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Acceptance and Commitment-Based Therapy for Improving Emotional Recognition and Distress Tolerance in Female Students with Disruptive Mood Dysregulation Disorder

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ABSTRACT

Objective: The present study aimed to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on emotional recognition and distress tolerance in female students with Disruptive Mood Dysregulation Disorder (DMDD).

Methods: This applied research employed a semi-experimental design with a pre-test–post-test control group. The statistical population consisted of all first-grade female secondary school students in Qods city during the academic year 2022–2023. A total of 32 students who scored above the cutoff (≥4 in self-report and ≥3 in parent-report) on the Affective Reactivity Index and met clinical interview criteria for DMDD were selected using purposive sampling. Participants were randomly assigned to experimental (n = 16) and control (n = 16) groups. Data collection tools included the Ekman and Friesen Facial Emotion Recognition Questionnaire and the Simmons and Gaher Distress Tolerance Scale. The experimental group received ACT in eight sessions (twice weekly, 90 minutes each), while the control group received no intervention. Data were analyzed using multivariate analysis of covariance.

Results: Findings indicated that the experimental group showed significantly higher scores in emotional recognition and distress tolerance compared to the control group ($p < 0.05$). Thus, ACT was effective in improving emotional recognition and distress tolerance among female students with DMDD.

Conclusions: Considering the positive effects of ACT on emotional recognition and distress tolerance in female students with DMDD, it is recommended that counselors and psychologists integrate ACT-based exercises into therapeutic interventions.

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Introduction

The rapid physical and neurological development that occurs during adolescence can significantly influence adolescents' social, emotional, and psychological well-being (Best & Ban, 2021; Kiarostami et al., 2022; Vafaei et al., 2023). Among the factors that can adversely affect adolescents' mental health, anger and aggression are particularly noteworthy. One disorder in which anger and aggression play a central role is Disruptive Mood Dysregulation Disorder (DMDD), which is characterized by recurrent and severe temper outbursts, either verbal or behavioral, that are grossly disproportionate in intensity or duration relative to the triggering situation or stimulus (Bruno et al., 2019; Meyers et al., 2017). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), these outbursts generally occur at least three times per week, persist for at least one year, and symptoms must appear before the age of 10, with diagnosis being made between ages 6 and 18 (Chase et al., 2020). DMDD was introduced as a new diagnostic category in DSM-5. Its primary features include chronic and severe irritability combined with frequent temper outbursts that occur at least three times per week and are developmentally inappropriate (Bruno et al., 2019).

A review of previous studies indicates that deficits in emotion recognition are observable across a variety of psychiatric conditions, including mood disorders (Nyquist & Luebbe, 2022), eating disorders (Price & Duman, 2020), personality disorders (Daros et al., 2013), and adjustment disorders (Domhardt & Baumeister, 2018). Emotion recognition is critical for social interactions, as it involves awareness of both one's own inner world and that of others—including thoughts, feelings, and intentions—concepts closely linked to Theory of Mind (ToM) (Dzedzickis et al., 2020). ToM, as a social metacognitive process, facilitates self-insight and empathy toward others. Research has shown that patients with mood disorders demonstrate distinct deficits in recognizing emotions (Carlson et al., 2013). For example, Bora et al. (2016) found that individuals with mood disorders show biases in identifying facial expressions reflecting emotional intensity. Specifically, they tend to exhibit attentional bias toward sad stimuli during both early and late stages of cognitive processing, which contributes to persistent rumination on sadness. Furthermore, such patients allocate different levels of cognitive resources to various intensities of sad facial expressions in the preconscious stages of processing, with stronger perceptions of sadness demanding greater cognitive resources.

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Another important concept, distress tolerance, has been identified as a risk factor in the onset and maintenance of various psychopathologies, including mood disorders (Byrne et al., 2024). Distress tolerance refers to the extent to which an individual is able to endure negative psychological or physiological states (Brown et al., 2022). Empirical evidence suggests that low distress tolerance significantly predicts the use of maladaptive emotion regulation strategies, such as emotional suppression, avoidance, and rumination (Li et al., 2024). Individuals with low tolerance for emotional distress experience intense emotional disruption, which compels them to seek relief, often at the expense of being unable to focus on other tasks. Consequently, diminished distress tolerance fosters maladaptive responses to stress (Gallego et al., 2020).

Acceptance and Commitment Therapy (ACT), a third-wave behavioral therapy, has emerged as a promising transdiagnostic intervention. Supported by more than 100 randomized controlled trials, ACT has been shown to be effective in treating depression, anxiety, mood disorders, eating disorders, stress, stigma, and self-harm (Hughes et al., 2017; Motamedi et al., 2019). Moreover, ACT may be more effective than cognitive-behavioral therapy (CBT) in improving depressive symptoms (Bai et al., 2020). The central mechanism of ACT lies in enhancing psychological flexibility, defined as the individual's ability to accept negative emotions, thoughts, and feelings while maintaining the capacity to choose adaptive responses (Scott & McCracken, 2015). ACT employs six core processes, which are promoted through psychoeducation, mindfulness exercises, metaphors, and experiential practices (Blackledge & Barnes-Holmes, 2009). Evidence indicates that ACT is at least as effective as CBT, and in some cases even superior (Ruiz, 2012).

Despite growing evidence, there remains a lack of studies examining the effectiveness of ACT on emotion recognition and distress tolerance. Such research is essential for expanding the scientific knowledge base of mental health interventions and ensuring the applicability of therapeutic approaches to both clinical and non-clinical populations. In light of these considerations, the present study seeks to address the following question: Is Acceptance and Commitment Therapy effective in improving emotion recognition and distress tolerance among adolescent girls diagnosed with Disruptive Mood Dysregulation Disorder?

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Material and Methods

This study was applied in nature and employed a quasi-experimental design with a pre-test–post-test structure, including two experimental groups and one control group. The statistical population consisted of all female students enrolled in lower secondary schools (middle school) in Qods City during the 2022–2023 academic year. Due to the relative rarity of Disruptive Mood Dysregulation Disorder (DMDD), the researcher visited the majority of girls' schools at this level in Qods. Using purposive sampling (a non-probability method in which participants are selected based on specific criteria), 46 students were identified who met the following conditions: a cut-off score of 4 on the Emotional Reactivity Index (self-report), a cut-off score of 3 on the parent-report version, and fulfillment of DMDD diagnostic criteria through clinical interview. These participants were then randomly assigned into two equal groups (16 in Experimental Group and 16 in the Control Group).

Inclusion Criteria

- Clinical diagnosis of DMDD based on DSM-5 criteria and clinical interview.
- Age range: 11–16 years.
- Physical health without major medical problems.
- Absence of other major psychological disorders.
- No concurrent participation in intervention programs during the study period or within the past six months.
- Written informed consent from students to participate.
- Scores above the mean on the Emotional Reactivity Questionnaire.
- Completion of all self-report measures.
- Ability to attend intervention sessions.

Exclusion Criteria

- Lack of DMDD diagnosis based on DSM-5 criteria and clinical interview.
- Failure to complete intervention-related homework or repeated disruption of treatment sessions.
- Absence from more than three treatment sessions.
- Failure to complete study instruments properly.

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Instruments

Distress Tolerance Scale (DTS): Developed by Simons and Gaher (2005), this 15-item questionnaire includes four subscales:

- *Tolerance of Emotional Distress* (items 1, 3, 15),
- *Absorption by Negative Emotions* (items 2, 4, 5),
- *Appraisal of Distress* (items 6, 7, 9, 10, 11, 12),
- *Regulation Efforts to Alleviate Distress* (items 8, 13, 14).

Responses are rated on a 5-point Likert scale (1 = strongly agree, 5 = strongly disagree). Item 6 is reverse-scored. The cut-off score is 45; total scores range from 15 to 75, with higher scores indicating greater distress tolerance. Simons and Gaher (2005) reported Cronbach's alpha coefficients of 0.72, 0.82, 0.78, and 0.70 for the subscales, and 0.82 for the total scale. Reliability and validity have been confirmed in Iranian samples as well, with internal consistency coefficients ranging from 0.64 to 0.82 and overall reliability at 0.89. In the present study, Cronbach's alpha was calculated as 0.90.

Facial Emotion Recognition Test: Originally developed by Ekman and Friesen (2003), this test includes 42 black-and-white photographs depicting six basic emotions: anger, disgust, fear, happiness, sadness, and surprise. Stimuli were selected from 110 images of facial expressions across age and gender groups. Forty-two photographs with ≥85% recognition agreement among a pilot sample of 42 psychology students were included as test items, and 7 photographs with 100% agreement were used as answer options. The test was administered in a multiple-choice format: participants viewed the 42 images on a computer screen in randomized order and selected one of the seven emotion options displayed on cards. Test–retest reliability has been reported as 0.85, with Cronbach's alpha in Iranian samples at 0.83 (Farhoumandi et al., 2021).

Procedure

Prior to the intervention, all groups completed the pre-test measures. The experimental groups then received Acceptance and Commitment Therapy (ACT) in eight sessions, held twice per week, each lasting 90 minutes. Sessions were delivered by a licensed therapist with experience in behavioral problems and certified training in ACT, under the supervision of the research advisor. After the intervention, two groups completed the post-test measures. The control group received no intervention during the study but was placed on a waiting list to receive ACT after the completion

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of the trial to ensure ethical considerations. Data were analyzed using multivariate analysis of covariance (MANCOVA) in SPSS version 26.

Acceptance and Commitment Therapy Protocol

Table 1. Summary of ACT Sessions (Hayes, Strosahl, & Wilson, 2011)

Session	Content Summary
1	Introduction of therapist and co-therapist; group member introductions; group guidelines (comfort, confidentiality); overview of treatment plan (number/duration of sessions, therapeutic process, participation expectations, homework assignments, attendance rules); discussion of treatment rationale; homework assigned.
2	Review of homework; introduction of the concept of *creative hopelessness*; metaphors: *tug-of-war with a monster*, *falling into a hole*; homework assigned.
3	Review of homework and Session 2; introduction of *control as the problem*; metaphors: *passengers on the bus*, *chocolate cake*; homework assigned.
4	Review of homework and Session 3; introduction of *cognitive defusion*; metaphors: *the grocery store*, *the lion*; homework assigned.
5	Review of homework and Session 4; introduction of *mindfulness*; exercises: *mindful walking with a chatterbox mind*, *mindful eating*; homework assigned.
6	Review of homework and Session 5; introduction of *values*; exercises: *bull's-eye worksheet*, *unwanted guest metaphor*; homework assigned.
7	Review of homework and Session 6; introduction of *self-as-context* and further mindfulness practices; metaphors: *the chessboard*, *television set*; exercise: *breath counting*; homework assigned.
8	Termination phase; review of sessions; discussion of participants' progress; summary of covered topics; closure of therapy.

Results

Tables 2 and 3 present the descriptive indices of emotion recognition and distress tolerance in the experimental group and the control group.

Table 2. Means and Standard Deviations of Emotion Recognition in Experimental and Control Groups

Variable	Stage	Group	N	Mean	Minimum	Maximum	SD
Facial Emotion Recognition	Pre-test	1	16	18.88	0	31	7.02
		2	16	19.81	12	27	4.25
	Post-test	1	16	24.19	16	34	5.36
		2	16	28.45	20	35	3.98

Table 3. Means and Standard Deviations of Distress Tolerance in Experimental and Control Groups

Subscale	Stage	Group	N	Mean	Minimum	Maximum	SD
Tolerance	Pre-test	1	16	5.94	3.00	12.00	2.57
		2	16	8.06	5.00	12.00	2.32
	Post-test	1	16	8.13	6.00	12.00	1.82
		2	16	9.44	7.00	12.00	1.67
Absorption	Pre-test	1	16	5.94	3.00	10.00	2.38
		2	16	6.50	4.00	10.00	1.97
	Post-test	1	16	7.81	3.00	10.00	2.14
		2	16	9.19	7.00	11.00	1.17

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Appraisal	Pre-test	1	16	14.31	8.00	21.00	3.98
		2	16	14.75	9.00	20.00	4.17
	Post-test	1	16	17.13	10.00	24.00	4.15
		2	16	17.69	13.00	27.00	3.79
Regulation	Pre-test	1	16	6.25	3.00	13.00	3.61
		2	16	7.31	3.00	13.00	3.63
	Post-test	1	16	9.31	4.00	15.00	2.96
		2	16	9.81	6.00	14.00	2.51

Assumption Testing for ANCOVA

To determine whether post-test group differences were statistically significant, Analysis of Covariance (ANCOVA) was conducted. Prior to analysis, assumptions were checked:

Normality: The Shapiro–Wilk test indicated nonsignificant results ($p > .05$), confirming normal distribution of the data.

Homogeneity of variances: Levene's test was nonsignificant for all variables ($p > .05$), supporting equal variances across groups.

Homogeneity of regression slopes: The interaction effect of pre-test scores × group was nonsignificant ($p > .05$), satisfying this assumption.

Multicollinearity: Variance Inflation Factor (VIF) was equal to 1, indicating absence of collinearity among variables.

Hypothesis Testing

Hypothesis 1. Acceptance and Commitment Therapy (ACT) has an effect on emotion recognition in adolescent girls with DMDD.

Table 4. ANCOVA Results for Emotion Recognition

Source	SS	DF	MS	F	Sig.
Model	991.570a	2	495.785	20.651	.000
Groups	991.570	2	495.785	20.651	.000
Error	1104.335	46	24.007		

As shown in Table 4, post-test scores on emotion recognition differed significantly among groups ($p < .05$). Thus, ACT significantly improved emotion recognition in adolescents with DMDD.

Hypothesis 2. Acceptance and Commitment Therapy (ACT) has an effect on distress tolerance in adolescent girls with DMDD.

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Table 5. ANCOVA Results for Distress Tolerance

Source	SS	DF	MS	F	Sig.
Model	480.298	2	240.149	3.197	.050
Groups	480.298	2	240.149	3.197	.049
Error	3455.702	46	75.124		

As shown in Table 5, post-test scores on distress tolerance also differed significantly among groups ($p < .05$). Thus, ACT significantly improved distress tolerance in adolescents with DMDD.

Discussion

The findings showed that Acceptance and Commitment Therapy (ACT) had a significant effect on improving emotion recognition and distress tolerance in female students with Disruptive Mood Dysregulation Disorder (DMDD). In explaining these findings, it can be said that ACT may influence the improvement of emotion recognition in students with DMDD in several ways. Within ACT, students learn that negative emotions (such as anger, sadness, or anxiety) are a natural part of life and should not be avoided. Accepting these emotions enables individuals to recognize and label them more accurately (Bavi et al., 2024; Reyes-Ortega et al., 2020).

Mindfulness, one of the key components of ACT, helps students direct their attention to the present moment. This skill allows them to observe and identify their emotions without judgment. Moreover, in ACT, students are encouraged to defuse from negative thoughts and self-labels such as *"I am always angry."* Instead, they learn to see such thoughts as temporary mental events. This process enhances their ability to recognize emotions more precisely and prevents exaggerated emotional reactions (Stein & Witkiewitz, 2020).

ACT also emphasizes discrimination among different emotions, encouraging students to accurately identify their feelings and use this awareness to guide behavior. Furthermore, ACT enables students to regulate their actions in line with their personal values rather than being driven by intense emotional reactions. This value-guided action requires correct recognition of emotions and making more adaptive decisions when facing them.

The findings regarding the effect of ACT on distress tolerance are consistent with the results of Sander et al. (2021). For female students with DMDD—who often struggle with intense emotions such as anger and anxiety—ACT can have positive impacts on enhancing distress tolerance. In ACT, students are taught that negative emotions like anger, frustration, and anxiety are natural

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parts of human experience. Acceptance helps them to stop avoiding emotions and instead face them directly. This approach allows students to confront their feelings and build greater tolerance toward distress.

ACT uses mindfulness techniques to reduce automatic and extreme reactions to emotions. For example, students learn to observe their emotional experiences without judgment or impulsive responses (McCracken & Vowles, 2014). This not only reduces the intensity of emotional arousal but also increases the ability to withstand distress. ACT also fosters psychological flexibility, encouraging students to accept challenges instead of resisting them, thereby helping them to adapt more effectively to stressful situations. As a result, they display greater resilience and rely on more constructive coping behaviors rather than avoidance or aggression.

Another important mechanism in ACT is commitment to goals and values. By learning to stay committed to their personal values even when experiencing negative emotions, students avoid being paralyzed by distress. Instead, they continue progressing in their personal growth, using their values as a compass for behavior (Neubert & Wu, 2012).

One limitation of the present study was the reliance on self-report measures, which may be subject to bias. Additionally, due to time constraints, it was not possible to conduct a follow-up phase to assess the persistence of treatment effects over time.

The results highlight the importance of implementing interventions such as ACT to enhance cognitive flexibility and distress tolerance in female students with DMDD, ultimately reducing their psychological difficulties. Considering the significant effects of ACT on improving emotional functioning, it is recommended that school counselors and clinical psychologists incorporate ACT-based exercises into therapeutic sessions.

For future research, it is suggested to include follow-up assessments to evaluate the long-term effects of ACT. Compare ACT with other evidence-based therapies such as Mindfulness-Based Interventions and Dialectical Behavior Therapy (DBT) is a suggestion. Finally, using multi-method assessments (e.g., behavioral tasks, teacher/parent ratings) in addition to self-reports to strengthen validity is recommended.

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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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