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Original Article

The Effect of Online Acceptance and Commitment Therapy on Academic Burnout, Self-Handicapping, Resilience and Psychological Empowerment: An Experimental Study

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ABSTRACT

Background: Adolescence and upper secondary education involve identity challenges and academic pressure, particularly in socioeconomically disadvantaged regions. Adolescents in these settings may face increased vulnerability to academic exhaustion and maladaptive coping mechanisms. This study evaluated online Acceptance and Commitment Therapy (ACT) for reducing academic burnout and self-handicapping and improving academic resilience and psychological empowerment among male high school students.

Methods: In a two-group pretest–posttest experimental study, participants were selected through multi-stage cluster sampling from a population of 8,766 male students in public secondary high schools in Zahedan, Iran, during September 2023 to January 2024. Forty students meeting predefined thresholds (burnout >60, self-handicapping >70, resilience <21, psychological empowerment ≤19) were randomly allocated using computer-generated random numbers and allocation concealment to ACT (n=20) or control (n=20). The intervention comprised eight weekly 90-minute online sessions via SkyRoom (10 November–29 December 2023). The control group did not receive ACT but completed identical pretest and posttest assessments. After study completion, controls received brief psychoeducation about managing academic stress. Measures included the Breso's Academic Burnout Questionnaire, Aliakbari and colleagues Academic Self-Handicapping Scale (2025), Martin and Marsh Academic Resilience Scale (2006), and Mirkamali and Nastiezaie Psychological Empowerment Questionnaire (2010). Change scores (posttest minus pretest) were compared using independent t-tests with Bonferroni-adjusted **α=0.0125.**

Results: Compared with controls, ACT significantly decreased academic burnout (mean change –7.50 vs. –0.25; t(28.40)=–5.549; p<0.001; Cohen's d=1.75) and self-handicapping (–8.80 vs. –0.15; t(38)=–6.134; p<0.001; d=1.94), while increasing psychological empowerment (+10.20 vs. –0.05; t(23.52)=9.567; p<0.001; d=3.03). Academic resilience showed no significant between-group difference (+0.55 vs. +0.60; t(38)=–0.312; P=0.757; d=0.10).

Conclusion: Online ACT yielded short-term improvements in academic burnout, self-handicapping, and psychological empowerment, but not academic resilience. These findings warrant further evaluation of ACT as a potentially scalable school-based intervention, particularly for adolescents in underserved areas. Additional studies are needed to examine the durability of these effects and whether academic resilience can improve over longer periods.

Keywords: Burnout; Self-Handicapping; Resilience; Psychological; Education; Distance; Acceptance and Commitment Therapy

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Introduction

The secondary school years represent a critical phase of human development, characterized by substantial biological, cognitive, psychological, and social transformations (1-3). At this stage, students face numerous developmental tasks, the most important of which are identity formation and preparation for entering the workforce or university (4-6). Alongside these developmental transitions, adolescents experience increasing academic demands, performance expectations, and uncertainty regarding future educational pathways, which may influence their psychological adjustment and academic functioning. These challenges are exacerbated when the student grows up in less privileged cultural and economic contexts (7-9). Consequently, students in these settings may be more susceptible to academic burnout, a multidimensional condition characterized by emotional exhaustion, negative or detached attitudes toward academic activities, and diminished perceptions of academic competence (10-12).

Research evidence indicates that academic burnout is highly prevalent among Iranian high school students. Dehghani and colleagues demonstrated that students with learning difficulties experience considerable academic burnout, and similar patterns are observed in underprivileged educational settings (13). Academic burnout represents more than temporary academic stress; it reflects a persistent state of exhaustion and disengagement that can negatively affect students' motivation, learning experiences, and educational persistence. Furthermore, academic self-handicapping, a maladaptive coping mechanism through which students deliberately establish or attribute obstacles to their academic performance to safeguard their self-esteem, has been recognized as a prevalent response to academic pressures among Iranian adolescents (14-16). Although self-handicapping may temporarily protect students' self-esteem, it can reduce effort, increase avoidance behaviors, and interfere with academic achievement over time. These problems are not merely individual but have broader consequences for students' educational development and future academic trajectories (17).

The simultaneous occurrence of academic burnout and self-handicapping suggests that students' academic difficulties may involve both emotional exhaustion and maladaptive coping responses. Therefore, examining protective psychological factors that can enhance adaptive functioning is essential. In this regard, resilience and psychological empowerment have received considerable attention as important psychological resources in educational settings. Resilience refers to the ability to overcome hardships, and psychological empowerment refers to the process of experiencing control, competence, and meaning in academic life (18-20). Students with higher levels of resilience may demonstrate a greater capacity to cope with and adapt to academic challenges, whereas psychological empowerment may enhance their perceived competence, autonomy, and active participation in the learning process.

Despite the recognized significance of these protective factors, students facing academic pressures may benefit from structured psychological interventions designed to address the underlying cognitive, emotional, and behavioral processes associated with maladaptive responses. Approaches that focus only on changing observable behaviors may not sufficiently address students' internal experiences, such as fear of failure, negative self-evaluations, and avoidance of academic challenges. In response to these challenges, third-wave therapies have offered novel solutions. Among them, "Acceptance and Commitment Therapy (ACT)" has received considerable attention as a third-wave cognitive-behavioral therapeutic approach (21, 22).

ACT is based on the assumption that psychological difficulties are often maintained not only by the presence of unpleasant thoughts and emotions but also by individuals' ineffective attempts to avoid or control these internal experiences (23). By

focusing on accepting unpleasant thoughts and feelings instead of fighting them, and emphasizing value-based action, ACT helps individuals develop more adaptive responses to challenging situations (23). This therapeutic approach primarily emphasizes enhancing psychological flexibility rather than directly targeting symptom reduction (24, 25). Psychological flexibility, as a core mechanism of ACT, may be particularly relevant in academic contexts because it enables students to remain engaged with valued educational goals despite experiencing stress, failure-related concerns, or negative emotions.

Furthermore, with the advancement of technology and the prevalence of online education platforms, the implementation of psychological interventions in virtual formats has become a viable and accessible option for reaching broader student populations (24, 26). Delivering ACT through online platforms may help overcome logistical and accessibility barriers associated with traditional face-to-face interventions while promoting the integration of psychological support services into educational settings.

Despite numerous pieces of evidence regarding the effectiveness of ACT in clinical settings, its application in educational contexts, particularly among high school students, remains less extensively investigated. A review of the literature reveals that while some studies have examined ACT in similar populations, limited evidence exists regarding the effectiveness of online ACT interventions targeting multiple academic and psychological outcomes simultaneously (24, 27). Most previous studies have focused on isolated outcomes or clinical populations rather than examining interconnected educational constructs such as academic burnout, academic self-handicapping, resilience, and psychological empowerment (28-30).

Moreover, previous interventions have predominantly relied on face-to-face formats, leaving uncertainty regarding whether online ACT can produce meaningful improvements in students' academic-related psychological characteristics. Addressing this research gap is particularly important, as educational settings require psychological interventions that are not only effective but also accessible, scalable, and flexible enough to accommodate students' diverse learning needs and environments.

Therefore, the present study was designed to examine the effectiveness of online ACT on academic burnout, academic self-handicapping, academic resilience, and psychological empowerment among male high school students in Zahedan who had prior experience with online learning. By investigating both adverse academic outcomes and positive psychological resources, this study provides a more comprehensive understanding of the potential contribution of online ACT to students' academic and psychological functioning.

Methods

Study Design and Setting

This study employed a two-group experimental design with pretest and posttest assessments to evaluate the effectiveness of online ACT. The impact of the independent variable (online ACT training) on the dependent variables (academic burnout, academic self-handicapping, academic resilience, and psychological empowerment) was examined by comparing the experimental and control groups. The research was conducted in public secondary high schools in Zahedan, Iran, between September 2023 and January 2024.

Participants and Sampling

The study population comprised 8,766 male students enrolled in the 12th grade at public secondary high schools in Zahedan, Iran, during the 2023–2024 academic year. Students who had previously participated in online education through the SHAD platform, an official educational communication platform developed by Iran's Ministry of Education, were considered eligible for the initial screening process.

The sample size for the initial screening stage was calculated using Cochran's formula, with a 95% confidence level and a 4.2% margin of error, resulting in a sample of 522 students (31). For the experimental phase, the sample size was estimated based on the effect size reported by Christodoulou and colleagues (2021) (32). Assuming a between-group effect size of Cohen's d=0.91, a two-tailed significance level of 0.05, statistical power of 80%, and equal allocation between the experimental and control groups (1:1), the estimated minimum sample size was approximately 20 participants per group, yielding a total sample of 40 students (32).

The sampling process was conducted via multi-stage cluster sampling. Initially, from the 28 public boys' high schools in Zahedan, eight schools were randomly selected. For this purpose, a random number was assigned to each school in Excel using the RAND function, and schools with the lowest random numbers were selected from each educational district. Subsequently, two 12th-grade classes were selected from each school using the same randomization procedure. All students in these 16 classes (N=522) were invited to participate in the screening phase after obtaining informed consent.

Participants' eligibility was determined based on predefined inclusion and exclusion criteria. Students were included if they scored above the cut-off point for academic burnout (>60, indicating high burnout based on questionnaire norms), scored above the cut-off point for academic self-handicapping (>70, indicating high self-handicapping), scored below the cut-off point for academic resilience (<21, indicating low resilience based on the 25th percentile), scored ≤19 on the psychological empowerment questionnaire (indicating low psychological empowerment), had access to the technological requirements necessary for participation in the online intervention (smartphone or computer with internet connectivity), and provided written informed consent from both themselves and their parents/guardians.

Students were excluded before enrollment if they had a history of psychiatric disorders or had received psychotherapy during the previous year, or if they were concurrently participating in other psychological interventions. During the intervention phase, participants were withdrawn if they were absent from more than two training sessions, failed to complete the study questionnaires, or withdrew their consent to participate.

Intervention/Procedures

Following eligibility screening, 40 participants were randomly allocated to either the experimental or control group in a 1:1 ratio using a computer-generated randomization sequence produced by Random Allocation Software (version 2.0). The allocation sequence was prepared by an independent statistician who had no involvement in the study procedures. To maintain allocation concealment, Sequentially Numbered, Opaque, Sealed Envelopes (SNOSE) were employed. The research assistant responsible for overseeing the pretest and posttest assessments remained blinded to participants' group assignments. However, given the nature of the psychological intervention, blinding of participants and the therapist was not possible, which was acknowledged as a methodological limitation.

Timeline: Pre-test assessments were conducted one week before the intervention (November 3, 2023). The intervention lasted for 8 weeks, from November 10, 2023 to December 29, 2023. Post-test assessments were conducted one week after the final session (January 5, 2024).

Platforms: The SkyRoom platform was used for delivering the live online ACT sessions. This platform supports video conferencing, screen sharing, breakout rooms for group activities, and real-time chat, making it suitable for interactive therapeutic sessions. The SHAD platform (the official social network for students under Iran's Ministry of Education) was used solely for initial communication with students, sending session links, reminders, and tracking attendance. No therapeutic content was delivered through SHAD.

Session Structure: The intervention was delivered to all 20 participants in the experimental group as a single cohort, comprising eight weekly online sessions, each lasting 90 minutes. Sessions were scheduled on Fridays from 10:00 AM to 11:30 AM to minimize interference with participants' regular school schedules.

Educational Content: The online ACT intervention was structured according to the therapeutic protocol developed by Hayes (1999) (33). The program consisted of eight sessions addressing key ACT processes, including acceptance, cognitive defusion, values clarification, self-as-context, mindfulness, and committed action. Each session incorporated therapeutic exercises and homework assignments designed to reinforce the concepts introduced during training and encourage their application in everyday situations. A detailed overview of the session schedule, therapeutic content, and corresponding homework assignments is provided in Table 1.

All online ACT sessions were delivered by a licensed clinical psychologist with a Ph.D. in clinical psychology with more than eight years of experience in delivering third-wave cognitive-behavioral therapies, including ACT. The therapist had completed specialized ACT training through formal workshops and supervised clinical practice and had prior experience implementing ACT protocols in both clinical and educational settings. To maintain treatment fidelity, the therapist completed a structured adherence checklist following each session, based on the Hayes (1999) treatment protocol. This checklist assessed adherence to the six core ACT processes: acceptance, cognitive defusion, present-moment awareness, self-as-context, values, and committed action. In addition, an independent supervisor who was not involved in delivering the intervention reviewed written session summaries weekly, including descriptions of the content covered and activities conducted, and evaluated protocol adherence using the same checklist.

Table 1: Overview of the intervention content and structure of the sessions

Sessions	Date	Topic	Content	Homework
Session 1	Nov 10, 2023	Introduction and assessment	Establishing therapeutic relationship, stating goals, and reviewing maladaptive control strategies.	Identify three situations where you tried to control your thoughts
Session 2	Nov 17, 2023	Control problem and willingness	Teaching that trying to control thoughts is problematic and introducing "willingness" to experiences as an alternative.	Practice willingness exercise daily
Session 3	Nov 24, 2023	Values and goals	Identifying personal values, clarifying academic goals, and identifying obstacles.	Complete values clarification worksheet
Session 4	Dec 1, 2023	Valuing	Examining values in more detail and connecting goals to personal values.	Act on one value daily
Session 5	Dec 8, 2023	Cognitive Fusion	Teaching "Defusion" techniques to create distance between the individual and negative thoughts.	"Leaves on a stream" exercise daily
Session 6	Dec 15, 2023	Self-as-Context	Teaching the concept of "self as context" and observing the mind.	Observing self-meditation
Session 7	Dec 22, 2023	Mindfulness	Teaching mindfulness exercises to increase contact with the present moment.	10-minute daily mindfulness
Session 8	Dec 29, 2023	Committed action and termination	Reviewing life stories, teaching committed action in line with values.	-

The posttest assessment was administered on January 5, 2024, one week after completion of the final intervention session.

The supervisor also randomly attended selected online sessions to directly assess treatment fidelity. Supervisor-confirmed adherence rates ranged from 88% to 95%, indicating satisfactory compliance with the intervention protocol.

The control group received no intervention during the study period. However, to address ethical considerations, participants in this group were provided with brief psychoeducational sessions on academic stress management strategies following completion of the study.

Tools/Instruments

The study variables were assessed using standardized questionnaires. Each questionnaire was scored according to its established scoring guidelines. Detailed descriptions of the questionnaires, including their structure, response scales, scoring procedures, and psychometric properties, are presented below.

Academic Burnout Questionnaire

To assess academic burnout, a 15-item student burnout questionnaire based on the framework examined by Bresó and colleagues (2007) was used (34). Responses are rated on a 7-point Likert scale (1=Never to 7=Always). The instrument includes emotional exhaustion (items 1, 4, 7, 10, 13), disengagement/cynicism (items 2, 5, 11, 14), and academic inefficacy (items 3, 6, 8, 9, 12, 15); positively worded efficacy items are reverse-scored. Total scores range from 15 to 105. For eligibility in the present study, scores >60 were treated as high academic burnout, consistent with prior Iranian use of this 15-item measure (35).

Validity and Reliability - The academic burnout questionnaire has demonstrated satisfactory validity and reliability in previous studies involving Iranian university students (36). Marzooghi and colleagues (2013) reported that the original instrument demonstrated acceptable internal consistency, with Cronbach's alpha coefficients of 0.70, 0.82, and 0.75 for emotional exhaustion, disengagement/cynicism, and academic inefficacy, respectively, supporting the instrument's reliability in the Iranian student population (36). In the present study, the overall Cronbach's alpha coefficient was 0.91, indicating excellent internal consistency.

Academic Self-Handicapping Questionnaire

Self-handicapping was measured using the researcher-developed "Academic Self-Handicapping Scale", an instrument developed by Aliakbari and colleagues (2025) specifically to assess self-handicapping behaviors in virtual learning environments (37). The instrument consists of 20 items rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). It evaluates five dimensions: anxiety and concerns, academic motivation and goal orientation, interpersonal and technological difficulties, time management abilities, and social support. The total score range is between 20 and 100; scores of 20-40 indicate weak self-handicapping, 41-70 moderate, and 71-100 indicate high self-handicapping.

Validity and Reliability - The scale's psychometric adequacy was established through Exploratory and Confirmatory Factor Analyses, yielding satisfactory fit indices (CFI=0.92; RMSEA=0.06). Furthermore, the original instrument demonstrated acceptable internal consistency, with an overall Cronbach's alpha coefficient of 0.84.

It should be noted that a preprint version of this instrument was available to the research team prior to its formal publication, and the data collection for the present study (November 2023 to January 2024) was conducted with access to this pre-published version (37). Although the instrument was originally designed and validated among nursing and midwifery students, it underwent a structured adaptation and subsequent validation process to ensure its suitability for male high school students. This process was carried out in collaboration with the original instrument developers, who also contributed as co-authors of the present study. The adaptations included: (a) revising item wording to align with high school

students' educational experiences and language comprehension; (b) adapting all items to reflect the specific socio-cultural and educational context of Zahedan City; and (c) removing terminology specifically associated with the COVID-19 pandemic, given that the study was conducted under post-pandemic educational conditions. For instance, expressions such as "during the pandemic," "due to the crisis," and "in the COVID-19 era" were replaced with broader terms, including "in the virtual learning environment," "in online education," and "in the digital learning space."

To confirm the content validity of the adapted version, the questionnaire was evaluated by a panel of 10 specialists in educational psychology and psychometrics. The findings revealed Content Validity Ratio (CVR) values ranging from 0.80 to 1.00 and Content Validity Index (CVI) values ranging from 0.80 to 1.00, exceeding the recommended minimum criteria of 0.62 for CVR with 10 experts and 0.79 for CVI. The overall mean CVR and CVI were 0.86 and 0.91, respectively, supporting the strong content validity of the adapted questionnaire. Additionally, the adapted instrument yielded a Cronbach's alpha coefficient of 0.87 in the present study, surpassing the reliability coefficient of the original version (0.84) and indicating good internal consistency among the target population of male high school students.

Academic Resilience Questionnaire

Academic resilience was evaluated using the six-item Academic Resilience Scale developed by Martin and Marsh (2006) (38). Items are rated on a 7-point Likert scale (1=Strongly Disagree to 7=Strongly Agree), with higher scores indicating greater academic resilience.

Validity and Reliability - The original validation study supported the scale's unidimensional structure and demonstrated satisfactory item-level and factorial properties among high school students (38). In the present study, the scale exhibited good internal consistency, with a Cronbach's alpha coefficient of 0.85.

Psychological Empowerment Questionnaire

Psychological empowerment was assessed using the questionnaire attributed to Mirkamali and Nastiezaie (2010) (39). This 19-item instrument evaluates five dimensions of psychological empowerment: meaning, competence, autonomy (freedom of choice), impact, and participation. Each item is scored on a five-point Likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree). Total scores between 0 and 19 indicate low psychological empowerment, scores of 20–38 represent moderate empowerment, and scores above 38 reflect higher levels of psychological empowerment. The questionnaire's conceptual framework is grounded in Spreitzer's theoretical model of psychological empowerment (39).

Validity and Reliability - Previous psychometric evaluations reported Cronbach's alpha coefficients of 0.77 for competence, 0.82 for autonomy, 0.69 for impact, 0.75 for meaning, and 0.83 for participation, with an overall reliability coefficient of 0.92 for the entire instrument (39). In the present study, Cronbach's alpha was 0.95, indicating excellent internal consistency.

Data Collection

Participants in the experimental group underwent the online ACT intervention as previously described, whereas those assigned to the control group received no intervention throughout the study period. Both groups completed identical assessments at the same predefined time points. All questionnaires were administered electronically through Google Forms, and the survey link was provided to participants at both assessment points. A research assistant who was blinded to group allocation supervised the remote data collection process. Baseline assessments were conducted on November 3, 2023, and post-intervention assessments were conducted on January 5, 2024.

Data Analysis

Data were analyzed using SPSS software, version 18. Descriptive statistics, including

means, standard deviations, frequencies, and percentages, were employed to summarize participants' demographic characteristics and study variables. Initially, independent-samples t-tests were conducted to examine potential baseline differences between the intervention and control groups.

For the primary analyses, individual change scores were obtained by subtracting baseline (pre-test) scores from post-intervention (post-test) scores for each outcome variable. Negative change scores reflected improvements in academic burnout and academic self-handicapping, whereas positive change scores indicated improvements in academic resilience and psychological empowerment. Independent-samples t-tests were subsequently performed to determine whether the mean change scores differed significantly between the intervention and control groups.

The change-score approach was adopted to provide a straightforward and interpretable measure of changes within participants over time while facilitating comparisons of these changes between the two study groups.

To minimize the risk of Type I errors associated with multiple hypothesis testing across the four outcome variables, the Bonferroni correction was applied, resulting in an adjusted statistical significance threshold of $P<0.0125$ (0.05/4). Effect sizes were estimated using Cohen's d, calculated from the pooled standard deviation of the change scores. The absolute values of Cohen's d were interpreted according to conventional benchmarks of 0.20, 0.50, and 0.80, representing small, moderate, and large effects, respectively. The assumption of homogeneity of variances was examined using Levene's test, and when this assumption was not satisfied, the independent-samples t-test results adjusted for unequal variances were reported. The normality of change-score distributions (post-test minus pre-test) was assessed separately for each outcome within the ACT and control groups using the Shapiro-Wilk test.

Ethics - This study was approved by the Ethics Committee of Islamic Azad University, Zahedan, Iran. Prior to participation, the study objectives and procedures were thoroughly explained to all students and their parents, and written informed consent was obtained from both. Participation was strictly voluntary, and participants were informed of their right to withdraw from the study at any stage without facing any consequences or penalties. Furthermore, the confidentiality of all collected information was maintained, and the data were used exclusively for research purposes.

Results

A total of 522 students were initially screened, of whom 87 fulfilled the questionnaire-based eligibility criteria. Among the eligible students, 47 were excluded from enrollment due to inadequate internet access (n=18), unwillingness to participate (n=22), or incomplete informed consent documentation (n=7). Consequently, 40 students were enrolled in the study and randomly assigned to either the ACT intervention group (n=20) or the control group (n=20). The CONSORT flow diagram presents a detailed overview of participant screening, eligibility determination, randomization, group allocation, and follow-up procedures (Figure 1).

The normality test statistics ranged from 0.914 to 0.968, with p-values ranging from 0.060 to 0.714, indicating no statistically significant departure from normality. Independent t-tests comparing pre-test scores between the ACT and control groups are presented in Table 2. No significant differences were found for any variable (all $P>0.05$), indicating that the two groups were comparable at baseline. Table 3 presents the means and standard deviations for all variables at pre-test, post-test, and change scores (post-test minus pre-test) by group.

Independent-samples t-tests were conducted to compare change scores (posttest minus pretest) between the ACT and control groups to evaluate the effectiveness of the intervention. To account for multiple comparisons, a Bonferroni correction was applied across four tests, resulting in an adjusted significance level of $\alpha=0.0125$.

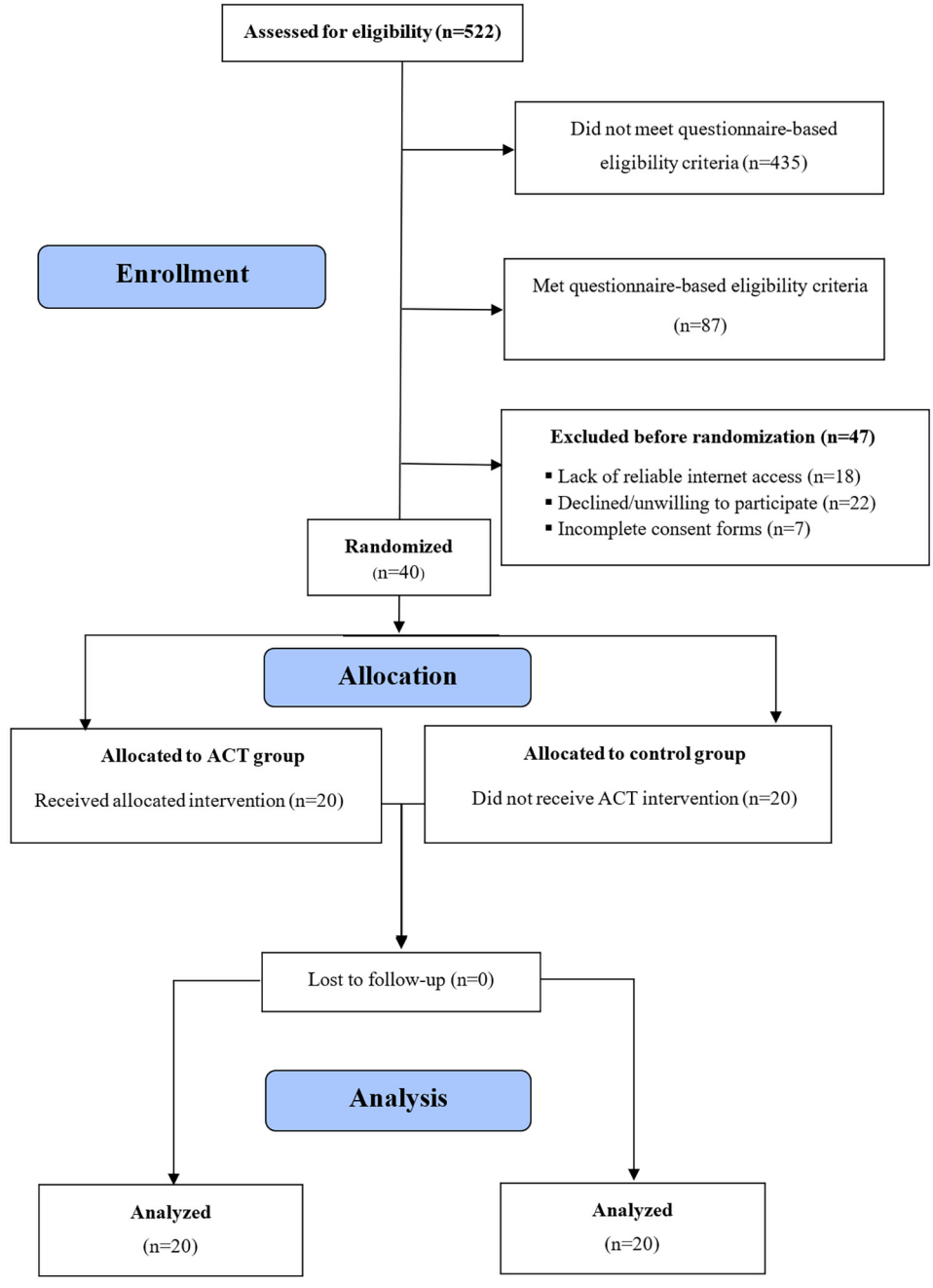


Figure 1: CONSORT flow diagram of participant selection and randomization process

Table 2: Comparison of pre-test scores between groups (Independent t-test)

Variable	ACT Group (n=20)	Control Group (n=20)	t	df	P-Value
	Mean±SD	Mean±SD			
Academic Burnout	69.00±5.64	70.45±6.29	–0.768	38	0.447
Academic Self-Handicapping	72.15±1.93	71.55±1.28	1.159	38	0.254
Academic Resilience	16.70±0.87	16.25±2.75	0.698	22.77	0.492
Psychological Empowerment	18.40±0.60	17.85±1.60	1.439	24.24	0.163

For variables where Levene's test was significant (unequal variances assumed), the t value and adjusted degrees of freedom from the unequal variances row (Welch's t-test) are reported. df: degrees of freedom; SD: Standard Deviation.

Table 3: Descriptive statistics of research variables at pre-test, post-test, and change Scores (post – pre)

Group	Variable	Pre-test Mean±SD	Post-test Mean±SD	Change Score Mean±SD
ACT (n=20)	Academic Burnout	69.00±5.64	61.50±9.28	–7.50±5.20
	Academic Self-Handicapping	72.15±1.93	63.35±3.79	–8.80±3.90
	Academic Resilience	16.70±0.87	17.25±1.16	+0.55±0.51
	Psychological Empowerment	18.40±0.60	28.60±4.43	+10.20±4.53
Control (n=20)	Academic Burnout	70.45±6.29	70.20±5.31	–0.25±2.67
	Academic Self-Handicapping	71.55±1.28	71.40±5.32	–0.15±4.96
	Academic Resilience	16.25±2.75	16.85±2.60	+0.60±0.50
	Psychological Empowerment	17.85±1.60	17.80±1.80	–0.05±1.57

Negative change scores for burnout and self-handicapping indicate improvement (reduction); Positive change scores for resilience and empowerment indicate improvement. ACT: Acceptance and Commitment Therapy; SD: Standard Deviation.

Table 4: Between-group comparison of pretest–posttest change scores using independent-samples t-tests

Variable	ACT Group Change Mean±SD	Control Group Change Mean±SD	t	df	P-Value	Cohen's d	95% CI of Difference
Academic Burnout	–7.50±5.20	–0.25±2.67	–5.549	28.40	< 0.001	1.75	[–9.92, –4.58]
Academic Self-Handicapping	–8.80±3.90	–0.15±4.96	–6.134	38	< 0.001	1.94	[–11.50, –5.80]
Academic Resilience	+0.55±0.51	+0.60 ±0.50	–0.312	38	0.757	0.10	[–0.37, 0.27]
Psychological Empowerment	+10.20±4.53	–0.05±1.57	9.567	23.52	< 0.001	3.03	[8.03, 12.47]

For variables with significant Levene's test (unequal variances), the t value from the unequal variances row is reported with adjusted degrees of freedom. ACT: Acceptance and Commitment Therapy; CI: Confidence Interval; SD: Standard Deviation.

Welch's t-test was used when the assumption of homogeneity of variances was violated. Effect sizes were calculated using Cohen's d, based on the pooled standard deviation of change scores, and are reported as absolute values. The 95% confidence intervals were not adjusted for multiple comparisons. The results are presented in Table 4.

Independent-samples t-tests comparing change scores between the intervention and control groups yielded the following results:

For Academic Burnout, the ACT group showed a mean reduction of –7.50±5.20, whereas the control group showed a reduction of –0.25±2.67. The difference was statistically significant ($t(28.40)=–5.549$, $P<0.001$) with a large effect size ($d=1.75$) (Table 4). This indicates that the online ACT intervention effectively reduced academic burnout.

For Academic Self-Handicapping, the ACT group demonstrated a mean decrease of –8.80 (SD=3.90), while the control group decreased by –0.15±4.96. The difference was significant ($t(38)=–6.134$, $P<0.001$) with a large effect size ($d=1.94$).

For Academic Resilience, the ACT group had a mean increase of +0.55±0.51, and the control group had an increase of +0.60±0.50. No significant difference was found between groups ($t(38)=–0.312$, $P=0.757$, $d=0.10$) (Table 4). Thus, the online intervention did not produce a significant short-term change in academic resilience.

For Psychological Empowerment, the ACT group showed a large positive change of +10.20±4.53, whereas the control group showed virtually no change (–0.05±1.57). Due to unequal variances (Levene's test $P<0.001$), the t-test with unequal variances assumed was used: $t(23.52)=9.567$, $P<0.001$, with a

very large effect size (d=3.03) (Table 4). This indicates that the online ACT intervention had a strong effect on increasing psychological empowerment.

Discussion

The present study investigated the effectiveness of an online ACT intervention on academic burnout, academic self-handicapping, academic resilience, and psychological empowerment among male high school students in Zahedan, Iran. The findings showed that online ACT significantly reduced academic burnout and academic self-handicapping and improved psychological empowerment; however, no significant change was observed in academic resilience. These findings suggest that an online ACT intervention may influence academic-related psychological outcomes through changes in students' relationships with difficult thoughts and emotions, while more stable psychological characteristics such as resilience may require longer or more intensive interventions.

The marked reduction in academic burnout in the intervention group is consistent with previous evidence that ACT may alleviate burnout-related difficulties. Towey-Swift and colleagues concluded that ACT-based interventions can reduce professional burnout, particularly in occupational and caregiving settings (28). Similarly, Montaner and colleagues reported reductions in emotional exhaustion and anxiety among healthcare professionals working with people with dementia (40). Although these populations differ from school students, the findings offer indirect support for ACT as a way to address maladaptive responses to stress. They do not establish the same mechanism in the present sample.

Meta-analytic evidence reported by some studies supports the efficacy of ACT for several psychological and health-related problems, although effects differ across conditions and studies (29, 30). In educational settings, Dehghani and colleagues demonstrated that hope-based training reduced academic burnout among students with learning difficulties (13). However, their intervention was not based on ACT. In occupational settings, Hosseinaei and colleagues found reductions in job stress but did not demonstrate a significant overall reduction in burnout (41), whereas Bahrainian and colleagues reported reduced burnout among nurses following ACT-based training (42). These findings indicate that the evidence across settings is not uniform.

The observed reduction in academic burnout in the present study may be explained by the core processes of ACT. By promoting acceptance of unpleasant internal experiences and reducing cognitive fusion with negative thoughts, ACT helps individuals allocate less psychological energy to struggling with distressing emotions and more energy toward meaningful actions. Consequently, students may experience reduced emotional exhaustion and improved engagement with academic activities.

The potential value of online delivery is also compatible with previous research. Brown and colleagues reported beneficial mental health and well-being outcomes following web-delivered ACT interventions (24). The present study suggests that this delivery format may be feasible for male secondary-school students, especially where face-to-face psychological services are difficult to access. However, because online and face-to-face ACT were not directly compared, equivalence between the delivery formats cannot be inferred.

The significant decrease in academic self-handicapping observed in the present study is also consistent with the theoretical framework of ACT. Academic self-handicapping can be understood as a maladaptive coping strategy in which students attempt to protect self-esteem by avoiding direct confrontation with possible failure. From an ACT perspective, this behaviour may reflect experiential avoidance and psychological inflexibility, in which individuals attempt to escape uncomfortable thoughts and emotions rather than engage in value-consistent behaviours (23).

Previous studies have examined ACT-based approaches in relation to avoidance-related psychological difficulties. Twohig and colleagues investigated the addition of ACT to exposure and response prevention for obsessive-compulsive disorder (43). Uysal and colleagues found ACT and cognitive behavioural therapy to be comparably beneficial for test anxiety, a construct associated with fear of failure (44). Gagnon and colleagues also reported that a web-based ACT intervention reduced academic procrastination (45). These outcomes are related to, but distinct from, academic self-handicapping.

Within the Iranian educational context, Soleymani and colleagues reported reduced academic self-handicapping after training in cognitive and metacognitive learning strategies (46). Although that intervention was not ACT, it indicates that self-handicapping behaviours may be modifiable. Malmir and colleagues and Yabandeh and colleagues also reported beneficial ACT-related findings for anxiety outcomes (47, 48), suggesting possible relevance to the emotional processes associated with defensive academic behaviour. The present study adds preliminary evidence specifically concerning academic self-handicapping.

The substantial reduction observed in the present study suggests that a relatively brief online ACT intervention may help adolescents reduce self-handicapping behaviours. A possible explanation is the intervention's emphasis on psychological flexibility, which may help students notice negative thoughts about failure without allowing these thoughts to determine their academic choices. This mechanism remains hypothetical because psychological flexibility was not measured as a mediator.

The intervention did not significantly improve academic resilience relative to the control condition. Although ACT was associated with improvements in other academic-related psychological outcomes, resilience may require sustained practice and repeated opportunities to cope with challenges before measurable change becomes apparent. The short observation period also limits conclusions about any delayed effects.

This finding differs from some previous studies reporting improvements in resilience following ACT. Büyüköksüz found improved resilience among adolescents after a face-to-face group programme comprising six sessions (27); differences in intervention content, participant characteristics, and outcome measurement may explain the contrasting results. Udell and colleagues reported increased resilience among injured military recruits following an ACT-based programme (49). Nikrah and colleagues and Cao and colleagues also reported improvements in resilience in clinical populations (50, 51). These studies differ substantially from the present educational context and should be considered indirect comparisons.

Differences across studies may reflect the populations examined, intervention duration and content, and sensitivity of the outcome measures. Resilience may develop through adaptation to challenges over time rather than through brief psychological training alone. Olsson and colleagues and Masten have emphasized the dynamic relationship between individual resources and environmental contexts in the development of resilience (18, 52). Accordingly, the absence of an immediate improvement should not be interpreted as evidence that ACT has no potential effect on resilience over longer periods.

Another possible explanation is related to measurement sensitivity. The six-item Academic Resilience Scale used in this study (38) may not have captured subtle changes in resilience-related processes. Future studies may consider using more comprehensive instruments, such as the Connor-Davidson Resilience Scale (CD-RISC), and incorporating follow-up assessments to examine longer-term changes.

The substantial increase in psychological empowerment is another notable finding. Psychological empowerment involves perceived competence, autonomy, meaning, and influence over one's actions, and these

domains are conceptually related to ACT processes such as values clarification and committed action. Nevertheless, the magnitude of the observed effect should be considered cautiously in view of the small and highly selected sample.

Few studies have examined psychological empowerment as a direct outcome of ACT in school settings. Flaxman and Bond reported ACT-related benefits in a workplace comparison (25), while Spijkerman and colleagues found that online mindfulness-based interventions improved mental health outcomes (53). These studies provide indirect rather than direct support for the present empowerment findings. Separately, Boudrias and colleagues examined the measurement of psychological empowerment (54), and Gagné and colleagues explored associations among empowerment, work characteristics, and intrinsic motivation (55). Neither investigation tested ACT among school students.

Meta-analyses by Öst and by A-Tjak and colleagues support ACT for a range of clinical outcomes (29, 30), but they do not directly establish improved academic empowerment. Han and Kim reported beneficial outcomes associated with internet-based ACT (21), and Fledderus and colleagues found improvements in psychological distress and positive mental health following guided self-help ACT (22). Such evidence is consistent with the possibility that acceptance-based approaches may support students' sense of agency, although the specific pathways require further investigation.

The improvement in psychological empowerment may be explained by ACT's emphasis on helping individuals identify personal values, develop committed action, and experience greater control over their responses to challenging situations. Rather than attempting to eliminate negative thoughts or emotions, ACT encourages individuals to pursue meaningful goals despite the presence of difficulties, which may strengthen perceptions of agency and competence.

The present study contributes to the ACT literature by examining an online intervention within a secondary-school setting. Its findings suggest potential benefits across several academic and psychological domains, while also highlighting an outcome that did not respond significantly. These observations extend the contexts in which digitally delivered ACT warrants evaluation but should not be taken as evidence that online delivery is equivalent to face-to-face treatment.

Another contribution is the simultaneous examination of academic burnout, academic self-handicapping, resilience, and psychological empowerment. Considering these outcomes together provides a broader view of potentially different responses to ACT, although the findings do not establish the psychological pathways responsible for change.

The results also raise the possibility that ACT may produce more immediate changes in outcomes closely related to avoidance and perceived agency than in a broader construct such as resilience. This interpretation is provisional because the study did not directly test psychological processes or long-term changes.

The online delivery format is a further practical consideration. The intervention was feasible to deliver using a digital platform in this study, but future research should compare online and face-to-face formats directly before conclusions are drawn about their relative effectiveness, acceptability, or cost-effectiveness.

Limitations and Suggestions

Despite the promising findings, several limitations should be acknowledged. First, the sample was small, with twenty participants in each group. This may have limited the power to detect smaller differences and restricts the generalizability of the findings. Replication with larger samples is necessary.

Second, because of the nature of psychological interventions, blinding of participants and the therapist was not feasible, which may have introduced expectancy effects. However, the outcome assessor was blinded to group allocation, reducing the risk

of assessment bias.

Third, the absence of long-term follow-up assessments prevents conclusions regarding the sustainability of the intervention effects. Future studies should include follow-up measurements to examine whether improvements are maintained over time.

Fourth, all outcomes were assessed using self-report instruments, which may be influenced by social desirability or response bias. The use of multi-method assessments, including behavioural or observational measures, is recommended in future research.

Fifth, participants were selected based on predefined cut-off scores for multiple psychological characteristics. Although this approach allowed the intervention to be evaluated among students with greater academic psychological difficulties, it may increase the possibility of regression to the mean. Random allocation and the inclusion of a control group help distinguish intervention-related change from regression to the mean, although they do not eliminate this concern.

Sixth, the sample consisted only of male high school students with previous experience of online learning through the SHAD platform, which may limit the generalizability of the findings to female students, students at other educational levels, or different educational contexts.

Seventh, the unusually large observed effect on psychological empowerment should be interpreted cautiously. It may partly reflect the participants' low baseline empowerment scores, the small sample, and the possibility that empowerment responds rapidly to the processes targeted by ACT. Larger studies using broader eligibility criteria are needed to establish how stable and reproducible this effect is.

Eighth, the participants were highly selected. Only a minority of those initially screened met the combined questionnaire eligibility thresholds, and the final sample comprised students experiencing multiple academic and psychological difficulties simultaneously. The findings therefore may not generalize to students with milder or isolated difficulties.

Ninth, although treatment fidelity was assessed and satisfactory adherence to the ACT protocol was confirmed, the absence of an attention-control condition prevents complete separation of ACT-specific effects from potential non-specific effects such as therapist interaction, group participation, or receiving psychological support.

The strengths of this study include the evaluation of an online ACT intervention using a controlled design, the use of reliable and validated instruments, the feasibility of digital intervention delivery, the application of appropriate statistical procedures including effect size estimation and correction for multiple comparisons, comprehensive reporting of therapist qualifications and treatment fidelity, and the systematic adaptation and re-validation of the academic self-handicapping scale for the target population.

For practical applications, online ACT may be a potentially accessible intervention for reducing academic burnout and self-handicapping where face-to-face services are scarce. School implementation should involve appropriately trained mental-health professionals or counsellors, with adequate supervision and safeguarding. The lack of a significant resilience effect indicates the value of testing additional components, longer interventions, and delayed assessments. Future trials should involve larger, more diverse samples, investigate psychological flexibility as a possible mediator, and use active comparison conditions. They should also include female students and participants from other educational and geographic contexts.

In summary, the results are broadly consistent with literature suggesting that ACT can improve several psychological outcomes. The online format was feasible to implement in this study and was associated with beneficial short-term changes in academic burnout, self-handicapping, and psychological empowerment. The absence of a significant resilience effect suggests that

this outcome may require different or longer intervention strategies. Overall, online ACT appears promising for further evaluation in underserved adolescent populations, but replication in larger and more diverse samples is needed.

Conclusion

The present findings indicate that online ACT was associated with significant short-term reductions in academic burnout and academic self-handicapping and with increased psychological empowerment among the selected male high school students. No significant between-group improvement was observed in academic resilience. These results support online ACT as a promising acceptance- and mindfulness-based behavioral intervention for further evaluation in school settings, particularly where access to psychological services is limited. Given the small and highly selected sample, the absence of long-term follow-up, and the lack of an attention-control condition, broader implementation recommendations should await replication in larger and more diverse samples.

Abbreviations

ACT: Acceptance and Commitment Therapy
AI: Artificial Intelligence
CD-RISC: Connor–Davidson Resilience Scale
CFI: Comparative Fit Index
CVI: Content Validity Index
CVR: Content Validity Ratio
SNOSE: Sequentially Numbered, Opaque, Sealed Envelopes

Author′ Contribution

RM designed the study, drafted the manuscript, and conducted the intervention sessions. HJ supervised the study, contributed to the conceptualization and critical revision of the manuscript. GhP performed the statistical analysis and validation. MRMS contributed to data collection and data interpretation. All authors reviewed and approved the final manuscript.

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Conflict of Interest

None declared.

Ethical Considerations

This study was approved by the Ethics Committee of Islamic Azad University, Zahedan Branch (approval code: IR.IAU.ZAH.REC.1402.085). Written informed consent was obtained from all participants and their parents after the objectives and procedures had been fully explained. Participation was entirely voluntary; students could withdraw at any time without any penalty. All collected data were kept confidential and used solely for research purposes.

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Availability of Data and Materials

The individual-level datasets generated and analyzed during the current study are not publicly available to protect the privacy and confidentiality of the participating students, who were minors. Requests for access to de-identified data may be directed to the corresponding author. An overview of the intervention sessions and the methods used to assess the study outcomes is provided in the manuscript.

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