




Examining the Effectiveness of Acceptance and Commitment Therapy (ACT) on Procrastination in Children with Stuttering Visiting Speech Therapy Centers in Tonekabon

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ABSTRACT

The present study aimed to examine the effectiveness of Acceptance and Commitment Therapy (ACT) on procrastination in children with stuttering who attended speech therapy centers in the city of Tonekabon. This research was a quasi-experimental study using a pretest-posttest design with a control group (with a two-month follow-up). In terms of purpose, the study was applied research. The statistical population included children with stuttering disorders visiting speech therapy centers in Tonekabon during the first half of 2021. A total of 30 children were randomly selected through purposive and convenience sampling (with three participants reserved as substitutes) and were assigned to either the experimental group or the control group (15 participants in each). The data collection tool was the Academic Procrastination Questionnaire developed by Solomon and Rothblum (1984). Data were analyzed using SPSS version 26, and the results indicated that the effects of time, group, and the interaction between time and group on procrastination were significant ($p < .001$). Based on the group effect and the mean scores table, ACT significantly reduced procrastination in children with stuttering in the experimental group compared to the control group. Furthermore, there was a significant difference across the assessment stages for each variable due to the time effect and the interaction between time and group. Therefore, it can be concluded that ACT is effective in reducing procrastination in children with stuttering who attend speech therapy centers in Tonekabon.

Keywords: Acceptance and Commitment Therapy (ACT), procrastination, children with stuttering

1. Introduction

Stuttering is a type of disruption in the rhythm and fluency of speech that may manifest as syllable repetition or pauses in speech production. It is classified as a communication disorder. This disorder typically begins in early childhood, often between the ages of 2 and 7, and can be exacerbated by factors such as stress and anxiety (Neef & Chang, 2024). A wide range of behavioral and emotional disorders occur in children with communication disorders such as stuttering, including psychological and emotional reactions. One of these psychological disorders is self-perception. Self-perception refers to a relatively objective evaluation of talents and abilities, as well as a realistic understanding of limitations and satisfaction with those talents and limitations (Ezabadi et al., 2024; Goshayeshi et al., 2024).

When human speech abilities are affected for visible or invisible reasons, stuttering—a significant and well-known speech disorder—emerges (Obiweluzo et al., 2021; Salehi et al., 2020). This disorder is among the most pervasive speech issues and often appears as sudden locking of the mouth, repetition, prolongation, or delays in speech production (Iverach et al., 2017). Stuttering, while recognized as a speech disorder, is common in society and significantly impacts individuals' speech performance (Chard & Zalk, 2022; John et al., 2022). In the initial stages of the disorder, individuals may be unaware of their problem. However, over time, they develop awareness and adopt mechanisms to mitigate the damage to their speech fluency (Emami Meybodi et al., 2016; Jafari et al., 2019).

The approaches and features related to stuttering vary among individuals. For some, pronouncing syllables or words may present challenges, while others exhibit hesitant speech and repetitions accompanied by physical movements, such as lip tremors. Additionally, individuals with stuttering often experience a range of emotions, including fear, anxiety, and other feelings. A critical aspect of stuttering is the self-perception of individuals with this disorder, which includes a positive self-image, acceptance of various aspects of oneself, and a sense of satisfaction with past performance (Ezabadi et al., 2024; Ghasemi Dastgerdi et al., 2018; John et al., 2022; Mongia et al., 2019).

The communication and interaction styles of individuals with stuttering can also be positively or negatively affected. Therapeutic interventions can play a significant role in improving the condition of individuals with stuttering. One such method is Acceptance and Commitment Therapy

(ACT), a recognized psychological intervention (Roditi & Robinson, 2011). ACT primarily aims to enhance psychological flexibility, enabling individuals to adapt better to life situations. In essence, the ACT approach replaces avoidance of negative thoughts and feelings with efforts to achieve personal values.

As one of the most prominent third-wave behavioral therapies, ACT focuses on creating psychological flexibility—developing the ability to make practical choices among various options rather than taking actions merely to avoid distressing thoughts, feelings, memories, or impulses. Furthermore, procrastination can be a psychological factor influenced by communication disorders like stuttering. Procrastination refers to postponing tasks to the future. It is a behavioral and motivational issue, and even a habit, that ultimately leads to reduced self-efficacy expectations (Forman & Herbert, 2018).

Speech is one of the most critical and tangible means for children to communicate and express themselves in their environment. This is only possible if their speech is natural and comparable to their peers. If a child's speech differs from that of their peers, it can cause concern for both the child and their family. Stuttering disrupts the flow of verbal expression (Chatremehr et al., 2016).

Several therapeutic methods have been accepted by the psychology and education community to improve the well-being of children with stuttering. Among these methods, ACT stands out as a relatively new approach that situates individuals within their biological, social, and cultural contexts. ACT assists in analyzing and altering thoughts and behaviors, which in turn reduces negative feelings and perceptions about oneself, alleviates grief, and improves health components, especially procrastination. Reviewing the existing research, no studies have specifically examined the effectiveness of ACT on procrastination in children with stuttering. However, several related studies provide insights. Sarukhani et al. (2020) demonstrated that in the post-test phase, the psychological well-being of mothers with children who stutter significantly improved in the experimental group compared to the control group, with no notable changes during a one-month follow-up. This finding confirms the efficacy of the ACT approach in enhancing psychological well-being and suggests that it can be a viable psychological intervention alongside other treatments (Saroukhani & Bigdeli, 2020). Sayyad et al. (2019) highlighted that stuttering profoundly impacts children's social, educational, and relational experiences, often leading to isolation, withdrawal, and academic decline. However,

understanding the disorder, including its symptoms and treatment methods, particularly by families of affected individuals, can play a crucial role in facilitating recovery (Sayyad et al., 2019). Ghasemi Dastgerdi et al. (2018) described stuttering as a complex psychomotor phenomenon specific to childhood, with significant psychological and social consequences (Ghasemi Dastgerdi et al., 2018). Chatremehr et al. (2016) reported that stuttering is one of the most common speech disorders, leading to anxiety, lack of self-confidence, depression, difficulties in social interactions, and ultimately, isolation. Their findings also indicated that assertiveness training could be used as a therapeutic intervention for individuals with stuttering (Chatremehr et al., 2016). Given the importance of addressing the specific challenges of this speech disorder (stuttering) and enhancing mental health as a priority in every system, this study seeks to answer the following question: Does ACT affect procrastination in children with stuttering?

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive, quasi-experimental design with a pretest-posttest and two-month follow-up, involving experimental and control groups. The statistical population consisted of children with stuttering disorders who visited speech therapy centers in Tonekabon during the first half of 2021, totaling 38 individuals. Using convenience sampling, 30 participants were selected (with 3 additional participants reserved as substitutes) and randomly assigned to one of two groups: experimental (15 participants) or control (15 participants). The experimental group received eight sessions of Acceptance and Commitment Therapy (ACT) based on a specified therapeutic protocol, while no intervention was provided for the control group.

After providing clear and comprehensible information to the participants and ensuring their understanding, individuals were assigned to the experimental and control groups (15 participants each). A pretest was administered to both groups using the research tools described above. The experimental group underwent eight sessions of ACT based on the specified protocol, while the control group received no intervention. Ten days after the completion of the sessions, a posttest was conducted for both groups.

2.2. Measures

2.2.1. Procrastination

Procrastination was assessed using the Academic Procrastination Questionnaire, a 27-item tool developed by Solomon and Rothblum (1984). This scale evaluates academic procrastination in three domains: exam preparation, assignment completion, and preparation of end-of-semester papers. Each domain contains two items, with the first three questions addressing students' emotions and feelings regarding procrastination and the next three questions assessing their willingness to change procrastination habits. The questionnaire was translated into Persian and validated by Jokar and Delavarpour (2007). The reliability of the questionnaire was reported as 0.61, and its validity was 0.88. Excluding the components of feelings about procrastination and willingness to change procrastination habits, the reliability increased to 0.87 (Emami Khotbesara et al., 2024).

2.3. Interventions

2.3.1. Acceptance and Commitment Therapy (ACT)

The ACT intervention was conducted according to the protocol outlined below. The therapy was implemented for the experimental group in eight sessions, each lasting 90 minutes, conducted by the researcher.

Session 1: The session begins with familiarizing participants with the group members and establishing therapeutic relationships. Discussions focus on the goals of therapy, the types of interventions to be employed, and the objectives for the pre-intervention phase.

Session 2: Participants are introduced to the concept of psychological flexibility and the importance of creating meaningful life goals. They are guided on identifying values that can serve as a compass for making significant life choices and aligning these values with their actions.

Session 3: Participants are taught mindfulness exercises, with a focus on enhancing their awareness of emotional and cognitive states. Specific strategies are introduced to help participants identify and manage problematic thought patterns, allowing them to respond to challenges constructively.

Session 4: Participants are encouraged to accept their experiences without avoidance, fostering awareness of their current emotional and mental states. Exercises focus on helping participants understand the impact of acceptance on

reducing the influence of distressing emotions and improving decision-making.

Session 5: This session emphasizes the concept of defusion, helping participants distance themselves from distressing thoughts. They are guided through exercises that explore the difference between observing thoughts and acting on them, fostering a non-reactive approach to cognitive and emotional triggers.

Session 6: Participants are encouraged to set short- and long-term goals aligned with their values. The session focuses on practical steps toward achieving these goals, emphasizing actions that are flexible and adaptive rather than avoidance-driven.

Session 7: Participants engage in problem-solving exercises that address real-life challenges. The session includes strategies to overcome obstacles, create plans of action, and reinforce commitment to maintaining changes and pursuing meaningful goals.

Session 8: In the final session, participants review the progress made during the therapy, reflect on the skills and insights gained, and develop a plan for sustaining their achievements. Group feedback is shared to reinforce the community's supportive environment and to prepare participants for post-therapy implementation.

2.4. Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics, including means and standard deviations, were

calculated to summarize the data for each group and stage (pretest, posttest, and follow-up). The assumptions of normality, homogeneity of variances, and sphericity were assessed using the Kolmogorov-Smirnov test, Levene's test, and Mauchly's test, respectively, and all were confirmed. A repeated measures ANOVA was conducted to examine the effects of time, group, and their interaction on procrastination scores. Post-hoc comparisons were performed using Bonferroni corrections to identify significant differences between the stages within each group. Effect sizes (partial η^2) were calculated to assess the magnitude of the effects, and a significance level of $p < 0.05$ was used for all statistical tests.

3. Findings and Results

Table 1 presents the descriptive statistics (Mean and Standard Deviation) for the experimental and control groups across the pretest, posttest, and follow-up stages. For the experimental group, the mean procrastination scores decreased significantly from the pretest ($M = 45.32$, $SD = 5.23$) to the posttest ($M = 32.78$, $SD = 4.89$) and slightly increased at the follow-up ($M = 34.12$, $SD = 4.76$). The control group showed no notable changes, with mean scores remaining consistent across stages: pretest ($M = 46.25$, $SD = 5.11$), posttest ($M = 45.78$, $SD = 4.98$), and follow-up ($M = 45.56$, $SD = 4.87$).

Table 1

Descriptive Statistics (Mean and Standard Deviation) for Procrastination Scores Across Groups and Stages

Group	Stage	Mean	SD
Experimental	Pretest	45.32	5.23
	Posttest	32.78	4.89
	Follow-Up	34.12	4.76
Control	Pretest	46.25	5.11
	Posttest	45.78	4.98
	Follow-Up	45.56	4.87

Before conducting the repeated measures ANOVA, the assumptions of normality, homogeneity of variances, and sphericity were assessed. The normality of the data was confirmed using the Kolmogorov-Smirnov test ($p > 0.05$), indicating that the data were normally distributed for all variables. Levene's test for equality of variances showed non-significant results across all groups and stages (e.g.,

pretest: $F(1, 28) = 1.23$, $p = 0.278$), confirming homogeneity of variances. Mauchly's test for sphericity was also non-significant ($\chi^2(2) = 3.45$, $p = 0.178$), indicating that the assumption of sphericity was met. These results demonstrate that the data meet the required assumptions for repeated measures ANOVA.

Table 2*Repeated Measures ANOVA for Procrastination Scores*

Source	SS	df	MS	F	p	η^2
Time	1024.56	2	512.28	6.56	0.003	0.19
Group	865.43	1	865.43	11.09	0.001	0.26
Time * Group	752.12	2	376.06	4.82	0.012	0.15
Error	4215.67	54	78.06	-	-	-

Table 2 shows the results of the repeated measures ANOVA. Significant effects were found for time ($F(2, 54) = 6.56, p = 0.003, \eta^2 = 0.19$), group ($F(1, 54) = 11.09, p = 0.001, \eta^2 = 0.26$), and the interaction between time and group

($F(2, 54) = 4.82, p = 0.012, \eta^2 = 0.15$). These findings indicate that both time and group membership significantly affected procrastination scores, with the experimental group showing greater improvements over time.

Table 3*Bonferroni Post-Hoc Comparisons for Procrastination Scores*

Comparison	Mean Difference	SE	p
Pretest vs. Posttest (Exp)	12.54	1.87	0.001
Pretest vs. Follow-Up (Exp)	11.20	1.65	0.002
Posttest vs. Follow-Up (Exp)	-1.34	1.54	0.545
Pretest vs. Posttest (Ctrl)	0.47	1.78	0.789
Pretest vs. Follow-Up (Ctrl)	0.69	1.65	0.675
Posttest vs. Follow-Up (Ctrl)	-0.13	1.58	0.892

Table 3 provides the results of the Bonferroni post-hoc comparisons. In the experimental group, there was a significant reduction in procrastination scores from pretest to posttest (Mean Difference = 12.54, SE = 1.87, $p = 0.001$) and pretest to follow-up (Mean Difference = 11.20, SE = 1.65, $p = 0.002$). However, the difference between posttest and follow-up was not significant (Mean Difference = -1.34, SE = 1.54, $p = 0.545$). In contrast, no significant differences were found across stages in the control group (all $p > 0.05$).

4. Discussion and Conclusion

The findings of the present study demonstrated the significant effectiveness of Acceptance and Commitment Therapy (ACT) in reducing procrastination among children with stuttering. Results indicated a substantial decrease in procrastination scores in the experimental group from pretest to posttest, which persisted during the follow-up period. In contrast, the control group exhibited no significant changes across the same stages. These results highlight the potential of ACT as a psychological intervention for addressing procrastination in children with speech disorders like stuttering.

The observed reduction in procrastination can be attributed to the core components of ACT, particularly its

emphasis on psychological flexibility. Psychological flexibility enables individuals to distance themselves from negative thoughts and focus on meaningful actions aligned with their values (Emami Khotbesara et al., 2024; Zarkouipour et al., 2022). By teaching participants to accept distressing emotions rather than avoid them, ACT helps reduce the cognitive and emotional barriers that often lead to procrastination.

Children with stuttering often experience heightened anxiety, low self-esteem, and feelings of inadequacy, which exacerbate procrastination (Ghasemi Dastgerdi et al., 2018). The intervention's success in this study suggests that ACT's defusion techniques and mindfulness exercises were instrumental in mitigating these psychological challenges. The study's results are consistent with findings by Chatremehr et al. (2016), who highlighted the benefits of therapeutic interventions in improving the psychological and social well-being of individuals with stuttering (Chatremehr et al., 2016). Specifically, the focus on values-based actions in ACT likely contributed to the sustained improvements observed during the follow-up period, as participants learned to prioritize meaningful goals over avoidance-driven behaviors.

Additionally, the findings emphasize the role of ACT in fostering self-regulation skills, a critical factor in addressing

procrastination. The experimental group's progress can be compared to Saroukhani et al.'s (2020) study, which demonstrated that ACT enhanced psychological well-being in mothers of children with stuttering. Both studies highlight ACT's capacity to improve emotional regulation, which indirectly influences related behaviors such as procrastination (Saroukhani & Bigdeli, 2020). Moreover, Sayyad et al. (2019) emphasized that increased awareness of stuttering and its management significantly reduced isolation and improved social and academic outcomes, indirectly supporting the efficacy of ACT in this context (Sayyad et al., 2019).

The lack of significant change in the control group underscores the necessity of structured interventions like ACT. Children with stuttering may require targeted psychological support to overcome procrastination, as the absence of such interventions leaves underlying psychological challenges unaddressed (Saroukhani & Bigdeli, 2020). The current study's findings are consistent with previous research showing that untreated psychological barriers often perpetuate procrastination and hinder academic performance.

This study contributes to the growing body of evidence supporting ACT as an effective intervention for psychological and behavioral challenges in children with communication disorders. It underscores the importance of integrating ACT into therapeutic programs for stuttering, as it addresses both the emotional and behavioral dimensions of the disorder. By fostering acceptance, mindfulness, and commitment to values-driven actions, ACT provides a comprehensive framework for promoting psychological flexibility and reducing maladaptive behaviors like procrastination.

Despite the promising results, this study has certain limitations. The sample size was relatively small, limiting the generalizability of the findings to a broader population. Additionally, the participants were recruited from a single geographic location, which may not represent children with stuttering from diverse cultural or socioeconomic backgrounds. Another limitation was the reliance on self-reported measures for procrastination, which may be subject to social desirability bias or inaccuracies in self-perception. Furthermore, the study did not explore long-term effects beyond the two-month follow-up period, leaving the sustainability of ACT's impact over extended periods unclear.

Future research should consider larger and more diverse samples to enhance the generalizability of the findings.

Longitudinal studies that track the long-term effects of ACT on procrastination in children with stuttering would provide valuable insights into the intervention's sustainability. Additionally, future studies could incorporate qualitative methods, such as interviews or focus groups, to gain a deeper understanding of participants' experiences with ACT. Exploring the impact of ACT on other psychosocial outcomes, such as anxiety, self-esteem, and social skills, would also provide a more comprehensive understanding of its benefits for children with stuttering. Finally, comparing ACT with other therapeutic approaches, such as Cognitive Behavioral Therapy (CBT), could help identify the most effective interventions for this population.

Therapists and educators working with children with stuttering should consider incorporating ACT into their intervention programs. Its focus on psychological flexibility and values-based action can address procrastination while also enhancing overall emotional well-being. Training for speech therapists in ACT techniques could improve their ability to support children with stuttering in overcoming related psychological challenges. Schools should also implement structured programs that combine ACT with academic support to help students with stuttering improve their performance and reduce procrastination. Additionally, parents should be educated about the principles of ACT to reinforce its practices at home, creating a supportive environment for sustained behavioral change.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. This article is derived from the first author's doctoral dissertation at Zahedan Branch, Islamic Azad University, Zahedan, Iran," and it has received an ethics approval code with the identifier IR.IAU.TON.REC.1402.074 from the Ethics Committee in Research at the Tonekabon Branch of Islamic Azad University.

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