning disabilities.

Materials and Methods: The present study employed a quasi-experimental design with repeated measurements, including pretest, posttest, and a two-month follow-up, conducted with three groups: two experimental groups (problem-solving counseling for procrastination and goal-setting training) and one control group. The statistical population consisted of all elementary school students with varying levels of academic procrastination, including students with and without learning disabilities, during the 2025–2026 academic year in schools in Tehran. Students with learning disabilities were selected using purposive sampling, whereas students without learning disabilities were selected through simple random sampling. The research instrument was the Academic Procrastination Scale (APS). Descriptive statistics such as mean and standard deviation were used for descriptive analysis, and inferential analyses were conducted using the Kruskal–Wallis H test and repeated-measures analysis of covariance at a significance level of 0.05, using SPSS version 27.

Findings: The results of the analyses indicated significant differences among the study groups in the components of inability to get things done ($F(2,36)=4.82$, $p=0.014$), attention drift ($F(2,36)=3.97$, $p=0.026$), and lack of initiative ($F(2,36)=5.21$, $p=0.010$). Post hoc analyses showed that goal-setting training was effective only in reducing inability to get things done among students without learning disabilities ($p<0.05$). In addition, for the components of poor time management ($F(2,36)=6.45$, $p=0.004$) and laziness ($F(2,36)=7.12$, $p=0.002$), both

problem-solving and goal-setting interventions demonstrated sustained effects in groups with learning disabilities. However, the effects of the interventions on distractibility were not statistically significant ($p>0.05$). Overall, no significant difference was observed between the effectiveness of the two intervention methods on most variables.

Conclusion: Overall, the findings indicate that both goal-setting training and problem-solving counseling are effective in reducing academic procrastination; however, the type and magnitude of their effects vary depending on the presence or absence of learning disabilities. Specifically, problem-solving counseling led to greater improvements in the executive and behavioral components of procrastination compared to goal-setting training. These results highlight the necessity of designing integrated interventions based on problem-solving and goal orientation to enhance academic self-regulation.

Keywords: *Problem-solving counseling package; academic procrastination; students with and without learning disabilities*

1. Introduction

Academic procrastination has long been recognized as a pervasive and persistent challenge within educational systems, affecting students across different age groups, academic levels, and sociocultural contexts. It is commonly defined as the voluntary delay of intended academic tasks despite expecting negative consequences from such delay, and it is closely associated with deficits in self-regulation, executive functioning, motivation, and goal-directed behavior (McCloskey & Scielzo, 2015; Poormoosa, 2025). Contemporary research has consistently demonstrated that academic procrastination is not merely a time-management problem, but rather a multidimensional psychological phenomenon influenced by cognitive, emotional, motivational, and contextual factors (Demir & Kuşcu Karatepe, 2025; Gutiérrez-García et al., 2020). As educational demands become more complex and self-directed, especially in competitive and performance-oriented academic environments, the prevalence and negative impact of procrastination on students' academic achievement, well-being, and life satisfaction have become increasingly evident (Demir & Kuşcu Karatepe, 2025; Işıkgöz et al., 2025).

Empirical studies indicate that academic procrastination is associated with a wide range of adverse outcomes, including lower academic performance, reduced learning quality, increased stress, anxiety, and diminished academic self-efficacy (Hedayat et al., 2022; López-Vargas et al., 2025). Neurocognitive and behavioral research further suggests that procrastination is linked to weaknesses in executive functions such as planning, inhibition, sustained attention, and cognitive flexibility (Cherrier et al., 2023; Gutiérrez-García et al., 2020). These findings underscore the importance of developing intervention approaches that go beyond surface-level behavioral modification and directly target the underlying self-regulatory and executive mechanisms of procrastination. Consequently, educational psychologists have increasingly focused on structured intervention programs aimed at enhancing self-regulation, problem-solving skills, and goal-oriented behavior as effective means of reducing academic procrastination (Agustina & Mudjiran, 2024; Realfan et al., 2025).

Among the various theoretical and practical approaches proposed, problem-solving–based interventions have received growing attention as a promising framework for addressing procrastination. Problem-solving approaches conceptualize procrastination as a maladaptive response to academic demands, rooted in ineffective coping strategies, avoidance tendencies, and difficulties in analyzing and managing task-related challenges (Ghaderi, 2024; Realfan et al., 2025). By systematically training students to identify academic problems, generate alternative solutions, evaluate consequences, and implement adaptive strategies, problem-solving interventions aim to strengthen executive control and reduce avoidance-driven delays (Ghaderi, 2024; Valizade et al., 2013). Previous studies have shown that problem-solving skills training can improve self-regulation, academic motivation, and task persistence, thereby indirectly reducing procrastination behaviors (Hedayat et al., 2022; Nematzadeh Soteh et al., 2023).

Parallel to problem-solving approaches, goal-setting training has been widely investigated as another effective intervention for academic procrastination. Goal-setting theory posits that clearly defined, specific, and achievable goals enhance motivation, direct attention, and promote

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sustained effort toward task completion (Haqnazari et al., 2021; López-Vargas et al., 2025). Goal-setting interventions typically focus on helping students formulate realistic academic goals, monitor progress, and adjust strategies in response to feedback. Research has demonstrated that goal-setting training can improve academic achievement, self-efficacy, and goal clarity, which are critical protective factors against procrastination (Atmojo et al., 2024; Haqnazari et al., 2021). However, evidence regarding the comparative effectiveness of goal-setting interventions versus more cognitively oriented approaches, such as problem-solving counseling, remains mixed and context-dependent (Nematzadeh Soteh et al., 2023; Ozmen et al., 2025).

An important dimension that has received comparatively less attention in procrastination research is the role of individual differences related to learning disabilities. Students with learning disabilities often experience persistent academic difficulties, including problems with attention regulation, planning, working memory, and task initiation, which may increase their vulnerability to procrastination (Gutiérrez-García et al., 2020; Rostami et al., 2023). These students frequently face repeated academic failure experiences, leading to reduced self-efficacy, avoidance motivation, and maladaptive coping strategies (Alhasani et al., 2022; Ghaderi, 2024). As a result, interventions that are effective for students without learning disabilities may not yield comparable outcomes for students with learning disabilities, highlighting the need for differential and tailored intervention designs (Çevik Kocagöz, 2025; Mohadesi et al., 2025).

Recent studies have emphasized that interventions targeting executive functions and self-regulatory processes may be particularly beneficial for students with learning disabilities, as these approaches directly address core cognitive vulnerabilities underlying academic procrastination (Cherrier et al., 2023; Rostami et al., 2023). Problem-solving–based counseling, with its emphasis on cognitive restructuring, strategic thinking, and adaptive decision-making, appears theoretically well-suited to this population. In contrast, goal-setting interventions, which rely heavily on autonomous planning and self-monitoring, may be less effective for students who struggle with executive control unless they are supplemented with structured guidance and scaffolding (Alhasani et al., 2022; López-Vargas et al., 2025). Despite these theoretical considerations, empirical studies directly comparing the effectiveness of problem-solving counseling and goal-setting training among students with and without learning disabilities remain scarce.

Furthermore, most existing research on academic procrastination interventions has focused on adolescents or university students, with limited attention to late childhood and early adolescence, a critical developmental period characterized by rapid growth in executive functions and academic self-regulation (Agustina & Mudjiran, 2024; Atmojo et al., 2024). Intervening at this stage may yield long-term benefits by preventing the consolidation of maladaptive procrastination patterns. Additionally, methodological limitations in prior studies, such as the absence of follow-up assessments and insufficient control of baseline differences, have constrained the generalizability and interpretability of findings (Kang, 2021; Ozmen et al., 2025). Rigorous quasi-experimental designs with repeated measurements are therefore essential to capture both immediate and sustained intervention effects.

Within this context, the present study seeks to address several critical gaps in the literature. First, it integrates two theoretically grounded intervention approaches—problem-solving counseling for procrastination and goal-setting training—within a comparative framework. Second, it explicitly examines differential intervention effects among students with and without learning disabilities, thereby acknowledging the role of individual cognitive and learning characteristics in shaping intervention outcomes. Third, by employing a repeated-measures design with pretest, posttest, and follow-up assessments, the study evaluates not only short-term effectiveness but also the durability of intervention effects over time. Finally, the study is grounded in validated measurement tools and contemporary psychometric standards, ensuring the reliability and validity of findings (McCloskey & Scielzo, 2015; Poormoosa, 2025).

Drawing on evidence from problem-solving–based guidance programs (Realfan et al., 2025; Valizade et al., 2013), goal-setting and motivational interventions (Haqnazari et al., 2021; López-Vargas et al., 2025), and self-regulation–focused educational models (Agustina & Mudjiran, 2024; Mohadesi et al., 2025), this study contributes to a more nuanced understanding of how different intervention strategies operate across learner profiles. By situating academic procrastination within a broader framework of executive functioning, motivation, and learning diversity, the present research aims to inform both theory and practice in educational and school psychology.

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The aim of this study was to design a problem-solving counseling package for academic procrastination and to compare its effectiveness with goal-setting training on reducing academic procrastination among students with and without learning disabilities.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with repeated measures, including pretest, posttest, and a two-month follow-up, with three groups comprising two experimental groups (problem-solving counseling for procrastination and goal-setting training) and one control group. The statistical population included all elementary school students with varying levels of academic procrastination, including students with and without learning disabilities, who were enrolled in schools in the city of Tehran during the 2025–2026 academic year. The study sample consisted of 40 participants; students with learning disabilities were selected using purposive sampling, whereas students without learning disabilities were selected through simple random sampling.

Members of the control group and the group without learning disabilities were assigned to groups through a random allocation process using a two-stage lottery method to reduce the likelihood of bias. The experimental groups included: intervention on solving the problem of procrastination with learning disabilities, intervention on solving the problem of procrastination without a learning disorder, goal-setting training with learning disabilities, and goal-setting training without learning disabilities. Learning disabilities in students were diagnosed and confirmed by specialists at the counseling clinics where the research was conducted. Sample size adequacy was determined using G*Power software, considering $\alpha = 0.05$, effect size = 0.40, power = 0.90, and a repeated-measures design (Kang, 2021).

Inclusion criteria comprised students aged 10 to 14 years (including fifth and sixth grades of elementary school and lower secondary school), enrollment in regular public schools rather than special or exceptional schools, a diagnosis of learning disability for the learning-disability group based on psychologist evaluation or official educational records (persistent difficulty in at least one domain of reading, writing, or mathematics with performance below age-expected levels), absence of learning disability for the non-disability group, age- and grade-appropriate academic performance with no reported learning or cognitive difficulties by teachers or parents, informed parental consent and student willingness to participate in training sessions, ability to attend group sessions regularly (at least eight 60-minute sessions over a four-week period), and no concurrent participation in similar counseling or training programs (problem-solving or goal-setting). Exclusion criteria included the presence of severe neurodevelopmental disorders (autism spectrum disorder, severe ADHD, moderate to severe intellectual disability), moderate to severe psychotic or mood disorders (based on school counselor reports or psychologist assessment), significant physical or sensory conditions (e.g., hearing or visual impairments affecting group learning), use of medications affecting cognitive or mood functioning during the study period, absence from more than two sessions or persistent noncompliance with homework and group exercises, voluntary withdrawal or parental withdrawal of consent during the study, and the occurrence of family or educational status changes affecting psychological or educational functioning during the intervention period, which resulted in exclusion from the study.

After obtaining the necessary permissions to conduct the research and receiving university approval, the researchers initially visited a counseling center affiliated with the Iranian Psychological Association. This center was selected based on accessibility. Following coordination, an announcement for implementing the interventions was disseminated and published virtually through the center's social media networks. In the next step, among individuals who submitted their information to the researchers based on the research participation announcements, students with learning disabilities who met the inclusion criteria were purposively selected. Learning disabilities in these individuals were confirmed by specialists at the research center. After selecting 20 eligible participants, an initial in-person interview was conducted at the center, during which the research objectives and ethical principles were explained, questions regarding intervention procedures were addressed, and screening questions were administered. Subsequently, students without learning disabilities who visited the center were selected for the remaining groups. At the same time, written information regarding participation in the intervention sessions was provided to their parents, and individuals who did not meet the inclusion criteria, such as lack of time or inability to attend training sessions, were excluded. Written informed consent was obtained from participants using a research participation consent form. Subsequently, the pretest was administered using the

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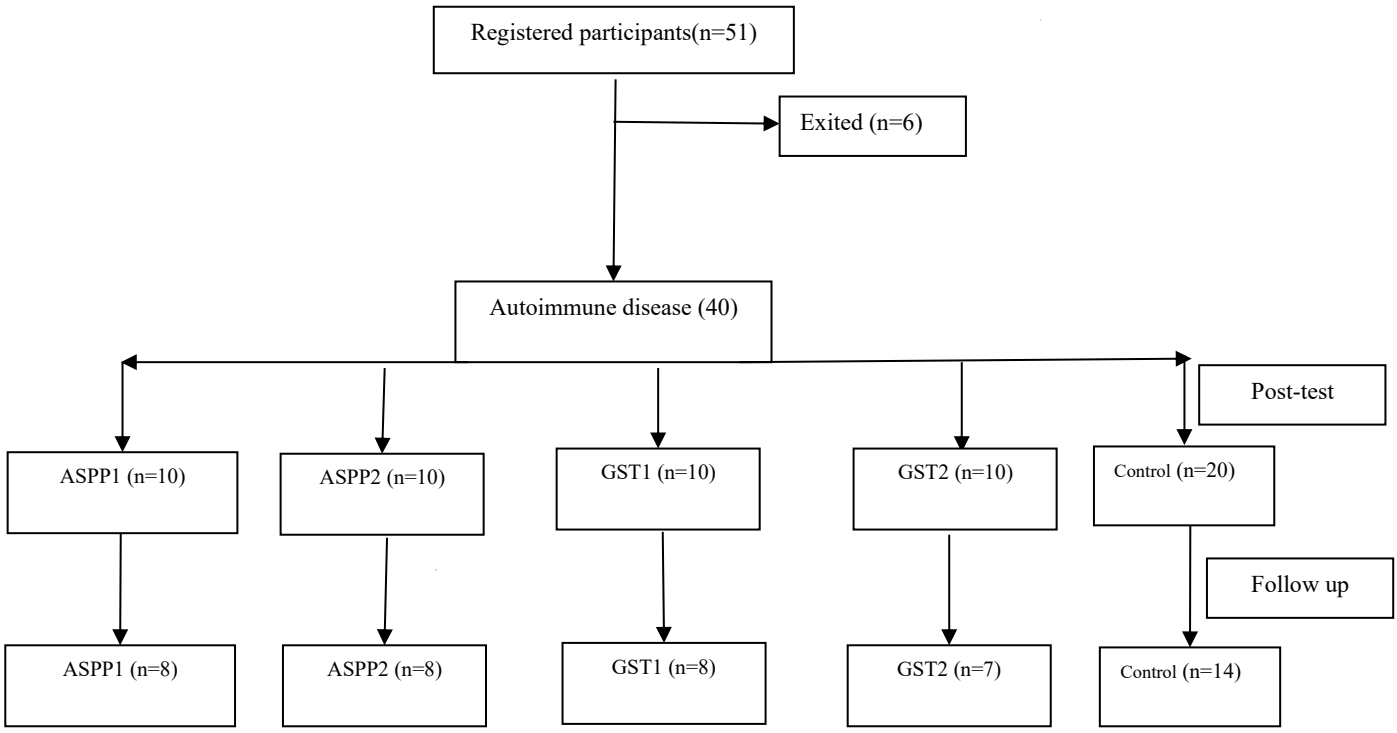
research instrument, namely the academic procrastination questionnaire. The problem-solving counseling for procrastination group received eight 60-minute sessions, held twice weekly in person (Valizadeh et al., 2013). The goal-setting training group also received eight 60-minute sessions, conducted twice weekly (Haqnazari et al., 2021). The control group did not receive any intervention. The interventions were conducted in one of the offices of the counseling center. At the end of the study, in accordance with research ethics, a condensed intervention program was offered to the control group (sample size = 14). Tables 1 and 2 present summaries of the training sessions. At the final session, participants in the experimental groups completed the posttest questionnaires, and two months later they completed the follow-up questionnaires. The CONSORT flow diagram of the study is presented in Figure 1.

Figure 1

The flow diagram of the study



2.2. *Measures*

Academic procrastination was assessed using the Academic Procrastination Scale (APS) developed by McCloskey and Scielzo in 2015, which is a multidimensional self-report instrument designed to measure students' tendency to delay academic tasks (McCloskey & Scielzo, 2015). The APS consists of 25 items organized into five subscales, including Inability to Get Things Done, Attention Drift, Lack of Initiative, Lack of Time Management, and Laziness, each subscale comprising five items that reflect distinct behavioral and cognitive components of academic procrastination. Items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater levels of academic procrastination. Total scores can be calculated by summing all items, and subscale scores can be obtained by summing the relevant items, allowing both overall and component-specific assessment of procrastination. The scale was originally developed and validated among student populations, demonstrating satisfactory construct validity and internal consistency. Subsequent psychometric evaluations in different academic and cultural contexts have further confirmed the validity and reliability of the APS, including evidence for acceptable factor structure, convergent validity, and Cronbach's alpha coefficients for the total scale and subscales (Poormoosa, 2025). Accordingly, the APS is considered an appropriate and reliable instrument for assessing academic procrastination in educational research.

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2.3. *Interventions*

The problem-solving counseling intervention was implemented across eight structured sessions designed to progressively shift students from passive delay to active coping with academic tasks by strengthening cognitive, emotional, and behavioral self-regulation. The first session focused on establishing rapport, creating a safe and supportive group climate, and enhancing students' motivation for participation; students introduced themselves, shared personal experiences of delaying schoolwork, and were guided to understand the concept of academic procrastination through age-appropriate examples, while related emotions such as anxiety, fear of failure, and boredom were openly discussed, followed by administration of the pretest and clarification of group rules including respect, confidentiality, and cooperation, with a homework assignment requiring students to record procrastination situations in a structured "my situation and reaction" log. The second session aimed to increase insight into procrastination patterns and their consequences by helping students identify common academic procrastination behaviors and understand procrastination as a cycle involving thoughts, emotions, and behaviors; with the counselor's guidance, students mapped the procrastination cycle (negative thought–unpleasant emotion–avoidance–guilt), thereby increasing awareness of its cognitive foundations and academic costs. In the third session, the counselor introduced the problem-solving model as an active alternative to procrastination, teaching its five sequential steps—positive problem orientation, problem definition and formulation, generation of alternative solutions, decision-making and selection of the best option, and implementation with outcome evaluation—using simple academic examples such as preparing for a mathematics exam, and students selected a real-life academic problem to practice during the following week. The fourth session concentrated on strengthening positive problem orientation and modifying dysfunctional beliefs; students examined common negative self-statements such as "I can't do this," "I will definitely fail," or "I'll do it later," and practiced cognitive restructuring to replace them with more rational and supportive beliefs, supported by the use of a "helpful thoughts" worksheet to be completed throughout the week. The fifth session emphasized accurate problem definition and analysis, highlighting that ineffective problem-solving often stems from poorly defined problems; through guided exercises, students analyzed a personal academic difficulty by clarifying what had happened, why it occurred, contributing factors, and the specific change they desired, with homework focusing on identifying and rewriting negative thoughts in logical terms. In the sixth session, creative solution generation and decision-making were targeted by encouraging divergent thinking through brainstorming multiple possible solutions without initial judgment, followed by systematic evaluation of each option in terms of feasibility, consequences, and practicality, culminating in the selection of optimal solutions and formulation of a simple action plan. The seventh session translated cognitive decisions into concrete action by teaching time-management skills, prioritization strategies, and techniques for controlling distractions, such as using daily schedules to allocate study time; students assigned specific times and rewards for academic tasks, reinforcing the importance of practice and consistency, and completed a homework assignment involving the creation of a personalized daily plan prioritizing more difficult subjects. The eighth and final session focused on review, consolidation, and posttest assessment; students shared reports of behavioral changes and progress, the five-step problem-solving model was reinforced through interactive activities and discussion, individualized positive feedback was provided to enhance self-efficacy, the posttest was administered, and students received a "problem-solving reminder" booklet, with a final homework task involving a brief report—completed with parental support—on the real-life implementation and outcome of their chosen solution.

The goal-setting training program was delivered in eight sessions aimed at reducing academic procrastination by enhancing clarity of goals, motivation, planning, and self-monitoring skills. In the first session, the counselor established a warm and motivating atmosphere, explained the overall purpose of the program, and introduced the concept of having goals in life and education; through short games and group discussions about future aspirations and academic dreams, students learned how goal orientation promotes focus and effort, after which the academic procrastination pretest was administered. The second session clarified the concept of goals and their role in success by distinguishing goals from mere wishes and defining academic goals using simple examples such as daily mathematics practice or achieving a specific exam score; students practiced writing three short-term academic goals for the upcoming week, emphasizing the importance of written and explicit goals. The third session introduced the SMART goal-setting model step by step, teaching students

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how to formulate goals that are specific, measurable, achievable, relevant, and time-bound; using concrete academic examples, students practiced transforming vague intentions into precise, measurable objectives. In the fourth session, the relationship between goal-setting, motivation, and procrastination was highlighted; the counselor explained how clear goals activate motivation and reduce delay, and students examined negative thoughts such as "I can't study" or "I don't feel like it," learning to counter these thoughts by setting small, realistic goals that enhance perceived competence and time control, with a homework assignment involving daily planning based on goals. The fifth session focused on prioritization and planning for goal attainment by teaching the simple ABC prioritization method; students organized daily activities according to importance and urgency, learned to break tasks into smaller steps, and practiced self-reward strategies to reinforce progress. The sixth session addressed obstacles to goal attainment, familiarizing students with the concept of temporary failure and common procrastination barriers such as fear of failure, disorganization, and distraction; the counselor guided students in identifying solutions through self-discipline, peer support, and small incentives, with a homework task requiring identification of three personal obstacles and corresponding coping strategies. The seventh session emphasized progress evaluation and goal adjustment, encouraging students to reflect on their achievements over previous weeks and introducing the principle of flexibility in goal-setting—modifying goals or strategies when necessary rather than abandoning effort—while providing positive reinforcement and guiding students to design a new set of academic goals for the next three weeks. The eighth and final session consolidated learning by reviewing all acquired skills, allowing students to share personal experiences of implementing goal-setting and its effects on their academic behavior, administering the posttest of academic procrastination, providing affirmative feedback, and distributing a personalized "my goals" booklet to support continued independent use of goal-setting strategies beyond the intervention period.

2.4. Data Analysis

In this study, descriptive statistics such as mean and standard deviation were used for descriptive analysis, and the research hypotheses were analyzed using the Kruskal–Wallis H test and repeated-measures analysis of covariance at a significance level of 0.05, employing SPSS version 27. Levene's test was used to assess the homogeneity of variances. Bonferroni post hoc tests were also used for pairwise mean comparisons.

3. Findings and Results

In this study, data were collected from participants at three time points (pretest, posttest, and follow-up) across the following groups: Advice on Solving the Problem of Procrastination with a Learning Disability (ASPP1), Advice on Solving the Problem of Procrastination without a Learning Disorder (ASPP2), Goal-Setting Training with Learning Disabilities (GST1), Goal-Setting Training without Learning Disabilities (GST2), and a control group. First, the researcher examined the demographic variables of the study. Participants were divided into four groups based on educational grade. The highest frequency was observed in eighth grade (approximately 50% of the groups). Fifth and sixth grades accounted for approximately 20–35%, whereas seventh grade had the lowest frequency (0–14%). The Kruskal–Wallis test results ($H = 2.018$, $p = 0.732$) indicated that differences in the distribution of educational grade among the groups were not statistically significant. Participants were also categorized by gender (boys and girls). The results of the Kruskal–Wallis test showed that there were no statistically significant differences among participants with respect to demographic variables ($p > 0.05$).

Table 1

Demographic Characteristics of the Experimental and Control Groups

Demographic Variable	Category	ASPP1 n (%)	ASPP2 n (%)	GST1 n (%)	GST2 n (%)	Control n (%)	Kruskal–Wallis H	p
Gender	Boy	7 (87.5)	6 (75.0)	7 (87.5)	6 (85.7)	10 (71.4)	1.440	0.837
	Girl	1 (12.5)	2 (25.0)	1 (12.5)	1 (14.3)	4 (28.6)		
	Total	8 (100)	8 (100)	8 (100)	7 (100)	14 (100)		
Education	Fifth grade	1 (12.5)	1 (12.5)	2 (25.0)	2 (28.6)	0 (0.0)	2.018	0.732
	Sixth grade	2 (25.0)	2 (25.0)	2 (25.0)	2 (28.6)	5 (35.7)		
	Seventh grade	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)	2 (14.3)		
	Eighth grade	5 (62.5)	5 (62.5)	3 (37.5)	3 (42.9)	7 (50.0)		

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The researcher also examined the mean and standard deviation of the research variables across the study groups, as presented in Table 2.

Table 2

Descriptive Statistics of the Research Variables Across Measurement Times

Variable	TIME	Groups	N	Mean	SD	Min	Max	Skewness	Kurtosis
Inability to get things done	Pre-test	ASPP1	8	16.75	1.282	15	18	-0.475	-1.546
		ASPP2	8	16.00	1.195	15	18	0.669	-1.204
		GST1	8	17.25	1.035	15	18	-1.675	3.136
		GST2	7	15.71	0.756	15	17	0.595	-0.350
		Control	14	16.21	1.122	15	18	0.276	-1.310
	Post-test	ASPP1	8	16.87	1.246	15	18	-0.876	-0.706
		ASPP2	8	16.00	0.535	15	17	0	3.500
		GST1	8	16.75	1.282	15	18	-0.475	-1.546
		GST2	7	15.00	0.816	14	16	0	-1.200
		Control	14	16.42	1.222	15	18	0.192	-1.573
	Follow up	ASPP1	8	16.87	1.246	15	18	-0.876	-0.706
		ASPP2	8	14.75	1.389	14	18	2.294	5.531
		GST1	8	16.87	1.246	15	18	-0.876	-0.706
		GST2	7	14.28	0.488	14	15	1.230	-0.840
		Control	14	16.00	1.109	15	18	0.789	-0.609
Attention drift	Pre-test	ASPP1	8	17.87	0.835	17	19	0.277	-1.392
		ASPP2	8	15.75	1.488	14	18	0.910	-0.571
		GST1	8	17.25	1.282	15	19	-0.611	-0.021
		GST2	7	16.85	2.116	14	19	-0.332	-2.232
		Control	14	16.07	1.730	14	19	0.704	-0.863
	Post-test	ASPP1	8	17.12	1.808	14	19	-0.825	-0.352
		ASPP2	8	15.75	1.581	14	18	0.542	-1.024
		GST1	8	17.12	1.458	15	19	-0.651	-0.732
		GST2	7	16.14	2.035	14	19	0.895	-1.064
		Control	14	16.14	1.875	14	19	0.413	-1.475
	Follow up	ASPP1	8	18.25	0.886	17	19	-0.615	-1.481
		ASPP2	8	15.87	1.458	14	18	0.651	-0.732
		GST1	8	17.62	1.302	15	19	-1.140	1.652
		GST2	7	16.42	1.902	14	19	0.154	-1.870
		Control	14	16.35	1.865	14	19	0.220	-1.763
Lack of initiative	Pre-test	ASPP1	8	17.50	1.927	14	19	-1.277	0.182
		ASPP2	8	16.50	2.204	14	19	0	-2.335
		GST1	8	18.62	0.518	18	19	-0.644	-2.240
		GST2	7	18.42	1.718	15	20	-1.487	2.666
		Control	14	16.57	2.277	14	19	-0.017	-2.133
	Post-test	ASPP1	8	16.00	1.309	15	19	2.037	4.900
		ASPP2	8	15.37	0.518	15	16	0.644	-2.240
		GST1	8	18.00	1.069	16	19	-0.935	0.350
		GST2	7	15.42	0.535	15	16	0.374	-2.800
		Control	14	16.21	2.155	14	20	0.539	-1.293
	Follow up	ASPP1	8	15.37	0.518	15	16	0.644	-2.240
		ASPP2	8	15.50	0.535	15	16	0	-2.800
		GST1	8	17.37	1.188	15	19	-0.970	1.872
		GST2	7	15.85	1.464	15	19	2.122	4.735
		Control	14	16.64	2.240	14	20	0.092	-1.870
Lack of time management	Pre-test	ASPP1	8	15.50	0.535	15	16	0	-2.800
		ASPP2	8	15.37	0.518	15	16	0.644	-2.240
		GST1	8	15.00	0.756	14	16	0	-0.700
		GST2	7	15.57	0.535	15	16	-0.374	-2.800
		Control	14	15.50	0.519	15	16	0	-2.364

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	Post-test	ASPP1	8	14.37	0.744	13	15	-0.824	-0.152
		ASPP2	8	14.37	0.518	14	15	0.644	-2.240
		GST1	8	13.25	0.886	12	15	1.026	1.851
		GST2	7	13.57	1.272	12	15	-0.222	-1.715
		Control	14	15.42	0.646	14	16	-0.692	-0.252
	Follow up	ASPP1	8	11.25	1.832	10	14	0.999	-1.039
		ASPP2	8	13.75	1.581	10	15	-2.349	6.217
		GST1	8	10.50	0.926	10	12	1.440	0
		GST2	7	11.00	1.915	10	15	1.994	3.694
		Control	14	15.35	0.633	14	16	-0.433	-0.394
Laziness	Pre-test	ASPP1	8	15.25	0.707	14	16	-0.404	-0.229
		ASPP2	8	14.75	0.707	14	16	0.404	-0.229
		GST1	8	14.50	0.535	14	15	0	-2.800
		GST2	7	15.00	0.816	14	16	0	-1.200
		Control	14	14.92	0.730	14	16	0.113	-0.856
	Post-test	ASPP1	8	12.00	0.756	11	13	0	-0.700
		ASPP2	8	12.00	0.756	11	13	0	-0.700
		GST1	8	14.75	0.707	14	16	0.404	-0.229
		GST2	7	14.71	0.488	14	15	-1.230	-0.840
		Control	14	14.85	0.663	14	16	0.151	-0.310
	Follow up	ASPP1	8	10.00	0.756	9	11	0	-0.700
		ASPP2	8	10.12	0.641	9	11	-0.068	0.741
		GST1	8	14.50	0.535	14	15	0	-2.800
		GST2	7	15.00	0.577	14	16	0	3
		Control	14	14.85	0.770	14	16	0.264	-1.123

Table 2 shows the means and standard deviations of participants' scores on the research variables. Accordingly, the mean scores for the variable Inability to get things done did not differ substantially among the five groups (ASPP1, ASPP2, GST1, GST2, and control) at the pretest stage. However, at the follow-up stage, the mean scores in the ASPP2 and GST2 groups decreased relative to the other groups, whereas no notable changes were observed in the remaining groups. Similarly, the variable Attention Drift did not exhibit substantial changes across measurement stages or groups. The mean scores for Lack of Initiative decreased at the posttest and follow-up stages in the ASPP1 and GST2 groups compared to the other groups, while no marked changes were observed in the remaining groups. For Lack of Time Management, the mean scores at the pretest stage were relatively similar across all five groups; however, at the posttest and follow-up stages, the mean scores in the ASPP1, ASPP2, GST1, and GST2 groups decreased compared to the control group, which showed no notable change. Likewise, for Laziness, mean scores were similar across groups at pretest, but decreased at posttest and follow-up in the ASPP1 and ASPP2 groups relative to the control group, with no substantial changes observed in the other groups. In addition, the researcher examined the equality of variances, and the results of Levene's test indicated significance levels greater than 0.05, confirming that the assumption of homogeneity of variances was met. Finally, the researcher examined the results of the repeated-measures analysis of covariance, which are presented in Table 3.

Table 3

Covariance analysis test

Variable		Source	SS	MS	F	P-value	Eta Squared
Inability to get things done	Within Subjects Effects	TIME	5.379	5.379	5.402	0.025	0.122
		TIME ✻ Pre-test	4.785	4.785	4.806	0.034	0.110
		TIME ✻ Group	2.018	0.505	0.507	0.731	0.049
	Between Subjects Effects	Pre-test	0.314	0.314	0.217	0.644	0.006
		Group	44.670	11.168	7.701	< .001	0.441
Attention drift	Within Subjects Effects	TIME	14.712	14.712	6.139	0.018	0.136
		TIME ✻ Pre-test	16.313	16.313	6.807	0.013	0.149
		TIME ✻ Group	0.752	0.188	0.078	0.988	0.008
		Pre-test	0.007	0.007	0.002	0.961	6.36×10^{-5}

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	Between Subjects Effects	Group	34.643	8.661	2.931	0.033	0.231
Lack of initiative	Within Subjects Effects	TIME	0.208	0.208	0.089	0.767	0.002
		TIME ✻ Pre-test	0.187	0.187	0.080	0.778	0.002
		TIME ✻ Group	5.292	1.323	0.569	0.687	0.055
	Between Subjects Effects	Pre-test	8.363	8.363	4.262	0.046	0.099
		Group	61.515	15.379	7.838	< .001	0.446
Lack of time management	Within Subjects Effects	TIME	0.281	0.281	0.286	0.596	0.007
		TIME ✻ Pre-test	0.051	0.051	0.052	0.820	0.001
		TIME ✻ Group	37.440	9.360	9.507	< .001	0.494
	Between Subjects Effects	Pre-test	0.426	0.426	0.269	0.607	0.007
		Group	168.154	42.039	26.557	< .001	0.731
Laziness	Within Subjects Effects	TIME	0.697	0.697	1.474	0.232	0.036
		TIME ✻ Pre-test	0.453	0.453	0.958	0.334	0.024
		TIME ✻ Group	20.320	5.080	10.739	< .001	0.524
	Between Subjects Effects	Pre-test	0.409	0.409	0.889	0.351	0.022
		Group	286.876	71.719	156.070	< .001	0.941

Based on the ANCOVA results presented in Table 3, the p values for the between-subjects effects were statistically significant for Inability to get things done, Attention drift, and Lack of initiative ($p < .05$). Accordingly, after controlling for pretest effects, significant differences were observed among the study groups, indicating statistically significant between-group differences.

At the same time, the p values for within-subjects effects regarding the interaction between time and group were statistically significant for Lack of time management and Laziness ($p < .001$). Table 4 presents the pairwise comparisons of the time-by-group interaction effects based on Bonferroni post hoc tests.

Table 4

Post Hoc Comparisons – Group

Variable			Mean Difference	SE	t	p_{bonf}
Inability to get things done	ASPP1	ASPP2	1.457	0.435	3.347	0.018
		GST1	0.091	0.430	0.211	1.000
		GST2	2.173	0.458	4.741	< .001
		Control	0.630	0.383	1.646	1.000
	ASPP2	GST1	-1.367	0.452	-3.022	0.044
		GST2	0.716	0.442	1.620	1.000
		Control	-0.827	0.378	-2.187	0.348
	GST1	GST2	2.083	0.479	4.349	< .001
		Control	0.539	0.398	1.356	1.000
	GST2	Control	-1.543	0.399	-3.869	0.004
Attention drift	ASPP1	ASPP2	1.862	0.662	2.815	0.076
		GST1	0.309	0.613	0.504	1.000
		GST2	1.396	0.641	2.176	0.357
		Control	1.426	0.583	2.449	0.189
	ASPP2	GST1	-1.553	0.635	-2.446	0.191
		GST2	-0.466	0.644	-0.725	1.000
		Control	-0.436	0.540	-0.806	1.000
	GST1	GST2	1.087	0.631	1.723	0.929
		Control	1.118	0.558	2.004	0.521
	GST2	Control	0.031	0.571	0.054	1.000
Lack of initiative	ASPP1	ASPP2	0.419	0.502	0.834	1.000
		GST1	-2.190	0.504	-4.347	< .001
		GST2	-0.112	0.518	-0.216	1.000
		Control	-0.584	0.445	-1.312	1.000
	ASPP2	GST1	-2.608	0.525	-4.970	< .001
		GST2	-0.531	0.536	-0.989	1.000

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		Control	-1.003	0.439	-2.285	0.278
	GST1	GST2	2.078	0.513	4.051	0.002
		Control	1.605	0.470	3.416	0.015
	GST2	Control	-0.473	0.483	-0.978	1.000
Post Hoc Comparisons - group ✻ TIME						
Lack of time management	ASPP1, Post-test	ASPP2, Post-test	-0.010	0.412	-0.025	1.000
		GST1, Post-test	1.083	0.426	2.543	0.678
		GST2, Post-test	0.810	0.425	1.903	1.000
		Control, Post-test	-1.054	0.364	-2.895	0.278
		ASPP1, Follow up	3.134	0.498	6.298	< .001
		ASPP2, Follow up	0.612	0.567	1.080	1.000
		GST1, Follow up	3.798	0.589	6.453	< .001
		GST2, Follow up	3.396	0.599	5.670	< .001
		Control, Follow up	-0.973	0.470	-2.070	1.000
	ASPP2, Post-test	GST1, Post-test	1.094	0.419	2.608	0.577
		GST2, Post-test	0.820	0.427	1.919	1.000
		Control, Post-test	-1.043	0.365	-2.857	0.307
		ASPP1, Follow up	3.144	0.568	5.537	< .001
		ASPP2, Follow up	0.623	0.496	1.255	1.000
		GST1, Follow up	3.808	0.586	6.497	< .001
		GST2, Follow up	3.407	0.599	5.684	< .001
		Control, Follow up	-0.963	0.470	-2.048	1.000
	GST1, Post-test	GST2, Post-test	-0.274	0.444	-0.616	1.000
		Control, Post-test	-2.137	0.381	-5.605	< .001
		ASPP1, Follow up	2.050	0.577	3.556	0.045
		ASPP2, Follow up	-0.471	0.573	-0.821	1.000
		GST1, Follow up	2.715	0.520	5.222	< .001
		GST2, Follow up	2.313	0.609	3.800	0.022
		Control, Follow up	-2.057	0.481	-4.279	0.005
	GST2, Post-test	Control, Post-test	-1.863	0.381	-4.896	< .001
		ASPP1, Follow up	2.324	0.579	4.015	0.012
		ASPP2, Follow up	-0.197	0.579	-0.341	1.000
		GST1, Follow up	2.988	0.601	4.975	< .001
		GST2, Follow up	2.587	0.535	4.839	< .001
		Control, Follow up	-1.783	0.483	-3.688	0.031
	Control, Post-test	ASPP1, Follow up	4.187	0.535	7.826	< .001
		ASPP2, Follow up	1.666	0.534	3.118	0.154
		GST1, Follow up	4.851	0.557	8.710	< .001
		GST2, Follow up	4.450	0.568	7.834	< .001
		Control, Follow up	0.080	0.377	0.213	1.000
	ASPP1, Follow up	ASPP2, Follow up	-2.521	0.690	-3.657	0.034
		GST1, Follow up	0.664	0.714	0.930	1.000
		GST2, Follow up	0.262	0.713	0.368	1.000
		Control, Follow up	-4.107	0.610	-6.735	< .001
	ASPP2, Follow up	GST1, Follow up	3.186	0.703	4.534	0.002
		GST2, Follow up	2.784	0.716	3.888	0.017
		Control, Follow up	-1.586	0.612	-2.592	0.601
	GST1, Follow up	GST2, Follow up	-0.402	0.745	-0.540	1.000
		Control, Follow up	-4.771	0.639	-7.470	< .001
	GST2, Follow up	Control, Follow up	-4.369	0.637	-6.854	< .001
Laziness	ASPP1, Post-test	ASPP2, Post-test	0.104	0.346	0.300	1.000
		GST1, Post-test	-2.594	0.356	-7.283	< .001
		GST2, Post-test	-2.662	0.352	-7.574	< .001
		Control, Post-test	-2.790	0.303	-9.203	< .001
		ASPP1, Follow up	2.077	0.353	5.888	< .001
		ASPP2, Follow up	1.949	0.346	5.628	< .001
		GST1, Follow up	-2.427	0.351	-6.918	< .001
		GST2, Follow up	-2.924	0.358	-8.161	< .001
		Control, Follow up	-2.782	0.307	-9.070	< .001
	ASPP2, Post-test	GST1, Post-test	-2.698	0.340	-7.942	< .001
		GST2, Post-test	-2.766	0.352	-7.870	< .001

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		Control, Post-test	-2.894	0.300	-9.632	< .001
		ASPP1, Follow up	1.973	0.347	5.693	< .001
		ASPP2, Follow up	1.845	0.345	5.346	< .001
		GST1, Follow up	-2.531	0.347	-7.286	< .001
		GST2, Follow up	-3.028	0.355	-8.538	< .001
		Control, Follow up	-2.886	0.303	-9.539	< .001
	GST1, Post-test	GST2, Post-test	-0.068	0.358	-0.191	1.000
		Control, Post-test	-0.196	0.306	-0.641	1.000
		ASPP1, Follow up	4.671	0.351	13.316	< .001
		ASPP2, Follow up	4.543	0.347	13.087	< .001
		GST1, Follow up	0.167	0.354	0.472	1.000
		GST2, Follow up	-0.330	0.359	-0.920	1.000
		Control, Follow up	-0.188	0.307	-0.611	1.000
	GST2, Post-test	Control, Post-test	-0.128	0.313	-0.409	1.000
		ASPP1, Follow up	4.739	0.358	13.239	< .001
		ASPP2, Follow up	4.612	0.354	13.020	< .001
		GST1, Follow up	0.235	0.359	0.656	1.000
		GST2, Follow up	-0.262	0.368	-0.711	1.000
		Control, Follow up	-0.120	0.315	-0.379	1.000
	Control, Post-test	ASPP1, Follow up	4.867	0.309	15.766	< .001
		ASPP2, Follow up	4.740	0.304	15.572	< .001
		GST1, Follow up	0.363	0.309	1.174	1.000
		GST2, Follow up	-0.134	0.318	-0.422	1.000
		Control, Follow up	0.008	0.260	0.033	1.000
	ASPP1, Follow up	ASPP2, Follow up	-0.128	0.354	-0.361	1.000
		GST1, Follow up	-4.504	0.364	-12.368	< .001
		GST2, Follow up	-5.001	0.359	-13.916	< .001
		Control, Follow up	-4.859	0.310	-15.674	< .001
	ASPP2, Follow up	GST1, Follow up	-4.376	0.347	-12.599	< .001
		GST2, Follow up	-4.874	0.359	-13.561	< .001
		Control, Follow up	-4.731	0.307	-15.400	< .001
	GST1, Follow up	GST2, Follow up	-0.497	0.366	-1.360	1.000
		Control, Follow up	-0.355	0.313	-1.133	1.000
	GST2, Follow up	Control, Follow up	0.142	0.320	0.446	1.000

Based on Table 4, the variable Inability to get things done showed a statistically significant difference between the ASPP1 group and the ASPP2 and GST2 groups ($p < .05$); however, no statistically significant difference was found between ASPP1 and the control group. Likewise, a statistically significant difference was found between the GST2 group and the control group ($p = .004$); however, no statistically significant difference was found between this group and the control group. Given that the mean difference was negative, it can be concluded that Inability to get things done decreased in the GST2 group. Therefore, goal-setting training was effective in reducing Inability to get things done only among students without learning disabilities, because the other groups did not differ from the control group.

Meanwhile, no statistically significant differences were found among the study groups for the variable Attention drift ($p > .05$). Accordingly, based on the Bonferroni-adjusted significance level, it can be concluded that the intervention methods used in this study had no effect on improving Attention drift in students with and without learning disabilities.

In addition, the variable Lack of initiative showed a statistically significant difference between the ASPP1 group and the GST1 group ($p < .001$); however, no statistically significant difference was found between ASPP1 and the control group. A statistically significant difference was also observed between the GST1 group and the control group ($p = .015$). Moreover, a statistically significant difference was found between GST1 and GST2 ($p = .002$). Considering the mean differences between groups, it can be concluded that the observed changes in Lack of initiative occurred in a direction contrary to the study hypotheses, and that most experimental groups did not differ from the control group. Therefore, it can be concluded that the intervention was not effective for students on this variable.

Meanwhile, for the variable Lack of time management, no statistically significant difference was found between the ASPP1 group at posttest and the control group at posttest ($p = .278$), whereas a statistically significant difference was

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found between these two groups at follow-up ($p < .001$). Given that the mean difference was negative, it can be concluded that Lack of time management decreased in the ASPP1 group, and that this effect emerged over time, because a statistically significant difference was also found between posttest and follow-up within the ASPP1 group ($p < .001$). Similarly, for the variable Lack of time management, no statistically significant difference was found between the ASPP2 group at posttest and the control group at posttest ($p = .307$), nor at follow-up ($p = .601$); therefore, the intervention did not affect Lack of time management in ASPP2. In contrast, for GST1, statistically significant differences were found between GST1 and the control group at both posttest and follow-up ($p < .001$). A statistically significant difference was also found between posttest and follow-up within the GST1 group ($p < .001$). Given that the mean difference was negative, it can be concluded that Lack of time management decreased in the GST1 group and that this effect was sustained, because Lack of time management at posttest was lower than at follow-up in the GST1 group. Likewise, for GST2, statistically significant differences were found between GST2 and the control group at both posttest and follow-up ($p < .001$). A statistically significant difference was also found between posttest and follow-up within the GST2 group ($p < .001$). Given that the mean difference was negative, it can be concluded that Lack of time management decreased in the GST2 group and that this effect was sustained, because Lack of time management at posttest was lower than at follow-up in the GST2 group. At the same time, no statistically significant difference was found between GST1 and GST2 at posttest and follow-up ($p = 1.000$). Therefore, goal-setting training did not have differential effects for students with versus without learning disabilities. Similarly, no statistically significant differences were found between GST1 and GST2 compared with ASPP1 at posttest and follow-up ($p > .05$). Therefore, the problem-solving intervention for procrastination and goal-setting training did not differ in their effects on students.

Meanwhile, for the variable Laziness, statistically significant differences were found between the ASPP1 group at posttest and the control group at posttest and follow-up ($p < .001$). Given that the mean difference was negative, it can be concluded that Laziness decreased in the ASPP1 group and that this effect was sustained, because Laziness at posttest was lower than at follow-up in the ASPP1 group. Similarly, for the variable Laziness, statistically significant differences were found between the ASPP2 group at posttest and the control group at posttest and follow-up ($p < .001$). Given that the mean difference was negative, it can be concluded that Laziness decreased in the ASPP2 group and that this effect was sustained, because Laziness at posttest was lower than at follow-up in the ASPP2 group. However, no statistically significant differences were found between GST1 and the control group at posttest and follow-up ($p = 1.000$). Likewise, no statistically significant differences were found between GST2 and the control group at posttest and follow-up ($p = 1.000$). In addition, no statistically significant difference was found between ASPP1 and ASPP2 for Laziness at posttest and follow-up ($p = 1.000$). Therefore, goal-setting training did not have differential effects for students with versus without learning disabilities. Similarly, no statistically significant differences were found between GST1 and GST2 compared with ASPP1 at posttest and follow-up ($p > .05$). Therefore, the problem-solving intervention for procrastination did not have differential effects for students with versus without learning disabilities.

4. Discussion and Conclusion

The findings of the present study provide a differentiated picture of how problem-solving counseling for procrastination and goal-setting training influence specific components of academic procrastination across students with and without learning disabilities. Overall, the results indicate that both interventions were capable of reducing certain dimensions of academic procrastination, yet their effectiveness varied depending on the targeted component and the learners' cognitive–educational status. In particular, the absence of significant differences between groups on the attention drift component suggests that attentional fluctuations may represent a relatively stable or context-dependent aspect of procrastination that is less responsive to short-term behavioral or cognitive interventions. This finding is consistent with previous evidence showing that attentional control problems are often closely linked to executive functioning deficits that require more intensive or neurologically informed interventions (Cherrier et al., 2023; Gutiérrez-García et al., 2020). As such, while both problem-solving counseling and goal-setting training addressed motivational and behavioral regulation, they may not have sufficiently targeted the deeper attentional mechanisms underlying distraction during academic tasks.

Regarding the component of inability to get things done, the results demonstrated that goal-setting training was effective only among students without learning disabilities,

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whereas students with learning disabilities did not show significant improvement compared to the control group. This finding aligns with theoretical assumptions of goal-setting theory, which emphasizes autonomous planning, goal clarity, and self-monitoring as central mechanisms of change (Haqnazari et al., 2021; López-Vargas et al., 2025). Students without learning disabilities are more likely to possess the baseline executive resources required to translate goal intentions into sustained action, thereby benefiting more directly from goal-setting interventions. In contrast, students with learning disabilities often experience deficits in planning, working memory, and task initiation, which may limit the effectiveness of goal-based strategies when implemented in isolation (Alhasani et al., 2022; Rostami et al., 2023). This pattern is consistent with findings reported by Atmojo et al. (Atmojo et al., 2024), who showed that self-regulated learning modules were more effective among students with intact executive functioning compared to those with underlying cognitive vulnerabilities.

The findings related to lack of initiative revealed a complex and partly unexpected pattern. Although significant differences were observed between some experimental groups, most intervention groups did not differ meaningfully from the control group, and in some cases changes occurred in a direction contrary to the study hypotheses. This suggests that initiative, as a motivational–behavioral construct, may be particularly sensitive to contextual and emotional factors rather than solely to structured cognitive or goal-based interventions. Previous research has highlighted that initiative is closely associated with intrinsic motivation, academic self-efficacy, and emotional engagement with learning tasks (Çevik Kocagöz, 2025; Demir & Kuşcu Karatepe, 2025). Consequently, interventions that do not explicitly address students' motivational beliefs or emotional experiences may have limited impact on this dimension. The present findings therefore resonate with studies suggesting that multidimensional interventions integrating motivational, emotional, and cognitive components are required to produce stable changes in initiative-related behaviors (Hedayat et al., 2022; Nematzadeh Soteh et al., 2023).

In contrast, the most robust and consistent effects of both interventions emerged in the domain of lack of time management. Problem-solving counseling and goal-setting training both led to significant and sustained reductions in time-management difficulties, particularly at the follow-up stage, indicating not only immediate but also enduring intervention effects. These results are theoretically coherent, as both approaches explicitly engage students in planning, prioritization, and monitoring of academic tasks. Problem-solving counseling facilitates systematic analysis of time-related obstacles and promotes adaptive coping strategies, while goal-setting training structures students' academic activities around clear temporal frameworks (Agustina & Mudjiran, 2024; Realfan et al., 2025). The durability of these effects, especially among students with learning disabilities, supports prior evidence that structured, skill-based interventions can compensate for executive weaknesses when delivered in a guided and repetitive manner (Cherrier et al., 2023; Ghaderi, 2024). Moreover, the lack of significant differences between students with and without learning disabilities suggests that time-management skills may represent a relatively malleable aspect of academic procrastination across learner profiles.

The results for laziness further underscore the differential strengths of the two intervention approaches. Problem-solving counseling led to significant and sustained reductions in laziness among both students with and without learning disabilities, whereas goal-setting training did not produce comparable effects. Laziness, often conceptualized as behavioral disengagement or low task activation, is closely related to avoidance coping and negative task appraisals (McCloskey & Scielzo, 2015). By reframing procrastination as a solvable problem and equipping students with concrete strategies for overcoming avoidance, problem-solving counseling appears particularly well-suited to reducing behavioral passivity. These findings align with earlier studies demonstrating that problem-focused and cognitive-behavioral interventions are effective in reducing avoidance-based procrastination patterns (Nematzadeh Soteh et al., 2023; Valizade et al., 2013). In contrast, goal-setting interventions may enhance direction and motivation but may not sufficiently address the emotional and cognitive barriers that underlie behavioral inertia, especially among students facing repeated academic challenges (Ozmen et al., 2025).

Taken together, the findings of this study support a differentiated and component-specific understanding of academic procrastination. Rather than viewing procrastination as a unitary construct, the results highlight the importance of targeting distinct underlying mechanisms, including executive control, motivational regulation, and behavioral activation. The relative superiority of problem-solving counseling in addressing laziness and time-management difficulties, particularly among students with learning disabilities, underscores the value of cognitively

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structured and guided interventions for populations with executive vulnerabilities. At the same time, the selective effectiveness of goal-setting training among students without learning disabilities suggests that learner characteristics play a critical moderating role in determining intervention outcomes. These conclusions are consistent with contemporary models emphasizing the interaction between individual cognitive capacities and instructional design in shaping self-regulatory behaviors (Işıkgöz et al., 2025; Mohadesi et al., 2025).

Despite the contributions of the present study, several limitations should be acknowledged. First, the relatively small sample size may limit the generalizability of the findings and reduce statistical power for detecting smaller effects. Second, reliance on self-report measures of academic procrastination may have introduced response biases, particularly among younger students. Third, the follow-up period, while informative, was limited to two months, and longer-term maintenance of intervention effects remains uncertain. Finally, the study did not directly assess executive functions or motivational beliefs, which could have provided deeper insight into the mechanisms underlying observed changes.

Future research should aim to replicate these findings with larger and more diverse samples across different educational contexts and age groups. Longitudinal studies with extended follow-up periods are needed to examine the long-term stability of intervention effects. Additionally, future studies should incorporate objective or performance-based measures of executive functioning and academic behavior to clarify the mediating mechanisms through which problem-solving and goal-setting interventions exert their effects. Comparative studies that integrate hybrid or multimodal interventions may further illuminate how best to tailor procrastination interventions to diverse learner profiles.

From a practical perspective, the findings suggest that educators, school counselors, and psychologists should adopt flexible and differentiated intervention strategies when addressing academic procrastination. For students with learning disabilities, structured problem-solving–based counseling appears particularly beneficial, especially for improving time management and reducing behavioral disengagement. For students without learning disabilities, goal-setting training may serve as an efficient and accessible approach to enhancing task completion. Integrating both approaches within school-based guidance programs may offer a comprehensive framework for promoting academic self-regulation and preventing the consolidation of maladaptive procrastination patterns.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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