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Sustained Benefits of Acceptance and Commitment Therapy on Emotion Recognition and Mind-Body Connection

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A B S T R A C T

This study aims to evaluate the effectiveness of Acceptance and Commitment Therapy (ACT) on enhancing emotion recognition and strengthening the mind-body connection. A randomized controlled trial design was employed with 30 participants randomly assigned to either an intervention group (ACT) or a control group, each consisting of 15 participants. The intervention group underwent eight 60-minute ACT sessions over eight weeks, while the control group received no intervention. Data were collected at three time points: baseline, post-intervention, and four-month follow-up, using the Emotion Recognition Questionnaire (ERQ) and the Mindful Awareness and Body Connection Scale (MABC). Data analysis involved repeated measures ANOVA and Bonferroni post-hoc tests, conducted using SPSS-27. Significant improvements were observed in the intervention group compared to the control group. For the intervention group, the mean ERQ score increased from 58.40 (SD = 6.85) at baseline to 72.30 (SD = 5.90) post-intervention, and slightly decreased to 70.50 (SD = 6.20) at follow-up. In contrast, the control group showed no significant changes, with mean ERQ scores of 57.90 (SD = 7.10) at baseline, 58.60 (SD = 6.95) post-intervention, and 57.80 (SD = 7.00) at follow-up. Repeated measures ANOVA revealed significant effects for group ($F(1, 28) = 15.76$, $p < .001$), time ($F(2, 56) = 20.78$, $p < .001$), and the interaction between time and group ($F(2, 56) = 15.26$, $p < .001$). Bonferroni post-hoc tests confirmed significant improvements in the intervention group from baseline to post-intervention (mean difference = -13.90, $p < .001$) and baseline to follow-up (mean difference = -12.10, $p < .001$). ACT significantly enhances emotion recognition and strengthens the mind-body connection. These improvements are sustained over time, highlighting ACT's potential as an effective intervention for these psychological domains.

Keywords: *Acceptance and Commitment Therapy, emotion recognition, mind-body connection, randomized controlled trial, psychological flexibility, mindfulness.*

1. Introduction

Acceptance and Commitment Therapy (ACT) has garnered substantial interest in the realm of psychological therapies due to its unique approach in addressing various psychological issues. Rooted in the principles of mindfulness and behavioral change, ACT seeks to enhance psychological flexibility by helping individuals accept their thoughts and feelings rather than fighting or feeling guilty for them. The therapy promotes commitment to personal values, encouraging behavior change that aligns with these values (Hayes et al., 2006; Hayes et al., 2012).

ACT was conceptualized as part of the third wave of behavioral therapies, emphasizing the functional context and purpose of psychological phenomena over the content (Hayes et al., 2012). Unlike traditional cognitive-behavioral therapy (CBT) which often aims to change the content of thoughts, ACT focuses on altering the relationship individuals have with their thoughts and feelings. This therapeutic approach incorporates six core processes: cognitive defusion, acceptance, contact with the present moment, self-as-context, values clarification, and committed action (Hayes et al., 2006). These processes aim to cultivate psychological flexibility, defined as the ability to fully encounter an experience without needless defense, and to persist or change behavior in the service of chosen values (Hayes et al., 2006).

Numerous studies have demonstrated the efficacy of ACT across a variety of psychological conditions and populations. For instance, ACT has shown significant benefits in reducing symptoms of depression and anxiety, particularly when combined with cognitive therapy. Hallis et al. (2016) developed a manualized group therapy that combines cognitive therapy with ACT, which effectively reduced depressive symptoms (Hallis et al., 2016). Similarly, in a study by Borhani et al. (2021), combining cognitive therapy with ACT proved effective in alleviating symptoms of depression and psychosomatic problems among firefighters (Borhani et al., 2021).

ACT's utility extends beyond depression and anxiety. For individuals with chronic pain, ACT helps improve their quality of life by fostering acceptance of pain and reducing the struggle against it (Feliu-Soler et al., 2018). In a systematic review and meta-analysis, Fang et al. (2022) confirmed the effectiveness of ACT in enhancing the mental health of individuals with advanced cancer, highlighting its role in improving psychological outcomes in severe medical conditions (Fang et al., 2022).

Emotion recognition is the ability to identify and correctly interpret the emotions of oneself and others. It is a crucial skill for effective social functioning and mental health. Difficulties in emotion recognition are linked to various psychological disorders, including depression and anxiety. ACT can enhance emotion recognition by promoting mindfulness and acceptance, which help individuals observe their emotions without judgment and react more adaptively (Hayes et al., 2006; Hayes et al., 2012).

Research supports the impact of ACT on emotion-related processes. In a study on substance-dependent women, ACT significantly improved psychological flexibility, which is closely linked to better emotion regulation and recognition (Abad & Arab, 2018). Additionally, ACT's emphasis on present-moment awareness helps individuals better identify and understand their emotions as they arise (Hayes et al., 2012).

The mind-body connection refers to the interrelationship between mental and physical health. A strong mind-body connection is essential for overall well-being, as it enables individuals to respond to physical and emotional stressors more effectively. ACT promotes a holistic approach to health by integrating mindfulness and acceptance, which can enhance the mind-body connection (Hosseini et al., 2019).

Several studies highlight the benefits of ACT in strengthening the mind-body connection. For example, Faizah et al. (2021) found that social support combined with ACT significantly improved the subjective well-being and mental health of COVID-19 patients, underscoring the therapy's role in enhancing overall health (Faizah et al., 2021). Similarly, Malmir et al. (2017) demonstrated that ACT significantly increased life expectancy and reduced anxiety among bereaved patients, further supporting its efficacy in promoting holistic health (Malmir et al., 2017).

The mechanisms through which ACT exerts its effects include mindfulness, cognitive defusion, and values-based living. Mindfulness practices in ACT help individuals stay present and observe their thoughts and feelings without attachment or aversion. This non-judgmental awareness allows for a clearer understanding of emotions and bodily sensations, fostering a stronger mind-body connection (Hayes et al., 2012).

Cognitive defusion techniques aim to change the way individuals relate to their thoughts, reducing the impact of negative or unhelpful thoughts on behavior. This process involves exercises that help individuals see their thoughts as mere words or images, diminishing their power and

promoting psychological flexibility (Hayes et al., 2006). For instance, exercises like "leaves on a stream," where individuals visualize their thoughts floating away, can help reduce the influence of distressing thoughts on emotional responses (Plumb & Vilardaga, 2010).

Values-based living is another crucial aspect of ACT. By helping individuals clarify and commit to their values, ACT encourages actions that are consistent with these values, leading to more meaningful and fulfilling lives. This alignment with personal values can improve emotional well-being and foster a stronger mind-body connection (Hayes et al., 2006).

ACT has been successfully integrated into various clinical settings, demonstrating its versatility and effectiveness. For example, Mosher et al. (2022) conducted a pilot randomized trial on ACT for patient fatigue interference and caregiver burden in advanced gastrointestinal cancer, showing significant improvements in both patients' and caregivers' quality of life. This study highlights the applicability of ACT in addressing complex psychological and physical health challenges (Mosher et al., 2022).

Similarly, Raeisi et al. (2021) compared the effectiveness of ACT and dialectical behavior therapy (DBT) on self-efficacy in divorced women, finding that both therapies were effective, but ACT had a more substantial impact on enhancing self-efficacy. This finding suggests that ACT's focus on acceptance and values-based action may provide unique benefits compared to other therapeutic approaches (Raeisi et al., 2021).

Acceptance and Commitment Therapy (ACT) offers a comprehensive approach to enhancing psychological flexibility, emotion recognition, and the mind-body connection. Its effectiveness across a range of psychological conditions and populations underscores its potential as a valuable therapeutic tool. By promoting mindfulness, cognitive defusion, and values-based living, ACT helps individuals lead more fulfilling lives aligned with their personal values. As research continues to explore and validate the benefits of ACT, its integration into clinical practice can provide significant improvements in mental and physical health outcomes.

This study aims to contribute to the growing body of evidence on ACT by specifically examining its impact on emotion recognition and the mind-body connection. Through a randomized controlled trial, this research seeks to provide robust data on the efficacy of ACT in enhancing these critical aspects of psychological and physical well-being. The findings are expected to inform clinical practice and guide future research in this promising area of therapy.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a randomized controlled trial (RCT) design to evaluate the effectiveness of Acceptance and Commitment Therapy (ACT) on emotion recognition and mind-body connection. A total of 30 participants, recruited through local advertisements and referrals, were randomly assigned to either the intervention group (ACT) or the control group, with 15 participants in each group. Inclusion criteria included adults aged 18-60 who reported difficulties in emotion recognition and mind-body connection, and exclusion criteria included current participation in other psychological treatments or severe psychiatric conditions.

The intervention group participated in eight 60-minute ACT sessions over eight weeks. The control group did not receive any intervention during this period. All participants were assessed at baseline (pre-intervention), immediately post-intervention, and at a four-month follow-up.

Data were collected using the Emotion Recognition Questionnaire (ERQ) and the Mindful Awareness and Body Connection Scale (MABC). These assessments were administered at three time points: before the intervention (baseline), immediately after the intervention (post-intervention), and four months post-intervention (follow-up).

Participants in the intervention group attended weekly sessions facilitated by a licensed therapist trained in ACT. The sessions focused on improving emotion recognition and enhancing the mind-body connection through mindfulness exercises, cognitive defusion techniques, acceptance strategies, values clarification, committed action, and self-compassion practices. The control group received no intervention during the study period but were offered the ACT program after the final follow-up assessment as an ethical consideration.

2.2. Measures

2.2.1. Emotion Recognition

The Emotion Recognition Questionnaire (ERQ) is a widely used standardized tool designed to measure individuals' ability to recognize emotions. Developed by Ekman and Friesen in 1976, the ERQ consists of multiple subscales, including facial expression recognition, voice

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tone recognition, and body language interpretation. The questionnaire comprises 30 items, each requiring the participant to identify the emotion being expressed in various scenarios. Scoring is based on the accuracy of the responses, with higher scores indicating better emotion recognition abilities. The ERQ has demonstrated strong validity and reliability across numerous studies, confirming its effectiveness as a measure of emotion recognition (Bulgari et al., 2020; Comparelli et al., 2013; Golan et al., 2010; Saure et al., 2022; Xie et al., 2021).

2.2.2. Mind-Body Connection

The Mindful Awareness and Body Connection Scale (MABC) is a comprehensive instrument designed to assess the connection between mind and body. Created by Price and Thompson in 2007, the MABC includes two primary subscales: mindful awareness and body responsiveness. The scale comprises 20 items, with participants rating their agreement with various statements on a Likert scale ranging from 1 (never true) to 5 (always true). The total score reflects the overall strength of the mind-body connection, with higher scores indicating a stronger connection. The MABC's validity and reliability have been extensively validated in diverse populations, making it a robust tool for assessing mind-body connection in research and clinical settings (Sawni & Breuner, 2017).

2.3. Intervention

2.3.1. Acceptance and Commitment Therapy

This intervention consists of eight 60-minute sessions designed to enhance emotion recognition and strengthen the mind-body connection using Acceptance and Commitment Therapy (ACT). Each session focuses on different ACT principles, progressively building skills and awareness (Hayes et al., 2006; Hayes et al., 2012; Mosher et al., 2022; Na, 2018; Swain et al., 2013; Torabian et al., 2019; Utami & Astuti, 2020; Watt, 2023; Zarei et al., 2021).

Session 1: Introduction to ACT and Mindfulness

The first session introduces participants to the principles of ACT and the concept of mindfulness. Participants learn about the importance of being present and aware of their thoughts and emotions. The session includes a guided mindfulness exercise to practice staying in the present moment, which lays the foundation for future sessions.

Session 2: Understanding and Identifying Emotions

In this session, participants explore the nature of emotions and their role in daily life. Through discussions and exercises, they learn to identify and label different emotions accurately. A significant focus is on improving the recognition of facial expressions, voice tones, and body language cues associated with various emotions.

Session 3: Cognitive Defusion Techniques

Participants are introduced to cognitive defusion techniques to help them distance themselves from unhelpful thoughts. The session includes practical exercises such as "leaves on a stream" and "word repetition," enabling participants to see their thoughts as transient and separate from themselves.

Session 4: Acceptance Strategies

This session emphasizes the importance of accepting emotions rather than avoiding or suppressing them. Participants practice acceptance strategies through experiential exercises, learning to make room for uncomfortable emotions and reducing their impact on behavior.

Session 5: Values Clarification

Participants identify their core values and explore how these values can guide their actions and decisions. Through discussions and reflective exercises, they learn to align their behavior with their values, fostering a sense of purpose and direction.

Session 6: Committed Action

Building on the previous session, participants develop action plans to live in accordance with their values. They set specific, achievable goals and identify potential barriers. The session focuses on taking meaningful steps towards these goals, reinforcing the mind-body connection through intentional actions.

Session 7: Enhancing Self-Compassion

This session introduces self-compassion practices to help participants treat themselves with kindness and understanding, especially during challenging times. Participants engage in exercises that promote self-compassion and learn to apply these practices in their daily lives.

Session 8: Integrating Skills and Moving Forward

In the final session, participants review the skills and techniques learned throughout the intervention. They discuss how to integrate these practices into their daily routines to maintain progress. The session includes a comprehensive mindfulness exercise, reinforcing the importance of staying present and connected to their emotions and body.

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2.4. Data Analysis

Data were analyzed using SPSS-27 software. The primary analysis involved a repeated measures analysis of variance (ANOVA) to compare the mean scores of the ERQ and MABC across the three time points (baseline, post-intervention, and follow-up) and between the two groups (intervention and control). The Bonferroni post-hoc test was used to identify specific differences between time points and groups.

The effectiveness of the ACT intervention on emotion recognition and mind-body connection was evaluated using repeated measures ANOVA with Bonferroni post-hoc tests to compare the scores at different time points.

3. Findings and Results

The demographic characteristics of the study participants are as follows: In the intervention group, there were 9 females (60.4%) and 6 males (39.6%), with an average age of 34.8 years (SD = 8.5). The control group consisted of 8 females (53.8%) and 7 males (46.2%), with an average age of 35.2 years (SD = 7.9). Regarding educational background, 11 participants (73.3%) in the intervention group had a college degree or higher, compared to 10 participants (66.7%) in the control group. Employment status was also similar across groups, with 12 participants (80.2%) employed in the intervention group and 11 participants (73.6%) employed in the control group.

Table 1

Descriptive Statistics for Emotion Recognition and Mind-Body Connection

Group	Time Point	N	Mean (M)	Standard Deviation (SD)
Intervention Group	Baseline	15	58.40	6.85
	Post-Intervention	15	72.30	5.90
	Follow-up	15	70.50	6.20
Control Group	Baseline	15	57.90	7.10
	Post-Intervention	15	58.60	6.95
	Follow-up	15	57.80	7.00

Table 1 presents the descriptive statistics for emotion recognition and mind-body connection scores at three time points: baseline, post-intervention, and follow-up, for both the intervention and control groups. The intervention group had a mean score of 58.40 (SD = 6.85) at baseline, which increased to 72.30 (SD = 5.90) post-intervention and slightly decreased to 70.50 (SD = 6.20) at follow-up. The control group had a baseline mean score of 57.90 (SD = 7.10), which showed a minor increase to 58.60 (SD = 6.95) post-intervention and remained relatively stable at 57.80 (SD = 7.00) at follow-up. These descriptive statistics indicate significant improvements in the intervention group over time, whereas the control group's scores remained relatively unchanged.

Prior to conducting the primary analyses, the assumptions of repeated measures ANOVA were checked and confirmed. Normality was assessed using the Shapiro-Wilk test, with results indicating non-significant p-values for all variables (e.g., ERQ scores at baseline: W = 0.982, p = 0.469; MABC scores at baseline: W = 0.975, p = 0.615), suggesting that the data were normally distributed. Homogeneity of variances was tested using Levene's test, which showed non-significant results (e.g., ERQ scores at baseline: F(1, 28) = 0.784, p = 0.384; MABC scores at baseline: F(1, 28) = 0.932, p = 0.343), indicating equal variances across groups. Additionally, Mauchly's test of sphericity was not significant for both ERQ and MABC scores, confirming that the assumption of sphericity was met (ERQ: $\chi^2(2) = 3.45$, p = 0.178; MABC: $\chi^2(2) = 2.68$, p = 0.262). These results validate the use of repeated measures ANOVA for the current study.

Table 2

ANOVA Summary for Emotion Recognition and Mind-Body Connection

Source	SS	df	MS	F	p
Between-Subjects					
Group	1258.70	1	1258.70	15.76	.000
Error	4469.10	28	159.61		
Within-Subjects					

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Time	2670.35	2	1335.17	20.78	.000
Time * Group	1960.65	2	980.32	15.26	.000
Error (Within)	3598.50	56	64.26		
Total	13957.30	89			

Table 2 summarizes the results of the repeated measures ANOVA for emotion recognition and mind-body connection scores. The analysis revealed a significant main effect for group, $F(1, 28) = 15.76$, $p < .001$, indicating a significant difference between the intervention and control groups. There was also a significant main effect for time, $F(2, 56) = 20.78$, $p < .001$, suggesting significant changes over time across both groups. The interaction effect between time and group was also significant, $F(2, 56) = 15.26$, $p < .001$, indicating that the changes over time differed significantly between the intervention and control groups. These results support the effectiveness of the intervention in improving emotion recognition and mind-body connection.

Table 3

Bonferroni Post-Hoc Test for Emotion Recognition and Mind-Body Connection

Comparison	Mean Difference	SE	p
Baseline vs. Post-Intervention (Intervention Group)	-13.90	1.65	.000
Baseline vs. Follow-up (Intervention Group)	-12.10	1.70	.000
Post-Intervention vs. Follow-up (Intervention Group)	1.80	1.60	.300
Baseline vs. Post-Intervention (Control Group)	-0.70	1.70	1.000
Baseline vs. Follow-up (Control Group)	-0.10	1.70	1.000
Post-Intervention vs. Follow-up (Control Group)	-0.80	1.60	1.000

Table 3 presents the Bonferroni post-hoc test results for emotion recognition and mind-body connection scores. In the intervention group, the mean difference between baseline and post-intervention was -13.90 (SE = 1.65, $p < .001$), and between baseline and follow-up was -12.10 (SE = 1.70, $p < .001$), indicating significant improvements from baseline to post-intervention and follow-up. The mean difference between post-intervention and follow-up was 1.80 (SE = 1.60, $p = .300$), which was not significant, suggesting the improvements were maintained. In the control group, no significant differences were observed between baseline and post-intervention (mean difference = -0.70, SE = 1.70, $p = 1.000$), baseline and follow-up (mean difference = -0.10, SE = 1.70, $p = 1.000$), or post-intervention and follow-up (mean difference = -0.80, SE = 1.60, $p = 1.000$). These findings highlight the sustained effectiveness of the intervention over time.

4. Discussion and Conclusion

The results of this study provide compelling evidence supporting the effectiveness of Acceptance and Commitment Therapy (ACT) in enhancing emotion recognition and strengthening the mind-body connection. The significant improvements observed in the intervention group, compared to the control group, align with existing literature on the efficacy of ACT in various psychological domains.

Emotion recognition is a critical component of emotional intelligence, impacting social interactions and mental health. The significant improvement in emotion recognition among participants in the ACT group corroborates findings from previous research. ACT's emphasis on mindfulness and present-moment awareness likely played a pivotal role in these improvements. By fostering a non-judgmental awareness of thoughts and emotions, ACT helps individuals become more attuned to their emotional states and those of others (Hayes et al., 2006). This enhanced attunement can lead to better emotion recognition, as individuals learn to observe emotions without immediate reaction or avoidance.

The improvements in emotion recognition observed in this study are consistent with findings by Abad and Arab (2018), who reported that ACT significantly improved psychological flexibility among substance-dependent women. Psychological flexibility, a core outcome of ACT, is closely related to the ability to recognize and adaptively respond to emotions (Abad & Arab, 2018). This enhanced flexibility likely contributes to better emotion recognition, as individuals become more adept at observing and understanding their emotional experiences.

The mind-body connection is crucial for overall well-being, influencing how individuals respond to physical and

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emotional stressors. The significant enhancement of the mind-body connection in the ACT group highlights ACT's potential in promoting holistic health. ACT's mindfulness practices encourage individuals to pay attention to their bodily sensations and emotional states, fostering a stronger connection between mind and body (Hayes et al., 2012). This connection is essential for effectively managing stress and improving overall health.

Faizah et al. (2021) found that combining social support with ACT significantly improved the subjective well-being and mental health of COVID-19 patients, underscoring ACT's role in enhancing overall health (Faizah et al., 2021). This study's findings are in line with these results, suggesting that ACT can effectively strengthen the mind-body connection by promoting mindfulness and acceptance.

The significant improvements in emotion recognition and the mind-body connection observed in this study highlight ACT's unique contributions compared to other therapeutic approaches. While traditional cognitive-behavioral therapy (CBT) focuses on changing the content of thoughts, ACT emphasizes changing the relationship with thoughts and emotions through acceptance and mindfulness (Najvani et al., 2015; Osaji et al., 2020; Petkus & Wetherell, 2013). This approach can be particularly effective in enhancing psychological flexibility, which is crucial for emotion recognition and the mind-body connection.

Borhani et al. (2021) demonstrated that combining cognitive therapy with ACT effectively reduced symptoms of depression and psychosomatic problems among firefighters. This combination of therapies underscores the complementary nature of ACT and cognitive approaches, suggesting that ACT's focus on acceptance and values-based action can enhance the benefits of traditional cognitive interventions (Borhani et al., 2021).

The significant improvements observed at the four-month follow-up indicate that the benefits of ACT are not only immediate but also sustainable. This long-term effectiveness is crucial for individuals seeking lasting improvements in emotion recognition and the mind-body connection. ACT's emphasis on values clarification and committed action helps individuals integrate the skills learned during therapy into their daily lives, promoting sustained behavior change and psychological well-being (Li et al., 2022; Lill & Lill, 2022; Rauwenhoff et al., 2023).

Fang et al. (2022) confirmed the long-term benefits of ACT in enhancing mental health among individuals with advanced cancer, highlighting its potential for sustainable improvements. This study's findings align with these results, suggesting that ACT can provide lasting benefits in various populations (Fang et al., 2022).

The findings of this study have significant clinical implications. The demonstrated effectiveness of ACT in enhancing emotion recognition and the mind-body connection suggests that it can be a valuable intervention for individuals struggling with emotional and psychosomatic issues. Clinicians can incorporate ACT into their therapeutic practices to help clients develop greater psychological flexibility, improve emotion recognition, and strengthen the mind-body connection.

Mosher et al. (2022) conducted a pilot randomized trial on ACT for patient fatigue interference and caregiver burden in advanced gastrointestinal cancer, showing significant improvements in both patients' and caregivers' quality of life. These findings support the broader applicability of ACT in diverse clinical settings, highlighting its potential to address complex psychological and physical health challenges (Mosher et al., 2022).

Despite the promising results, this study has several limitations. The sample size was relatively small, which may limit the generalizability of the findings. Future studies with larger sample sizes are needed to confirm these results and explore the effects of ACT in more diverse populations. Additionally, the study relied on self-report measures, which can be subject to response biases. Incorporating objective measures of emotion recognition and the mind-body connection in future research could provide a more comprehensive understanding of ACT's effects.

Further research should also explore the mechanisms underlying the improvements in emotion recognition and the mind-body connection observed in this study. Understanding these mechanisms can help refine ACT interventions and enhance their effectiveness. Moreover, comparing the efficacy of ACT with other therapeutic approaches in larger randomized controlled trials can provide valuable insights into the relative benefits of different treatments.

This study provides robust evidence for the effectiveness of Acceptance and Commitment Therapy (ACT) in enhancing emotion recognition and strengthening the mind-body connection. The significant improvements observed in the intervention group, sustained over a four-month follow-up, highlight ACT's potential as a valuable therapeutic intervention. By promoting mindfulness, acceptance, and values-based action, ACT helps individuals develop greater psychological flexibility, improve their emotional awareness, and foster a stronger connection between mind

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and body. These findings have important clinical implications, suggesting that ACT can be effectively integrated into therapeutic practices to address a wide range of psychological and physical health issues. Further research is needed to confirm these results and explore the underlying mechanisms, paving the way for more refined and effective ACT interventions in the future.

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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Ethics Considerations

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

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