




The Effect of Acceptance and Commitment Therapy on Cognitive Fusion in Anxious Students

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ABSTRACT

Objective: This study aimed to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on cognitive fusion in anxious students.

Methods and Materials: The present research is a quasi-experimental study with a pretest, posttest, and follow-up design, along with a control group. The statistical population consisted of all female student-teachers at Resalat Campus of Farhangian University in Zahedan. To conduct the study, participants were initially screened based on inclusion and exclusion criteria. Then, 30 students with severe anxiety, identified using Beck's Anxiety Inventory, were selected and randomly assigned to two groups: experimental and control, with 15 participants in each group. Participants in both groups completed the Cognitive Fusion Questionnaire developed by Gillanders et al. (2014). The experimental group received eight 90-minute sessions of Acceptance and Commitment Therapy (Qamian & Shairi, 2014), while the control group did not receive any treatment. Data were analyzed using one-way ANCOVA with SPSS statistical software.

Findings: The results indicated a significant difference between the two groups in terms of cognitive fusion ($P < 0.05$). Acceptance and Commitment Therapy led to improvements in cognitive fusion in the experimental group ($P < 0.05$). These results were sustained during the follow-up phase.

Conclusion: Based on the findings of this study, psychologists and university counselors can utilize Acceptance and Commitment Therapy for health-related interventions, particularly for improving cognitive fusion in students.

Keywords: Acceptance and Commitment Therapy, Cognitive Fusion, Anxiety.

1. Introduction

One of the most significant periods of life is the educational phase, which impacts various other aspects of life. University education places individuals in an environment that can elicit different reactions. The university period is a crucial and challenging time for students. Teacher candidates at Farhangian University, due to its unique and specific conditions—such as being residential and having distinctive limitations—face additional stressors during their studies, such as heavy coursework, long academic periods, feelings of loneliness, and the need for appropriate adaptation. They must possess greater mental health and self-reliance to achieve success in their education and eventually their profession (Parsakia et al., 2022).

During their studies, students face various issues such as engaging in risky behaviors, suicide, internet addiction, living in virtual spaces, social, economic, and interpersonal problems, disciplinary and academic challenges, separation from family, pressures from independence, lifestyle changes, study habits, beliefs, hopes for the future, self-efficacy, and similar concerns (Vaezi et al., 2020). Moreover, the lack of emotional, psychological, and social skills renders students vulnerable to problems and exposes them to a range of mental, social, and behavioral disorders. Adjusting to new environments and friends, lack of emotional and social support, educational difficulties, and anxiety are among the tensions students experience (Dargahi et al., 2018).

One of the issues students may face is anxiety. Like other individuals, students may experience acute anxiety crises. In most cases, these reactions occur in response to sudden events or specific situations, such as illness, the death of a relative or friend, sexual experiences, academic problems, and more, often in the context of chronic anxiety (Snoek & Skinner, 2005). Anxiety is generally described as a vague, unpleasant emotional feeling of worry, often accompanied by one or more physical sensations such as shortness of breath or palpitations. Anxiety is typically defined as a diffuse, ambiguous, and unpleasant feeling of fear and apprehension (Dargahi et al., 2018). Anxiety serves as a warning of internal or external threats, often preserving the quality of life. At lower levels, anxiety signals potential physical harm, pain, distress, possible punishment, unfulfilled social or physical needs, separation from loved ones, threats to status and position, and, ultimately, threats to one's sense of self and security (Eilenberg et al., 2013; Ghamari et al., 2021).

According to Ritchie and Roser (2018), in 2016, 4% of the global population (275 million people) experienced anxiety

disorders, with 3% of men and 4.7% of women affected (Ghamari et al., 2021). While some anxiety is considered necessary for daily life, excessive anxiety can have serious physical, psychological, social, professional, and academic consequences, preventing individuals from achieving acceptable well-being and weakening their overall functioning (Fernández-Rodríguez et al., 2022).

One variable related to anxiety is cognitive fusion. Cognitive fusion is a cognitive and social concept that confuses an individual to the point where it becomes difficult to distinguish between personal experiences and real events (Ebrahimianshirin et al., 2022; Samadifard & Mikaeili, 2016). Cognitive fusion refers to the extent to which individuals become fused with their cognitive content (e.g., thoughts, beliefs, memories, or images) (Davis et al., 2024; Dezfuli, 2024), a state in which individuals are unable to experience their cognitions as transient interpretations of reality, instead treating their inner experiences as definitive external truths, leading to a detachment from reality (Fernández-Rodríguez et al., 2022). Cognitive fusion is a process known as excessive and undesirable regulation of behavior based on verbal processes (Chung, 2016). Cognitive fusion occurs when thoughts influence behavior to the extent that individuals focus on thought content rather than the thought process itself (Hayes et al., 2006; Hayes et al., 2003; Hayes et al., 2011). In other words, individuals are so influenced by their thoughts that they perceive them as entirely real, causing behavior and experiences to be governed by these thoughts rather than other sources of behavior regulation, resulting in reduced sensitivity to direct consequences (Gillanders et al., 2015). Cognitive fusion spans from high fusion to cognitive defusion. For example: "I am depressed" (high fusion), "I feel depressed" (moderate fusion), "I am becoming depressed" (low fusion), "I am currently experiencing a sensation commonly referred to as depression" (cognitive defusion) (Zare, 2014, 2017). In Iran, Samadifard and Mika'ili (2016) found a significant relationship between cognitive fusion and psychological disorders (Samadifard & Mikaeili, 2016).

Various psychological treatments have been developed over the years to address psychological issues. One of the most important therapeutic approaches is Acceptance and Commitment Therapy (ACT). ACT, which stands for Acceptance and Commitment Therapy, is one of the recent extended models whose key therapeutic processes differ from traditional Cognitive Behavioral Therapy (CBT). ACT is an effective interpersonal therapy based on experience, supported by coherent philosophical and theoretical foundations. Acceptance and Commitment Therapy, one of

the third-wave therapies, was introduced in the 1980s by Hayes at the University of Nevada (Kazemi et al., 2023). Its foundational principles include: (1) acceptance or willingness to experience distress or other disruptive events without attempting to suppress them; (2) committed action, or the willingness to act toward meaningful personal goals before eliminating unwanted experiences (Keenan et al., 2020). The healthy alternatives to these issues in ACT include: (1) acceptance of reactions and being present in the moment; (2) choosing a valued direction; and (3) taking action toward that direction (Kazemi et al., 2023). The therapy integrates linguistic methods and cognitive processes with other nonverbal contingencies to foster healthy functioning. This approach includes exposure-based exercises, language metaphors, and techniques like mindfulness (Hayes et al., 2006; Hayes et al., 2003; Hayes et al., 2011). According to studies, cognitive fusion is associated with avoidant behaviors, stress, psychological and physical disorders, psychological distress, and lower levels of mental health (Ebrahimiashirin et al., 2022; Gillanders et al., 2015).

ACT has six core principles: defusion, acceptance, contact with the present moment, self-as-context, values, and committed action. Defusion helps prevent cognitive fusion, where individuals view themselves and their thoughts as inseparable. Cognitive defusion means recognizing that thoughts are separate from oneself and are no more than transient private events. Acceptance involves creating space for unpleasant feelings, sensations, desires, and other private experiences without trying to change or escape from them. Contact with the present moment entails fully bringing awareness to the here and now, with openness, interest, and acceptance, focusing on what is happening and engaging fully with the activity at hand. Self-as-context refers to continuous self-awareness, which remains constant even as thoughts, feelings, and experiences change. Values and committed action mean identifying what is most important to oneself, setting goals based on those values, and taking effective, committed action to achieve them (Hayes et al., 2006; Hayes et al., 2003; Hayes et al., 2011). The goal of Acceptance and Commitment Therapy is not to create direct change in the client but to help the client relate to their experiences differently and engage fully with a meaningful, value-based life. In other words, ACT aims to help clients clarify their life values and take action based on them. This process adds vitality and meaning to the client's life while increasing their psychological flexibility (Gloster et al., 2020; Twohig & Levin, 2017).

ACT's effectiveness has been confirmed in treating anxiety and depression (Bluett et al., 2014; Eilenberg et al., 2013; Hoffmann et al., 2014; Keikha et al., 2019; Twohig & Levin, 2017), stress reduction (Flaxman & Bond, 2010), and cognitive fusion in students (Zare, 2017), cognitive fusion and self-management behaviors in type 2 diabetes patients (Lotfi et al., 2021), emotional regulation difficulties and cognitive fusion in type 2 diabetes patients (Mousavi et al., 2022), executive functioning and cognitive fusion in adolescents with obsessive-compulsive disorder (Farhadi et al., 2018), and mental health (Laura & Victoria, 2022).

A review of the research literature shows that no study has been conducted on teacher candidates using these variables. Therefore, to better understand the effectiveness of new psychotherapeutic methods in addressing anxiety-related psychological problems in students, this study seeks to answer the fundamental question: Does Acceptance and Commitment Therapy affect cognitive fusion in female teacher candidates at Farhangian University?

2. Methods and Materials

2.1. Study Design and Participants

The statistical population of the present study consisted of all female undergraduate teacher candidates majoring in elementary education at Farhangian University, Resalat Campus, Zahedan, during the second semester of the 2023-2024 academic year. The sampling method was purposeful. Initially, the Beck Anxiety Inventory was administered to 150 students, and those scoring above 26, indicating severe anxiety, were selected. Inclusion criteria were female gender, continuous undergraduate study, studying at the Zahedan campus, willingness to participate in the study, no psychological illness, and not receiving concurrent psychological treatments. Exclusion criteria included studying at campuses in Iranshahr, Zabol, or Chabahar, non-continuous undergraduate studies, previous participation in Acceptance and Commitment Therapy training courses, unwillingness to participate in the research, and missing more than two intervention sessions. Thirty anxious students were randomly selected and randomly assigned to two groups of 15 participants (experimental and control groups).

2.2. Measure

The questionnaire, developed by Gillanders et al. (2014), consists of 12 items with two subscales: fusion and defusion, and is scored on a 7-point Likert scale (from "always true" =

7 to "never true" = 1) (Gillanders et al., 2015). Scores range from 7 to 49, with higher scores indicating greater cognitive fusion. The creators of the scale reported a Cronbach's alpha coefficient of 0.93 and a test-retest reliability coefficient of 0.80 over four weeks. The questionnaire was translated and standardized in Iran by Zare in 2014. Content validity was confirmed, and reliability using Cronbach's alpha was reported at 0.79 (Zare, 2014). In their study, Lotfi et al. (2023) reported a Cronbach's alpha of 0.74 for this questionnaire (Lotfi et al., 2021). In the present study, the internal consistency reliability was calculated using Cronbach's alpha, yielding a value of 0.75.

2.3. Intervention

Session 1:

The first session focuses on building rapport among group members and establishing a therapeutic relationship. Confidentiality is discussed, and participants are informed about the goals, nature, and components of the therapy. The concept of "creative hopelessness" is introduced to encourage individuals to acknowledge the futility of certain control strategies they use to manage their emotions and thoughts, thus setting the stage for further exploration.

Session 2:

This session continues with an assessment of participants' functioning and further development of the "creative hopelessness" concept. The primary goal is to disrupt the participants' usual control strategies and shift their focus towards accepting their emotional and cognitive experiences without attempting to suppress them. This begins the process of challenging the idea of controlling one's inner experiences as a way to resolve issues.

Session 3:

Performance assessment continues, and control is introduced as a key issue in psychological difficulties. The discussion revolves around behavioral commitments, helping participants to recognize how their efforts to control their thoughts and feelings can be counterproductive. The session emphasizes behavioral commitments as a way to engage in meaningful actions aligned with personal values, despite the presence of challenging thoughts and emotions.

Session 4:

This session starts with a review of the reactions to the previous session. The discussion shifts to the different control strategies used by participants and emphasizes that while all thoughts are important, the relationship we have with our

thoughts is more crucial. Metaphors are employed to help participants understand this concept more deeply, fostering a shift from controlling thoughts to changing their relationship with them.

Session 5:

In this session, the participants' reactions to the previous session are reviewed, and the process of cognitive defusion is introduced. Cognitive defusion techniques are practiced to help individuals see their thoughts as mere words and mental events rather than absolute truths. The goal is to reduce the influence of thoughts on behavior and promote psychological flexibility.

Session 6:

Participants' reactions to the prior session are explored. The concept of "self as context" is introduced, with discussions on the observing self ("I" and the "observing self"). Participants are encouraged to understand that while experiences change, their core self remains constant. This session also includes an exploration of personal values, and participants complete a values questionnaire to identify what is truly important to them.

Session 7:

This session deepens the understanding of "self as context" through the use of metaphors such as the "chessboard metaphor." The discussion revisits personal values, emphasizing their importance in guiding committed actions. Participants are encouraged to reflect on how their values can serve as a compass for their behavior, even when faced with difficult thoughts or emotions.

Session 8:

In the final session, previous assignments and values are revisited using metaphors. The sessions are reviewed, and participants' commitment to action is evaluated. They are asked how committed they are to moving towards their valued actions, even when it may be difficult. The focus is on reinforcing the importance of living in accordance with their values and maintaining the behavioral changes initiated during therapy.

2.4. Data Analysis

Data were analyzed using one-way ANCOVA with SPSS statistical software.

3. Findings and Results

Table 1 shows the descriptive statistics of the research variables by group and test phase:

Table 1

Mean and Standard Deviation of Research Variables by Group in Pre-test, Post-test, and Follow-up Phases

Variable	Phase	Control Group (Mean ± SD)	ACT Group (Mean ± SD)
Cognitive Fusion	Pre-test	25.63 ± 6.47	26.96 ± 7.81
	Post-test	25.10 ± 7.61	16.65 ± 5.72
	Follow-up	24.96 ± 7.82	16.05 ± 6.48
Cognitive Defusion	Pre-test	9.03 ± 2.33	8.27 ± 3.11
	Post-test	9.24 ± 2.12	13.11 ± 3.40
	Follow-up	8.86 ± 2.79	13.80 ± 2.98

According to the data in [Table 1](#), the mean scores for cognitive fusion in the experimental group decreased in the post-test and follow-up phases compared to the control group, while the mean scores for cognitive defusion increased.

To use the ANCOVA test, the underlying assumptions were first examined, including data normality with the Kolmogorov-Smirnov test ($p < 0.05$), homogeneity of variances with the Levene's test ($p < 0.05$), and regression slope homogeneity in both groups, confirmed by the F-test ($p > 0.05$).

Table 2

Results of ANCOVA on Post-test and Follow-up Cognitive Fusion Scores in Both Groups

Source	Post-test	Mean Square	F	p-value	Eta Squared (Effect Size)
Group	Cognitive Fusion	637.59	36.92	0.001	0.61
	Cognitive Defusion	197.96	44.87	0.001	0.649
Error	Cognitive Fusion	17.68			
	Cognitive Defusion	4.60			
Follow-up	Cognitive Fusion	567.87	27.94	0.001	0.548
	Cognitive Defusion	209.81	32.68	0.001	0.581
Error	Cognitive Fusion	20.21			
	Cognitive Defusion	6.30			

The results in [Table 2](#) show a significant difference in the post-test mean scores of cognitive fusion and cognitive defusion between the experimental and control groups ($p < 0.01$). Therefore, Acceptance and Commitment Therapy (ACT) led to a reduction in cognitive fusion and an increase in cognitive defusion in the anxious student-teachers at Farhangian University. Based on the Eta-squared coefficients, the largest effect was observed in the cognitive defusion subscale during the post-test phase, with approximately 65% of the variance in post-test cognitive defusion scores attributed to the effect of ACT.

4. Discussion and Conclusion

The present study aimed to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on cognitive fusion in female student-teachers at Farhangian University. The findings indicated that ACT reduced cognitive fusion and

increased cognitive defusion in the experimental group during both the post-test and follow-up phases. These results are consistent with the prior findings ([Alfouneh et al., 2020](#); [Keikha et al., 2019](#); [Laura & Victoria, 2022](#)). Alfouneh and colleagues found that ACT reduced cognitive fusion in both short- and long-term phases in patients with migraines ([Alfouneh et al., 2020](#)). Numerous studies have confirmed the effectiveness of ACT group therapy in various contexts ([Alfouneh et al., 2020](#); [Eilenberg et al., 2013](#); [Hallis et al., 2016](#); [Hoffmann et al., 2014](#); [Jalali Farahani et al., 2021](#); [Keikha et al., 2019](#); [Lotfi et al., 2021](#); [Vaezi et al., 2020](#)).

In explaining these findings, it can be said that ACT provides a situation in which the client experiences "creative hopelessness" regarding their usual strategies to control or eliminate negative thoughts and emotions related to anxiety, avoidance, and complete escape from these experiences. This process introduces acceptance as an alternative solution, allowing the individual to focus on more meaningful aspects

of life, such as health, rather than constantly concentrating on negative thoughts and avoidant behaviors associated with anxiety.

The ACT process helps individuals take responsibility for behavioral changes, make adjustments when necessary, and persist as needed. ACT seeks to balance strategies suited to the context, focusing on change in areas of overt behavior that are alterable and emphasizing acceptance and mindfulness exercises in areas where change is not possible (Kashdan & Rottenberg, 2010). According to Hayes (2003), ACT encourages clients to change their relationship with thoughts and other internal experiences, viewing them as mental events that come and go. Acceptance of thoughts as thoughts, feelings as feelings, and emotions as they are—no more, no less—weakens cognitive fusion. Additionally, when individuals are not struggling against their distress, acceptance of internal experiences allows them to expand their behavioral repertoire and use the time gained for engaging in meaningful activities. This commitment to a valued and purposeful life enhances the quality of life. In other words, in areas where cognitive fusion occurs, the processes of acceptance and cognitive defusion help break the patterns of avoidance and the rules governing them (Hayes et al., 2006; Hayes et al., 2003; Hayes et al., 2011).

5. Limitations & Suggestions

One limitation of this study is the purposive sampling method and the fact that it was conducted among female students, which should be considered in future research. University counseling center staff can take valuable steps to assist anxious students by applying this intervention. It is recommended that directors and counseling center managers hold ACT workshops to help students overcome cognitive fusion.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. This research

adhered to the ethical requirements of the Alzahra University Research Ethics Committee and was approved under the code IR.ALZAHRA.REC.2022.093.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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