Comparing the Effectiveness of Acceptance and Commitment Therapy and Self-Regulation Training on Ego Resiliency in Depressed Adolescents

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Article Info	ABSTRACT
	Objective: The primary aim of this investigation was to evaluate and compare the efficacy of acceptance and commitment therapy with emotional self-regulation therapy in enhancing the ego resiliency of adolescents experiencing depression in Tehran. **Methods**: The target population for this research comprised all female ninth-grade students enrolled in high schools within District 5 of Tehran in the year 2024. A total of 45 participants were selected using purposive sampling techniques and subsequently assigned at random to three distinct groups of 15 individuals each (comprising two experimental groups and one control group). Data for the study were gathered utilizing the Block and Kremen Ego Resiliency Scale. The research hypotheses were tested employing multivariate analysis of variance. **Results**: The findings indicated that the ego resiliency scores for the groups undergoing emotional self-regulation therapy and acceptance and commitment therapy were significantly superior to those observed in the control group. Furthermore, the ego resiliency scores of the acceptance and commitment therapy group were significantly higher than those of the emotional self-regulation group ($p < 0.05$). **Conclusions**: Consequently, it can be inferred that both acceptance and commitment therapy and emotional self-regulation therapy were effective in enhancing ego resiliency among depressed adolescents, with acceptance and commitment therapy demonstrating a greater degree of effectiveness compared to emotional self-regulation.

Introduction

Depression constitutes a psychological state characterized by sentiments of inadequacy, hopelessness, diminished activity, pessimism, melancholia, and associated symptomatology (Fried & Nesse, 2015). The manifestations of this condition can be categorized into four primary domains: emotional symptoms (including sadness and guilt), cognitive symptoms (such as diminished self-esteem, hopelessness, and pessimism), motivational symptoms (exemplified by lethargy and decision-making difficulties), and physical symptoms (notably sleep disturbances, appetite changes, and fluctuations in body weight) (Magid et al., 2022). A significant determinant in navigating adversities and enhancing mental well-being is self-resilience, which is conceptualized as the capacity to recover from setbacks, surmount challenges, and effectively adapt to disruptions while fostering social, academic, and professional competencies in the face of adverse circumstances. In other terms, it represents an individual's ability to anticipate and address external challenges (Peng et al., 2017). Furthermore, ego resiliency encompasses the capacity to withstand difficulties encountered in personal, familial, professional, and social spheres (Block & Block, 2014; Farkas & Orosz, 2015). Individuals exhibiting characteristics of ego resiliency are open to novel experiences, possess problem-solving capabilities, and, due to their optimistic disposition towards varied circumstances, manage stressful situations with enhanced flexibility and self-efficacy when confronted with ambiguity and novelty (Jun & Lee, 2017). Findings from a survey involving approximately 1,800 students in Hong Kong indicated that resilience serves as a robust predictor for adolescents at elevated risk of depression, and enhancing resilience among adolescents is crucial for the amelioration of their psychological health; consequently, developing interventions aimed at bolstering resilience and fostering positive mental health among this demographic is of paramount importance (Chan et al., 2010). A variety of therapeutic methodologies have been implemented in the management of depression. Among these, Acceptance and Commitment Therapy (ACT) is recognized as a prominent intervention for a broad spectrum of chronic conditions. ACT is a potent interpersonal therapeutic approach grounded in experiential principles and possesses a cohesive philosophical and theoretical framework (Öst, 2014). This therapeutic modality employs acceptance and mindfulness-based techniques in conjunction with commitment and behavioral change strategies to enhance psychological flexibility (Hayes et al., 2006). This therapy facilitates individuals in residing more fully in the

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present while prioritizing significant values and objectives, thereby shifting focus away from distressing thoughts, emotions, and experiences. Through the utilization of metaphor, paradox, and experiential exercises, clients cultivate a healthy relationship with distressing thoughts, emotions, memories, and physical sensations; in the course of this process, they acquire competencies to accept these occurrences and to effectuate necessary behavioral changes aligned with their personal values (Harris, 2019). Another efficacious intervention aimed at mitigating psychological distress is emotional self-regulation training, which entails the initiation, enhancement, maintenance, or attenuation of one's positive and negative emotional responses in relation to environmental stimuli (Miles et al., 2016). In alternative phrasing, emotional self-regulation refers to the capacity to oversee emotional reactions and modulate the intensity and duration of emotions through the application of adaptive and efficacious strategies when confronting diverse intrapersonal and social contexts (Maierna & Camodeca, 2021). The three fundamental skills associated with emotion regulation—namely emotional awareness (the capability to identify and articulate emotional experiences while comprehending and recognizing emotional responses), emotional acceptance (which entails non-judgmental acknowledgment and engagement with all emotions without exhibiting adverse reactions toward specific emotions), and the employment of various emotion regulation strategies (a range of techniques for emotional control)—establish a foundation for adaptive emotion regulation (Pos & Greenberg, 2007). Self-regulation training is characterized as a comprehensive and innovative pedagogical approach founded on the enhancement and evolution of traditional cognitive therapy principles and practices, having amalgamated the tenets and underpinnings of cognitive, attachment, object relations, Gestalt, and constructivist paradigms into a cohesive educational and conceptual model (Cleary et al., 2017). Indeed, one of the interventions that appears to exhibit efficacy in ameliorating the research variables is self-regulation training. Instructing students in self-regulation techniques enables them to plan, organize, and self-assess their academic assignments and daily endeavors in a more goal-oriented fashion. Through the application of self-regulation strategies, students are equipped to critically evaluate and reflect upon their numerous setbacks, ultimately enhancing active learning processes among the student population. As a result of self-regulation, these students can recognize the utility of specific strategies for effective problem-solving and enhanced learning outcomes (Meltzer, 2018). Given the attributes delineated for the treatment modalities of acceptance and

commitment as well as emotional self-regulation, these methodologies are theoretically posited as suitable therapeutic interventions for fostering ego resiliency among depressed adolescents in Tehran; however, the investigator's research indicates a lack of efforts to assess the efficacy of these approaches concerning the aforementioned variable within the depressed student demographic. Consequently, the omission of acceptance and commitment therapy and emotional self-regulation in the context of depressed students represents a significant lacuna in the existing research literature, which the present study aims to address to a certain extent; hence, this study will be undertaken with the objective of comparing the effectiveness of acceptance and commitment therapy against emotional self-regulation in enhancing the ego resiliency of depressed adolescents in Tehran, while seeking to elucidate the inquiry: does a disparity exist between the efficacy of acceptance and commitment therapy and emotional self-regulation in fostering ego resiliency among depressed adolescents in Tehran?

Material and Methods

The current research methodology employed was a semi-experimental design incorporating both pre-test, post-test and follow-up assessments with designated experimental and control groups, wherein a comparative analysis was conducted between the experimental cohort and the control cohort at three distinct stages: pre-test, post-test and follow-up. The statistical population under investigation consisted of all ninth-grade female high school students residing in the fifth district of Tehran during the academic year 2024. For the initial sample, ninth-grade female high school students in the fifth district of Tehran completed the Beck Depression Inventory, from which those exhibiting depression scores ranging from 32 to 62 (indicative of moderate to severe depression) were identified, and subsequently, a sample of 45 participants (with 15 individuals allocated to each group based on an effect size of 0.25, an alpha level of 0.05, and a statistical power of 0.80 as calculated using G Power software) was selected through purposive sampling in accordance with specified inclusion and exclusion criteria and randomly assigned to three groups of 15 (comprising two experimental groups and one control group). Prior to the commencement of the study, participants were required to complete an informed consent form. The hypotheses were examined utilizing Mixed-design analysis of variance. The statistical computations were conducted employing SPSS-22 software.

Instrument

Ego resiliency scale: This 14-item scale was conceptualized by Block and Kremen (1996), with each item rated on a four-point Likert scale, ranging from "not at all true" (score of one) to "always true" (score of four), yielding a total score range of 14 to 56, whereby higher scores indicate greater ego resilience and lower scores indicate the opposite. The content validity of this scale was affirmed by Block and Kremen (1996), who reported a reliability coefficient of 0.76 as determined by Cronbach's alpha. In the research conducted by Narimani and Abbasi (2009), the scale's validity was deemed satisfactory with a reported coefficient of 0.79. Furthermore, in the present study, its reliability was established with a Cronbach's alpha of 0.84. The therapeutic intervention implemented in this investigation was predicated upon the protocol established for acceptance and commitment therapy sessions as delineated by Hayes et al. (2011), which was conducted over eight 90-minute sessions spanning a four-week period. A summary of the therapeutic sessions is provided in Table 1.

Table 1. Summary of the acceptance and commitment therapy sessions

Session	Content
1	Introducing the trainer, getting to know the group members and establishing a therapeutic relationship, introducing ACT therapy, its goals and main themes, explaining the rules governing treatment sessions, providing information about diabetes and its types, reviewing diabetes-related treatments, their costs and benefits, rest and refreshments
2	Reviewing the experiences of the previous session and receiving feedback from clients, discussing and evaluating their experiences, the individual's willingness to change, examining the clients' expectations of ACT training, summarizing the discussions raised in the session
3	Reviewing the experiences of the previous session, in the context of feedback from patients, recognizing ineffective control strategies and realizing their futility, explaining the concept of acceptance and its difference from the concepts of failure, despair, denial, resistance and defining effective and ineffective coping and coping strategies, summarizing the discussions raised in the session and reviewing the next session's practice
4	Reviewing the experiences of the previous session and receiving feedback from patients, task and behavioral commitment, introducing and explaining the fusion to the conceptualized self, applying intervention in the functioning of problematic chains of language and Metaphors, summarizing the discussions in the session and reviewing the next session's practice
5	Reviewing the experiences of the previous session and receiving feedback from patients, demonstrating the separation between self, inner experiences and behavior, observing oneself
6	As a context, summarizing the discussions in the session and reviewing the next session's practice
7	Reviewing the experiences of the previous session and receiving feedback from patients, identifying the values of the patients' lives and clarifying and focusing on these values and paying attention to their power of choice, using mindfulness techniques with an emphasis on the present, summarizing the discussions in the session and reviewing the next session's practice
8	Reviewing the experiences of the previous session and receiving feedback from patients, examining the values of each individual and deepening previous concepts, the difference between values, goals and common mistakes in choosing values were explained, possible internal and external barriers to pursuing values were discussed, members listed their most important values and possible barriers to pursuing them and shared them with other members, goals related to values and characteristics of goals were discussed for the group Then, the members identified their most important values and set goals that they wanted to pursue in line with each of those values. Finally, they identified the behaviors they intended to perform to achieve those goals, and the dangers of focusing on results were also reviewed.

The emotional self-regulation training program constituted an intervention aimed at emotion regulation, constructed in accordance with the guidelines articulated by Allen and Windsor (2019). A summary of the training sessions is detailed in Table 2.

Table 2. Summary of emotional self-regulation training sessions

Session	Content
1	Introducing emotion regulation sessions and conducting a pre-test
2	Session agenda: 1- Introducing and getting to know the group members 2- Stating the group rules and goals 3- Introducing the course and necessity of emotion regulation
3	Assignment: Group members should write down their goals for participating in the sessions.
4	Title: 1- Expressing normal and problematic emotions 2- Emotional self-awareness
5	Session agenda: 1- Teaching and introducing emotions 2- Identifying, naming, and labeling emotions 3- Distinguishing between different emotions 4- Identifying emotions in physical and psychological states 5- Factors for success in emotion regulation
6	Assignment: Identifying the most common emotions and emotions experienced in everyday relationships.
7	Title: Pathogenic emotions and the need for treatment, symptoms of emotional disorders and appropriate treatment, causes of emotional disorders, and cognitive errors
8	Session agenda: 1- Cognitive consequences of emotional reactions 2- Physiological consequences of emotional reactions 3- Behavioral consequences of emotional reactions and the relationship between these three. Introduction to physical symptoms, behavioral symptoms, and cognitive symptoms 4- Introduction to psychological therapy (cognitive-behavioral) 5- Genetics and environment and how individuals are influenced by these two, 6- Introduction to two common cognitive errors 7- Introduction to emotion and avoidance as indicators of emotional disorder

Results

Table 3 delineates the mean and standard deviation of ego resilience scores across the three phases of pre-test, post-test, and follow-up for both the experimental and control groups.

Table 3. Statistical characterization of ego-resilience scores across the three assessment phases by group

Variable	Group	Phase	Mean	SD
Ego resiliency	Control	Pretest	28.13	2.475
		Posttest	28.40	2.028
		Follow-up	28.78	2.448
	SRT	Pretest	28.58	2.061
		Posttest	31.80	2.274
		Follow-up	31.22	2.090
	ACT	Pretest	28.73	2.251
		Posttest	34.73	2.631
		Follow-up	34.23	2.803

As evidenced in Table 3, the mean scores within the control group during the pre-test exhibited minimal fluctuation in comparison to the post-test and follow-up phases, whereas the experimental groups demonstrated an augmentation in scores during the post-test and follow-up in relation to the pre-test.

To evaluate the comparative efficacy of acceptance and commitment therapy alongside emotional self-regulation on ego resilience in adolescents experiencing depression, a mixed-design analysis of variance was employed. The subsequent results of the implementation of this test and the examination of its underlying assumptions are delineated.

Table 4. Outcomes of mixed-design analysis of variance to contrast ego resilience between control and experimental groups

Effect		Value	F	Effect DF	Error DF	P	Effect size
Repeated	Pillai's trace	0.836	104.815	2	41	0.001	0.836
	Wilks' Lambda	0.164	104.815	2	41	0.001	0.836
	Hotelling's trace	5.113	104.815	2	41	0.001	0.836
	Roy's largest root	5.113	104.815	2	41	0.001	0.836
Repeated * Group	Pillai's trace	0.778	13.364	4	84	0.001	0.389
	Wilks' Lambda	0.257	19.945	4	82	0.001	0.493
	Hotelling's trace	2.757	27.574	4	80	0.001	0.580
	Roy's largest root	2.708	56.858	2	42	0.001	0.730

Table 4 elucidates the results of mixed-design analysis of variance aimed at investigating the disparities in mean scores of ego resilience among the control group, emotional self-regulation group, and acceptance and commitment therapy group throughout the treatment phases. The data presented in table 4 indicates that all multivariate analyses yield statistically significant results, thereby highlighting the presence of a principal effect associated with the repeated measures factor (pre-test, post-test, and follow-up) as well as an interactive effect between groups and the repeated measures (i.e., the existence of differences among groups during the assessment phases).

Table 5. Outcomes of the univariate within-subject effects analysis to contrast ego resilience between control and experimental groups

Source		SS	DF	MS	F	P	Effect size
Repeated	Sphericity Assumed	279.308	2	139.654	139.855	0.001	0.769
	Greenhouse-Geisser	279.308	1.780	156.923	139.855	0.001	0.769
	Huynh-Feldt	279.308	1.942	143.846	139.855	0.001	0.769
	Lower-bound	279.308	1	279.308	139.855	0.001	0.769
Repeated * Group	Sphericity Assumed	144.400	4	36.100	36.152	0.001	0.633
	Greenhouse-Geisser	144.400	3.560	40.564	36.152	0.001	0.633
	Huynh-Feldt	144.400	3.883	37.184	36.152	0.001	0.633
	Lower-bound	144.400	2	72.200	36.152	0.001	0.633
Error	Sphericity Assumed	83.879	84	0.999			
	Greenhouse-Geisser	83.879	74.756	1.122			
	Huynh-Feldt	83.879	81.552	1.029			
	Lower-bound	83.879	42	1.997			

Table 5 conveys the results of the univariate within-subject effects analysis aimed at comparing self-resilience across the control, emotional self-regulation, and acceptance and commitment therapy groups. According to the findings detailed in Table 5, the F values pertaining to the interaction effects between groups and repeated measures (i.e., the presence of disparities among groups during the assessment phases) are significant at the 0.01 alpha level ($p<0.01$). The significance of the interaction effects underscores the existence of a differential trend in the changes observed in self-resilience scores among the control group, emotional self-regulation group, and acceptance and commitment therapy group throughout the assessment phases. To facilitate the comparison of pairwise mean scores across the assessment phases, the Bonferroni post hoc test was utilized, the outcomes of which are presented in the subsequent section.

Table 6. Bonferroni post hoc test

Group	Phase	Phase	Mean difference	Std. error	P
Control	Pretest	Posttest	-0.267	0.382	1.000
		Follow-up	-0.647	0.407	0.358
	Posttest	Follow-up	-0.380	0.296	0.619
SRT	Pretest	Posttest	-3.220	0.382	0.001
		Follow-up	-2.640	0.407	0.001
	Posttest	Follow-up	0.580	0.296	0.170
ACT	Pretest	Posttest	-6	0.382	0.001
		Follow-up	-5.493	0.407	0.001
	Posttest	Follow-up	0.507	0.296	0.283

In Table 6, it is evident from the results derived from the emotional self-regulation and acceptance and commitment therapy cohorts that the discrepancy between the mean scores at the pre-test phase and those at the post-test and follow-up phases is statistically significant ($p<0.05$). A comparative analysis of the mean scores across the three phases indicates a significant enhancement in mean ego resilience during the post-test and follow-up phases when compared with the pre-test phase. The disparity between the post-test phase scores and the follow-up phase scores is not statistically significant ($p<0.05$), suggesting the enduring nature of the therapeutic effects over time. In the control group, no statistically significant difference is observed between the pre-test phase scores and those of the post-test and follow-up phases, nor between the post-test phase scores and the follow-up scores ($p<0.05$).

Table 7. Results of the between-subjects effects test to compare the mean ego resilience scores of the groups

Source	SS	DF	MS	F	P
Group	383.192	2	191.596	13.101	0.001
Error	614.242	42	14.625		

Table 7 delineates the findings of the between-subjects effects test aimed at evaluating the mean self-resilience scores across the control, emotional self-regulation, and acceptance and commitment therapy groups. The outcomes reveal that the F statistic pertaining to the ego resilience variable is statistically significant (P<0.01).

Table 8. Bonferroni post hoc test

Dependent variable	Group 1	Group 2	Mean difference	Std. error	P
Ego resiliency	Control	SRT	-2.096	0.806	0.039
	Control	ACT	-4.127	0.806	0.001
	SRT	ACT	-2.031	0.806	0.047

Table 8 provides a series of pairwise comparisons to assess the mean ego resilience scores among the control, emotional self-regulation, and acceptance and commitment therapy groups. The findings indicate that the mean ego resilience scores of the emotional self-regulation and acceptance and commitment therapy groups are statistically significantly greater than those of the control group (p<0.05). Furthermore, the mean ego resilience of the acceptance and commitment therapy group is significantly elevated in comparison to that of the emotional self-regulation group (p<0.05).

Discussion

Based on the empirical findings, the mean ego resilience scores of the groups receiving emotional self-regulation and acceptance and commitment therapy were markedly superior to those of the control group. Furthermore, the mean ego resilience of the acceptance and commitment therapy cohort was significantly elevated in comparison to the emotional self-regulation group. Consequently, it can be inferred that both acceptance and commitment therapy and emotional self-regulation were efficacious in augmenting the ego resilience of adolescents experiencing depression, with acceptance and commitment therapy demonstrating a greater efficacy than emotional self-regulation. Within the domain of acceptance and commitment therapy's effectiveness in enhancing the self-resilience of depressed adolescents, the findings align with the results of prior research in this arena. The investigation conducted by Afshin and Asadpour (2022), entitled "The Effectiveness of Acceptance and Commitment Therapy on the Self-Resilience of Infertile Women in Sari County," indicated that acceptance and commitment therapy had a positive

impact on the self-resilience of infertile women. In another study, Kazemi et al. (2022) established that an intervention based on acceptance and commitment therapy effectively improved quality of life, marital satisfaction, self-resilience, and its various components among women experiencing premature menopause who sought assistance at a health center. In elucidating the aforementioned finding, it is pertinent to note that during the sessions of acceptance and commitment therapy, individuals' psychological acceptance of their mental experiences (cognitions and emotions) is enhanced while ineffective control diminishes. Participants come to understand that attempts to control or evade unwanted mental experiences are futile and may yield counterproductive effects that exacerbate these experiences, which should be embraced without any internal or external resistance or attempts at elimination. This approach also heightens the individual's psychological awareness of the present moment; specifically, the individual gains insight into their current mental states concerning thoughts and behaviors and learns to dissociate from these mental experiences. Such practices facilitate individuals in successfully adapting to manifestly debilitating challenges and stressors, thereby fostering improvements in ego resilience.

Regarding the effectiveness of emotional self-regulation therapy in enhancing the ego resilience of depressed adolescents, the aforementioned finding is congruent with the outcomes of previous investigations in this field. A study conducted by Hamouleh (2022), titled "The Effectiveness of Teaching Self-Regulatory Learning Strategies on Resilience and Academic Procrastination of Female High School Students in Masjed-e-Suleiman County," demonstrated that the instruction of self-regulatory strategies has resulted in an increase in academic resilience and a decrease in academic procrastination. Furthermore, by imparting self-regulatory strategies, educational programs can be designed to enhance and augment students' resilience while simultaneously mitigating academic procrastination. The research conducted by Mohamadiheris et al. (2021), entitled "The Effectiveness of Emotion Regulation Training on Chronic Pain, Resilience, and Self-Care in Patients with Coronary Artery Occlusion," demonstrated that emotion regulation training is efficacious in alleviating chronic pain while fostering resilience and self-care among patients. In the preceding discourse, it can be posited that self-regulation training, in addition to providing instruction in emotion management, underscores competencies pertinent to resilience, social adaptation, the mitigation of maladaptive emotions, and the modification of situational contexts. Moreover, components of this program are associated with the cultivation of attentional capacities,

cognitive appraisal, modification of responses, as well as the evaluation and practical application concerning psychological challenges and their alleviation. Conversely, self-regulation strategies pertain to an individual's capacity to confront negative emotions rather than evading them during distressful situations, fostering an understanding characterized by compassion to attain established objectives. In this context, participation in a self-regulation strategies program enables individuals to attain greater awareness regarding their behaviors, emotions, and challenges, thereby engaging both cognitive processes and behavioral direction. Given that the self-regulation strategies program places significant emphasis on logical reasoning and the accurate articulation of psychological and emotional responses, this program encompasses the education of emotional awareness, as well as skills for comprehending emotions and selecting appropriate situational contexts, which will profoundly influence individuals' self-resilience and adaptation.

Like other scholarly investigations, this research is not devoid of limitations. The inability to control for certain intervening variables, including economic, familial, cultural, and social factors, which could have potentially influenced the study's outcomes, represents one of the constraints of the current research. In conclusion, it is recommended that future research endeavors compare acceptance and commitment therapy with alternative psychological interventions and incorporate long-term follow-up periods of six months to evaluate the sustainability of therapeutic effects.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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