




# Comparison of the Effectiveness of Unified Transdiagnostic Therapy and Reality Therapy on Social Information Processing and Emotion Regulation in Students with Disruptive Mood Dysregulation Disorder

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### ABSTRACT

**Objective:** Disruptive mood dysregulation disorder (DMDD), classified under depressive disorders, leads to functional impairments across various domains and a reduction in mental health during adulthood. The current study aimed to compare the effectiveness of unified transdiagnostic therapy and reality therapy on social information processing and emotion regulation among students with disruptive mood dysregulation disorder.

**Methods and Materials:** The research employed a quasi-experimental design with pre-test, post-test, and follow-up assessments, including a control group. The sample consisted of all 8 to 11-year-old boys diagnosed with DMDD in Isfahan, along with their mothers, who visited the Superior Counseling Center and the Child and Adolescent Home affiliated with the Isfahan Municipal Cultural, Social, and Sports Organization in Spring 2022. Forty-five participants were selected through purposive sampling and then randomly assigned into three groups of fifteen (two experimental and one control group). Research Tools: The research instruments included the Disruptive Mood Dysregulation Diagnostic Scale – Parent Form (DMDDS) (Shahmohammadi et al., 2021), Social Stories (Turkospa & Bryan, 1994), and the Cognitive Emotion Regulation Questionnaire (Garnefski, 2007). The experimental groups received separate interventions (unified transdiagnostic therapy and reality therapy), each consisting of ten 60-minute sessions for the students and thirty-minute sessions for the parents, while the control group received no intervention. Data Analysis: The data were analyzed using SPSS version 23 and repeated measures analysis of variance.

**Findings:** The results indicated that both unified transdiagnostic therapy and reality therapy significantly improved social information processing and both positive and negative emotion regulation in students with DMDD at post-test ( $p < .01$ ), and these effects were maintained at follow-up ( $p < .001$ ). No significant

difference was found between the two therapeutic methods in this regard. Only the goal clarification aspect of unified transdiagnostic therapy was effective at post-test, showing greater efficacy than reality therapy, though the effectiveness of both therapies was not significant at follow-up.

**Conclusion:** Given the effectiveness of unified transdiagnostic therapy and reality therapy on social information processing and emotion regulation in students with disruptive mood dysregulation disorder, both therapies can be utilized in clinics and specialized counseling centers to improve outcomes for students with this disorder.

**Keywords:** *Unified Transdiagnostic Therapy, Reality Therapy, Social Information Processing, Emotion Regulation, Disruptive Mood Dysregulation Disorder.*

## 1. Introduction

The onset of emotional disorders, such as disruptive mood dysregulation disorder (DMDD) categorized under depressive disorders, during childhood or adolescence is associated with greater functional impairment across a wide range of areas compared to onset in adulthood (Hannigan et al., 2017; Ogundele, 2018). For example, individuals with a history of DMDD had higher rates of regular smoking, involvement in illegal and risky activities, unlawful entry into buildings or properties, and were also at high risk for long-term outcomes including multiple psychiatric diagnoses (such as depression and borderline personality disorder), poor academic progress, and poverty (APA, 2022; Martins, 2021). Symptoms of disruptive mood dysregulation disorder include persistent and acute outbursts of anger that are inappropriate for the developmental age, manifesting as irritability and anger occurring continuously two or three times a week. The primary feature of this disorder is severe and persistent irritability. The clinical presentation of irritability has two forms: the first is recurrent anger outbursts in response to frustration, which can be verbal or behavioral and must occur repeatedly, within a minimum of one year, and in at least two different settings. The second clinical presentation is a consistently irritable mood, which must be present for a significant part of the day, nearly every day, and be noticeable to others (APA, 2022).

This disorder is characterized by severe impairments in emotional and behavioral regulation, and individuals with this condition struggle with social information processing and emotion regulation. Impairment in social information processing in students with chronic irritability puts them at higher risk for experiencing frequent interpersonal problems (Shahmohammadi Gahsare et al., 2021; Stringaris et al., 2018). Compared to typical students in an ambiguous social situation, they are more prone to bias in information processing, resulting in fewer social responses and more

hostile behaviors as they have difficulty in recognizing emotions through facial expressions, particularly negative emotions, and tend to negatively misinterpret neutral faces (Pourmaveddat et al., 2021; William E. Copeland et al., 2014). The tendency to interpret ambiguous social cues as threatening seems to increase anger in these individuals, leading to the provocation of reactive aggression (Deveney et al., 2019). The more aggressive children's social information processing, the more likely they are to confront or verbally clash with peers, and the less likely they are to agree with their peers; the higher children's social information processing, the more likely they are to agree with their peers (Hubbard et al., 2023). Social information processing is a mechanism for encoding, processing, storing, and retrieving social data that influences individual social behaviors (Bennett et al., 2005). Based on the cognitive-social approach by Crick and Dodge for explaining aggressive behavior in children and adolescents, in ambiguous social situations, aggressive children and adolescents show biases in processing information; they exhibit a pattern of cognitive distortions when faced with a problematic social stimulus. This model includes six stages (encoding social cues, mental interpretation and representation of these cues, clarifying goals, searching for social responses, selecting a response, and behavioral response) that are activated when individuals face social situations (Crick & Dodge, 1994).

For children with persistent irritability, the continuation between symptoms of irritability and subsequent depressive symptoms may indicate a dysfunction in emotion regulation that exists both in the context of irritability and symptoms of depression. The concept of mood regulation disorder, a mood disorder characterized by irritability in childhood and associated with subsequent depression (Brotman et al., 2017; Orri et al., 2019). Emotion regulation is a complex structure that "defines the processes that enable an individual to manage emotional arousal." These processes appear during

infancy and expand during childhood and adolescence, encompassing both innate personal characteristics and social and environmental influences (Crowell, 2021). Cognitive emotion regulation strategies include: self-blame, blaming others, rumination, catastrophizing, perspective-taking, positive refocusing, positive reappraisal, acceptance, and planning (Garnefski & Kraaij, 2006; Garnefski et al., 2001; Ghoreishi & Behboodi, 2017). The use of cognitive styles such as rumination, catastrophizing, and self-blame may make individuals more vulnerable to emotional problems, while the use of other styles, such as positive reappraisal, makes individuals less vulnerable (Garnefski & Kraaij, 2006). Adolescents with externalizing problems report high levels of maladaptive behavioral (not cognitive) emotion regulation strategies (te Brinke et al., 2021). Strategies such as blaming others and positive reappraisal of situations help predict early psychotic traits and are identified as protective factors. In contrast, having a catastrophizing strategy is posited as a risk factor for secondary psychotic traits (Kyranides & Neofytou, 2021). Education and improvement in emotion regulation can be effective in reducing aggression and rumination and increasing self-control and impulsivity in students, and individuals capable of regulating their emotions enjoy better social performance (Taheri et al., 2022).

Despite the significant challenges that irritable children face, often interventions for treating irritability or underlying mechanisms associated with disruptive mood dysregulation disorder have not been created, and most interventions do not easily allow the simultaneous implementation of individual-focused strategies on child and structured parent-child interactions as a primary underlying framework. Both parent management interventions and strategies based on emotional exposure, self-regulation, and frustration management are assumed to be key elements in treating children's irritability (Ehrenreich-May & Chu, 2013; Ehrenreich-May et al., 2017; Stringaris et al., 2018). Recently, there has been a significant focus on delineating common and unique causal processes in psychopathology (Lahey, Krueger, Rathouz, Waldman, & Zald, 2017). Transdiagnostic models of psychopathology propose underlying transdiagnostic mechanisms such as emotion regulation and social information processing as factors maintaining psychopathology (Dodge & Pettit, 2003; Ehrenreich-May & Chu, 2013; Ehrenreich-May et al., 2017; Leibenluft, 2011). Unified transdiagnostic therapy, a cognitive-behavioral intervention focused on emotion, consists of five core modules or components based on

elements of proven effective cognitive-behavioral therapy targeting negative feelings and responses to emotions (Barlow et al., 2014; Barlow et al., 2020). This therapy, by targeting distressing reactions and problematic strategies (such as repetitive negative thinking and rumination) in regulating the intensity of negative emotions and increasing the use of adaptive strategies (such as cognitive reappraisal), affects the emotional processes involved in emotional disorders (Barlow et al., 2014). The principles of unified transdiagnostic therapy of emotional disorders in children and adolescents are: (a) increasing emotional awareness; (b) preventing avoidance strategies through engagement in present-focused awareness during intense emotions; (c) increasing cognitive flexibility; and (d) modifying maladaptive action tendencies (i.e., emotional behaviors) through exposure and behavioral activation techniques. This therapy is designed as group therapy, and parents participate in the therapy in addition to the child (Kennedy et al., 2021). Initial data shows that the unified transdiagnostic therapy protocol for children and adolescents is effective in reducing the severity of irritability, emotional disorders and symptoms, cognitive emotion regulation, and increasing emotional-social skills in adolescents (Mehdi Akbari et al., 2015; M. Akbari et al., 2015; Alavi et al., 2022; Barlow et al., 2020; Ehrenreich-May et al., 2017; Fonseca-Pedrero et al., 2023; Hawks et al., 2020; Mehrdadfar et al., 2023; Milgram et al., 2022; Osmani & Shokri, 2019; Pouladi et al., 2022).

Reality therapy, based on William Glasser's choice theory introduced in 1965, posits that all problems arise from unmet basic needs. If all five basic needs of an individual are met, they can successfully control their behavior, and when failing to meet their needs, they exhibit risky behaviors. Glasser believed that efforts to change behavior based on the individual's own desire (internal control) would be more successful than efforts to follow others (external control) (Glasser, 2010). Meeting our needs should begin from our childhood and continue throughout a person's life. It has been proven that reality therapy can help students work on their problematic behaviors (Shafie et al., 2019). Reality therapy provides effective therapy for individuals of all ages, including children and adolescents. However, counseling must consider issues such as cognitive and language development levels and individuality (Sori & Robey, 2013) and can easily present reality therapy concepts such as the quality world, needs, performing assessments, and planning through creative artistic mediums like painting for elementary school students' goals and plans (Davis, 2011).

Reality therapy can enable students to be more aware of their actions and help them better understand themselves (Shafie et al., 2019; Shafiee, 2021). Sullo (1993) used Glasser's choice theory and reality therapy to provide a method for helping children through self-assessment of behaviors to responsibly and balancedly meet their basic needs (Sullo, 1993). On the other hand, it teaches parents how to create an environment at home that encourages children to balancedly meet their four basic psychological needs. Research indicates the effectiveness of reality therapy on aggression, emotion regulation, emotional balance, responsibility, bias interpretation, self-regulatory competence, positivity, and interpersonal relationships in adolescents (Ahmadi Tabar et al., 2021; Behmanesh et al., 2021; Cervantes & Robey, 2018; Davis, 2011; Elyasi & Eftekhary, 2023; Eslami Hasanabadi et al., 2023; Eslami Hassanabadi et al., 2023; Ghoreishi & Behboodi, 2017; Khaleghi et al., 2017; Nowruzpoor et al., 2021; Nurjanah et al., 2020; Puh, 2023; Shafie et al., 2019; Shafiee, 2021; Sori & Robey, 2013).

As stated, research has shown that both unified transdiagnostic therapy and reality therapy are effective for emotional disorders, thus there is potential for both therapies to be effective for disruptive mood dysregulation disorder. However, no research has yet been conducted on the impact and comparison of unified transdiagnostic therapy and reality therapy on this disorder. Therefore, the present study was conducted with the aim of comparing the effectiveness of unified transdiagnostic therapy and reality therapy on social information processing and emotion regulation in students with disruptive mood dysregulation disorder.

## 2. Methods and Materials

### 2.1. Study Design and Participants

The research method for this study was a quasi-experimental design involving a pre-test, post-test, and follow-up with a control group. The study population included all 8 to 11-year-old boys diagnosed with disruptive mood dysregulation disorder in Isfahan, along with their mothers, who visited the Superior Counseling Center and the Child and Adolescent Home affiliated with the Isfahan Municipal Cultural, Social, and Sports Organization in Spring 2022. Among them, 45 students with disruptive mood dysregulation disorder along with their mothers were purposively selected based on inclusion criteria for participation in the study and were randomly assigned into three groups of fifteen (two experimental and one control group). The inclusion criteria for the research were: 1)

Parental and child's informed consent to participate in the study; 2) Children aged 8 to 11 years; 3) Male gender; 4) Diagnosis of disruptive mood dysregulation disorder in the student through obtaining a score at least one standard deviation above the mean on the Disruptive Mood Dysregulation Diagnostic Scale – Parent Form (DMDDS) administered by one of the parents (mother) and also through a clinical interview by a clinical psychologist based on the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders; 5) Parental education level sufficient to respond to tests and perform tasks (at least completed primary education); and 6) Neither the student nor the mother had participated in any other therapeutic or educational course in the past six months. The exclusion criteria were: 1) Having symptoms and criteria for bipolar disorder or oppositional defiant disorder; 2) Non-attendance at therapy sessions and absence of more than one session; 3) Non-cooperation and failure to adequately respond to test questions; and 4) Withdrawal of parental consent for their and their child's participation in the planned sessions.

### 2.2. Measures

#### 2.2.1. Disruptive Mood Dysregulation Disorder

In addition to using a clinical interview by a specialist according to the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, the DMDDS was used to select students with disruptive mood dysregulation disorder. This scale was developed by Shahmohammadi, Abedi, Khiyatan, and Aghaei (2021) to identify students with this disorder and includes 26 items on a 5-point scale with four factors. The score range is between 26 and 130, with higher scores indicating greater severity of the disorder. The validity and reliability of this questionnaire were examined by the developers, and the results showed that the content, face, and construct validity indices were acceptable for parents and could be used to assess disruptive mood dysregulation in children aged 6-12 years (Shahmohammadi Gahsare et al., 2021). The overall reliability coefficient of the scale by Cronbach's alpha was .894.

#### 2.2.2. Social Information Processing

Social stories were designed by Turkospa and Bryan (1994) based on Dodge's (1986) social processing approach. Five stories are used to measure social information processing, which the examiner reads to the subject, and

questions measuring the stages of social information processing are asked. The questions and scoring of information processing are based on Dodge's model and include six stages: 1) Encoding cues: Responses are scored in two dimensions (main story and details) with a total score for five stories up to 23. 2) Representation and interpretation of information: Responses are scored on a three-point scale (0 to 2). 3) Clarification of goals: Non-response scores 0, and each response given scores 1. Positive and negative responses are then calculated separately. 4) Search for possible responses: Each response is given a score. The subject is asked whether each response is bad, average, or good, with scores of 1 to 3 considered for each response. 5) Selection of response: The subject is asked what solution they would have implemented, with 1 score for an appropriate response and 0 score for an inappropriate one. Then several solutions are read to the subject, and they are asked which solution is bad, average, or good, with scores of 1 to 3 for each solution. 6) Behavioral response execution: This stage was omitted due to the provision of fabricated responses by the subjects by other researchers and was also omitted in this study. In the research by Bauminger et al. (2005) for the reliability calculation of inter-rater agreement in the stages of information processing, two assessors independently coded it. The agreement between the assessors was 89% and for encoding; 94% for interpreting signs; 97% for clarifying goals; 95% for searching for responses; 89% for decision-making on responses and assessing responses; 85% was reported (Bauminger et al., 2005). Keil and Price (2009) also reported median Cronbach's alpha values for the range of provocation and entry into the group as .74 and .79, respectively, confirming their reliability (Keil & Price, 2009). The face validity of the social information processing questionnaire was reviewed by Pourmotabbed and Besharat (2007) and reported as satisfactory, and the test-retest reliability of the stories was significant between .50 and .83. Besharat and Latifian (2009) investigated the concurrent validity of social stories through teacher judgment scales, which showed a significant relationship with the stages of social information processing (Pournavedit & Bashash, 2009). Roshan and Besharat (2011) also examined the reliability of the questionnaire using test-retest methods, and the correlation coefficients ranged from .67 to .85 (Roshan et al., 2015). In the current study, Cronbach's alpha for the Social Stories Questionnaire was .795.

### 2.2.3. Cognitive Emotion Regulation

This version was adapted by Garnefski and colleagues (2007) from the original version of the Cognitive Emotion Regulation Questionnaire for use with a child population and is a self-report tool with 36 items. The questionnaire consists of 9 sub-scales in two general dimensions: positive cognitive emotion regulation (acceptance, refocusing and planning, positive refocusing, positive reappraisal, and perspective taking) and negative cognitive emotion regulation (self-blame, blaming others, rumination, and catastrophizing). Responses are based on a Likert scale (1=never to 5=always). Each sub-scale has 4 questions, with the score range for each sub-scale between 4 and 20 and the total score range between 36 and 180. Higher scores on each sub-scale indicate greater use of that strategy. In the research by Garnefski and Kraaij (2007), the Cronbach's alpha coefficient for the nine sub-scales of the questionnaire ranged from .62 to .80. This questionnaire was translated and validated in Iran by Mashhadi, Hasani, and Mirdoraghi (2012), and the obtained Cronbach's alpha coefficients for all sub-scales were psychometrically satisfactory. The average Cronbach's alpha was .795, and the range of most item-total correlations was more than .40. This result indicates that the sub-scales have internal consistency and satisfactory validity (Mashhadi et al., 2012; Mashhadi et al., 2011). In the current study, Cronbach's alpha for negative emotion regulation was .776 and for positive emotion regulation was .745.

## 2.3. Interventions

### 2.3.1. Unified Transdiagnostic Therapy

In this study, unified transdiagnostic therapy refers to 10 group therapy sessions of 60 minutes each for students and 30 minutes each for mothers, based on the therapy package by Ehrenreich-May and colleagues (Ehrenreich-May & Chu, 2013; Ehrenreich-May et al., 2017), provided weekly by a credentialed and certified individual for this therapy.

#### Session 1:

The first session for students involves initial introductions and establishing connections between group members and the therapist, identifying main problems, and setting therapeutic goals, while also familiarizing students with the purpose of emotions. For parents, this session covers an introduction to the therapy structure, cue skills, the three-part model of emotions, and discussions on the cycle of emotional behaviors.

Session 2:

In this session, students learn to recognize, identify, and rate the intensity of emotions. They are introduced to the normalization of emotional experiences, the three components of emotional experience, the avoidance cycle, and identifying rewards for new behaviors. For parents, the focus is on understanding the monitoring process before, during, and after emotional episodes, countering parenting behaviors, and discussions on positive reinforcement as a contrast to blaming.

Session 3:

Students learn the concept of countering behaviors, utilizing scientific experiments to form behaviors that counter emotional ones, understanding the link between activity and emotion, and tracking emotion and activity levels through an experiment. Parents discuss scientific experiments and how to support their child in conducting practical experiments, along with reinforcement methods.

Session 4:

The fourth session for students involves understanding physical cues linked to emotions, learning to identify these cues, and practicing body scanning to detect these cues without avoidance or distraction. Parents learn about physical manifestations of emotions, body scanning skills, sensory exposure practice in groups, and expressing empathy.

Session 5:

Students are taught about flexible thinking and identifying common cognitive traps. Parents familiarize themselves with cognitive flexibility, the four common cognitive traps, and discussions on the use of consistent reinforcement rules.

Session 6:

This session introduces detective thinking and problem-solving for students and how these can be applied. Parents learn about detective thinking, practice it, understand overcontrolling and over-protective emotional parenting behaviors and their countering behaviors which promote independence, and discuss problem-solving for interpersonal conflicts and dealing with assurance-seeking and adaptability.

Session 7:

Students learn about the "No" skill, mindfulness in the present moment, and non-judgmental awareness. Parents discuss the importance of learning from emotional experiences rather than avoiding them, practicing present-moment awareness, and non-judgmental awareness.

Session 8:

Students review detective skills and emotional and countering behaviors concepts, and engage in emotional exposure with an object or toy. Parents are introduced to the concept of emotional exposure as another form of practical testing, learn about modeling extreme emotional responses and avoidance, and its counter-behavior, which is healthy emotional modeling.

Session 9:

In this session, students learn about safety-seeking and avoidance behaviors, practice confronting strong emotions, and plan for facing situational emotions. Parents review the concept of situational emotion exposure, discuss its application for different symptoms, learn about safety-seeking behaviors, and understand the emotional ladder for exposure.

Session 10:

Students review the emotional detective skills learned during the course and plan for confronting strong future emotions. Parents review emotional efficacy skills and countering behaviors and plan for further progress and continuity after therapy ends.

### 2.3.2. Reality Therapy

In this study, reality therapy refers to 10 group therapy sessions, 60 minutes each for students and 30 minutes each for mothers, based on reality therapy by Glasser (1965) and derived from the package by Sulo (1993), provided weekly by a credentialed and certified individual for this therapy (Glasser, 2010; Sullo, 1993).

Session 1: Introduction and Connection

In the first session for the students, an introduction and establishment of relationships between group members and the therapist are conducted, along with an explanation of the session plans and rules. For the parents, the session involves an introduction among members, an explanation of disruptive mood dysregulation disorder, and an introduction to reality therapy. This sets the groundwork for mutual understanding and sets the expectations for the therapy process.

Session 2: Understanding Needs and Their Impact

The second session for students focuses on teaching about various needs and their impact on behavior and life, explaining why and how behaviors are exhibited. For parents, the session introduces basic human needs, setting the stage for a deeper understanding of motivational psychology and behavioral outcomes.

Session 3: Identifying Signals and Desired World Images

Students explore and identify signals and images of their ideal world (desires) in this session. Parents are introduced to the concept of the ideal world and discuss different parenting styles and definitions. This helps both students and parents align on expectations and aspirations.

#### Session 4: Introducing the Four General Components of Behavior

In this session, students learn about the four general components of behavior: feeling, thought, action, and physiology, and they are taught relaxation techniques to control and regulate emotions. Parents discuss the reasons and methods behind behaviors, providing insights into problematic behaviors and appropriate responses.

#### Session 5: Decision Making and Real-Time Changes

Students are taught decision-making skills and explore changes in thoughts, feelings, actions, and physiology through behavioral cards. Parents learn about the overall concept of behavior and its components, aiding in understanding the systemic nature of behaviors.

#### Session 6: Teaching Balanced Satisfaction of Needs

The sixth session involves teaching students how to achieve balanced satisfaction of needs through activities like drawing circles of needs and crafting need pendants. Parents learn about balancing needs, further reinforcing the concepts taught to the students.

#### Session 7: Enhancing the Creative System

Students engage in brainstorming sessions and play calming games, discussing alternative solutions. Parents learn about how to enhance their child's creative systems, focusing on nurturing creativity and problem-solving skills.

#### Session 8: Introducing Destructive and Constructive Behaviors in Relationships

In this session, students learn about destructive and constructive behaviors in relationships, effective expression of desires, and negotiating through storytelling and role-playing. Parents discuss the importance of improving relationships, negotiation, and compromise teaching methods, and introduce caring and destructive habits.

#### Session 9: Increasing Self-Awareness and Alternative Coping Mechanisms

Students increase their awareness of effective and ineffective thoughts and actions, learn problem-solving, and alternative coping strategies for anger control through finger traps and role-playing. Parents discuss internal and external control and how to deal with ineffective behaviors, introducing two perspectives on parenting based on control and choice.

#### Session 10: Evaluation and Summary of Techniques

The final session for students involves evaluating the outcomes and summarizing the techniques used throughout the sessions, utilizing drawings of roadmaps. For parents, the session sums up the key concepts of reality therapy, ensuring a cohesive understanding and application of the therapy's principles in everyday parenting practices. This session aims to reinforce learned concepts and prepare participants for continued application beyond the therapy environment.

### 2.4. Data analysis

Data were analyzed using SPSS version 23 and repeated measures analysis of variance.

## 3. Findings and Results

The average age of children in the reality therapy group was  $8.93 \pm 1.03$ , in the unified transdiagnostic therapy group it was  $9.07 \pm 1.03$ , and in the control group it was  $8.93 \pm 0.88$ . An analysis of variance test to examine the difference in average age among the three groups found no significant difference ( $F = 0.092, p = .913$ ). In the reality therapy group, 10 parents (66.7%) were aged between 30 and 40 years, and 5 parents (33.3%) were between 40 and 50 years. In both the unified transdiagnostic therapy group and the control group, 13 parents (86.7%) were between 30 to 40 years, and 2 parents (13.3%) were between 40 to 50 years. In the reality therapy group, 6 students (40%) were in the second grade, 6 (40%) in the third grade, and 3 (20%) in the fourth grade. Similarly, in the unified transdiagnostic therapy group, 5 students (33.3%) were in the second grade, 6 (40%) in the third grade, and 4 (26.7%) in the fourth grade, while in the control group, 5 (33.3%) were in the second grade, 7 (46.7%) in the third grade, and 3 (20%) in the fourth grade. Parental education in the reality therapy group included 1 person (6.7%) with a high school diploma, 1 (6.7%) with an associate degree, 8 (53.3%) with a bachelor's degree, 4 (26.7%) with a master's degree, and 1 (6.7%) with a doctorate. In the unified transdiagnostic therapy group, 3 parents (20%) had a high school diploma, 6 (40%) a bachelor's degree, and 6 (40%) a master's degree. In the control group, 2 (13.3%) had an associate degree, 9 (60%) a bachelor's degree, and 4 (26.7%) a master's degree. Chi-square tests for the frequency differences in parent age groups ( $\chi^2 = 2.5, p = .287$ ), children's educational level ( $\chi^2 = 0.43, p = .98$ ), and parent education ( $\chi^2 = 8.68, p = .370$ ) across the three groups showed that these demographic characteristics did not significantly differ.

Descriptive findings for research variables are presented in Table 1.

**Table 1**

*Descriptive Indices of Research Variables by Two Groups and Three Stages of Research*

Variable	Group	Pre-test M(SD)	Post-test M(SD)	Follow-up M(SD)
Social Information Processing	Unified Transdiagnostic	109.13 (13.52)	148.66 (18.7)	149.87 (17.95)
	Reality Therapy	112.2 (10.06)	149.73 (19.6)	151.6 (18.48)
	Control	113.93 (12.07)	112.47 (12.67)	112 (12.46)
Encoding Information	Unified Transdiagnostic	17.13 (1.68)	19.33 (2.46)	19.53 (1.9)
	Reality Therapy	17.33 (2.55)	19.6 (1.4)	19.8 (1.32)
	Control	17.27 (1.53)	16.87 (1.55)	16.53 (1.46)
Interpretation and Representation	Unified Transdiagnostic	13.73 (1.44)	19.93 (2.89)	20.47 (2.69)
	Reality Therapy	13.07 (1.79)	21.47 (2.82)	21.8 (2.52)
	Control	13.8 (2.39)	13.87 (2.55)	14.07 (2.34)
Clarification of Goals	Unified Transdiagnostic	5.07 (0.88)	6 (0.53)	5.4 (0.63)
	Reality Therapy	5.73 (0.89)	5.2 (0.67)	5.07 (0.59)
	Control	5.4 (1.02)	5.27 (0.79)	5.13 (0.83)
Search for Responses	Unified Transdiagnostic	21.67 (8.5)	35 (10.11)	38.73 (9.77)
	Reality Therapy	22.22 (5.58)	35.13 (13.62)	36 (11.6)
	Control	24.2 (9.02)	23.67 (9.01)	23.47 (8.06)
Selection of Responses	Unified Transdiagnostic	51.6 (4.32)	65.2 (8.44)	65.73 (7.84)
	Reality Therapy	53.6 (5.23)	68.33 (6.82)	68.93 (6.77)
	Control	52.53 (4.48)	52.8 (5.13)	52.8 (4.38)
Positive Emotion Regulation	Unified Transdiagnostic	48.33 (5.28)	64.47 (8.26)	62.73 (9.82)
	Reality Therapy	45.2 (6.06)	58.67 (10.05)	58.87 (10.13)
	Control	45.47 (5.46)	45.87 (6.32)	46.07 (5.9)
Negative Emotion Regulation	Unified Transdiagnostic	45.6 (5.77)	36.67 (5.4)	36.87 (5.19)
	Reality Therapy	40.27 (6.95)	36 (5.29)	36.07 (4.62)
	Control	43.07 (8.04)	42.87 (9.35)	42.53 (7.78)

As observed in Table 1, the mean scores of the research variables in the intervention groups (unified transdiagnostic therapy, reality therapy) showed more change in the post-test and follow-up stages compared to the pre-test in contrast to the control group. The use of parametric repeated measures tests requires adherence to several initial assumptions including the normality of scores, homogeneity of variances, and covariance matrix equality, which can be validated and used in the tests if the group size is less than 40 and the assumptions are met. The purpose of testing the normality assumption is to examine whether the distribution of scores is consistent with the population distribution. This assumption indicates that the observed difference between the distribution of sample group scores and the normal distribution in the population is equal to zero. For this purpose, the Shapiro-Wilk test was used. The results of this assumption testing regarding the research variable scores showed that the zero assumption based on the normal distribution of scores in all three stages (pre-test, post-test, and follow-up) in all three groups remains (all significance levels greater than .05). To test the assumption of

homogeneity of variances, the Levene's test was used. The results showed that in the variable of cognitive information processing in the pre-test ( $p = .091$ ,  $F = .094$ ), post-test ( $p = .112$ ,  $F = 2.3$ ), and follow-up ( $p = .088$ ,  $F = 20.45$ ), in positive cognitive regulation pre-test ( $p = .467$ ,  $F = .774$ ), post-test ( $p = .346$ ,  $F = 1.09$ ), and follow-up ( $p = .088$ ,  $F = 2.45$ ), and in negative cognitive regulation pre-test ( $p = .305$ ,  $F = 1.22$ ), post-test ( $p = .138$ ,  $F = 2.07$ ), and follow-up ( $p = .065$ ,  $F = 2.69$ ), the results indicate that the assumption of variance homogeneity is confirmed in all three main variables in all three stages. The results of Mauchly's test for examining the uniformity of covariances in the groups for the variable of cognitive information processing (Mauchly's  $W = .069$ ,  $\chi^2 = 109.79$ ,  $p = .001$ ), positive emotion regulation (Mauchly's  $W = .504$ ,  $\chi^2 = 28.05$ ,  $p = .001$ ), and negative emotion regulation (Mauchly's  $W = .25$ ,  $\chi^2 = 56.88$ ,  $p = .001$ ) showed that this is not confirmed in the research variables. Therefore, in within-subject analyses in repeated measures variance analysis, a conservative test such as Greenhouse-Geisser is used.



**Table 2**

*Analysis of Between and Within Subjects Effects for Research Variables*

Variable	Effect	Source	SS	df	MS	F	p	Eta <sup>2</sup>	Power
Social Information Processing	Between Subjects	Group	17408.311	2	8704.156	16.79	.001	.444	.999
	Within Subjects	Time Effect	19831.6	1.036	19150.39	109.27	.001	.722	1.000
		Time × Group	11293.82	2.07	5452.942	31.11	.001	.597	1.000
Encoding Information	Between Subjects	Group	109.644	2	54.822	7.66	.001	.267	.932
	Within Subjects	Time Effect	56.044	1.28	43.77	19.65	.001	.319	.998
		Time × Group	57.511	2.56	22.46	10.08	.001	.324	.993
Interpretation and Representation	Between Subjects	Group	619.6	2	309.8	22.15	.001	.513	1.000
	Within Subjects	Time Effect	772.978	1.102	701.202	210.26	.001	.834	1.000
		Time × Group	382.62	2.5	173.547	52.04	.001	.712	1.000
Clarification of Goals	Between Subjects	Group	1.17	2	0.585	0.428	.654	.02	.115
	Within Subjects	Time Effect	1.97	1.38	1.42	3.22	.064	.071	.495
		Time × Group	9.007	2.77	3.25	7.36	.001	.26	.972
Search for Responses	Between Subjects	Group	2074.237	2	1037.119	4.36	.019	.172	.724
	Within Subjects	Time Effect	2879.57	1.04	2761.1	42.67	.001	.504	1.000
		Time × Group	1692.207	2.08	811.294	12.54	.001	.374	.995
Selection of Responses	Between Subjects	Group	2893.793	2	1446.89	17.66	.001	.457	1.000
	Within Subjects	Time Effect	2838.859	1.07	2659.306	93.47	.001	.69	1.000
		Time × Group	1349.54	2.13	632.09	22.22	.001	.514	1.000
Positive Emotion Regulation	Between Subjects	Group	3766.28	2	1883.14	9.46	.001	.311	.972
	Within Subjects	Time Effect	2872.59	1.24	2145.002	49.36	.001	.54	1.000
		Time × Group	1324.296	2.67	495.126	11.38	.001	.351	.998
Negative Emotion Regulation	Between Subjects	Group	253.08	2	126.54	15.88	.001	.43	1.000
	Within Subjects	Time Effect	601.53	1.14	426.43	46.328	.001	.524	1.000
		Time × Group	360.474	2.28	157.73	13.88	.001	.398	.999

According to the findings in Table 2, in the between-subject analysis, the mean scores of the variables of social information processing and its dimensions, as well as positive and negative emotion regulation in both experimental groups (unified transdiagnostic therapy and reality therapy) and the control group show significant differences ( $p < .05$ ). According to the results in the within-subject analyses, the main effect of time on the variables of social information processing and its dimensions, as well as positive and negative emotion regulation is significant, indicating that there is a significant difference between the average scores at different stages of the research ( $p < .001$ ). The results also showed that the interaction effect of time

and group membership is significant for the variables of social information processing and positive and negative emotion regulation ( $p < .001$ ), indicating that the changes from the pre-test, post-test, and follow-up stages in each group were significant. The extent of difference between stages in the groups for the variable of social information processing was 59.7%, and for the dimensions of encoding, interpretation and representation, clarification of goals, search for responses, and selection of responses, the differences were 32.4%, 71.2%, 26%, 37.4%, and 51.4% respectively. Furthermore, the extent of difference between stages in the groups for the variables of positive and negative emotion regulation was 35.1% and 39.8% respectively.

**Table 3**

*Follow-up Test Results for Comparing Three Groups Across Research Variables at the Post-test Stage*

Variable	Groups	Mean Difference	p	Effect Size
Social Information Processing	Unified Transdiagnostic vs. Control	36.2	.001	.44
	Reality Therapy vs. Control	37.27	.001	.45
	Unified Transdiagnostic vs. Reality Therapy	1.07	.867	.01
Encoding Information	Unified Transdiagnostic vs. Control	2.47	.001	.24
	Reality Therapy vs. Control	2.73	.001	.28
	Unified Transdiagnostic vs. Reality Therapy	0.267	.698	.04
Interpretation and Representation	Unified Transdiagnostic vs. Control	6.07	.001	.46

	Reality Therapy vs. Control	7.6	.001	.57
Clarification of Goals	Unified Transdiagnostic vs. Reality Therapy	1.53	.136	.05
	Unified Transdiagnostic vs. Control	0.733	.005	.17
	Reality Therapy vs. Control	-0.067	.789	.02
Search for Responses	Unified Transdiagnostic vs. Reality Therapy	-0.8	.002	.20
	Unified Transdiagnostic vs. Control	14.33	.001	.23
	Reality Therapy vs. Control	11.47	.007	.16
Selection of Responses	Unified Transdiagnostic vs. Reality Therapy	-2.87	.483	.012
	Unified Transdiagnostic vs. Control	12.4	.001	.364
	Reality Therapy vs. Control	15.53	.001	.473
Positive Emotion Regulation	Unified Transdiagnostic vs. Reality Therapy	3.13	.223	.035
	Unified Transdiagnostic vs. Control	18.6	.001	.363
	Reality Therapy vs. Control	12.8	.002	.212
Negative Emotion Regulation	Unified Transdiagnostic vs. Reality Therapy	-5.8	.135	.052
	Unified Transdiagnostic vs. Control	-6.2	.019	.125
	Reality Therapy vs. Control	-6.87	.01	.149
	Unified Transdiagnostic vs. Reality Therapy	0.67	.794	.02

As shown in Table 3, both experimental groups—unified transdiagnostic therapy and reality therapy—differ significantly from the control group in the post-test stage for the variable of social information processing and all its dimensions, except for clarification of goals, as well as for the variables of positive and negative emotion regulation ( $p < .01$ ). The effects of unified transdiagnostic therapy on the variables of social information processing, positive, and negative emotion regulation in the post-test were respectively 44%, 36.3%, and 12.5%. Similarly, the effect of reality therapy on improving social information processing

and the regulation of positive and negative emotions in the post-test were respectively 45%, 21.2%, and 14.9%. However, only unified transdiagnostic therapy had a 17% effect on clarification of goals in the post-test ( $p < .05$ ). The comparison of the two therapy methods also indicated that there was no significant difference between the therapy groups across the three variables of social information processing and positive and negative emotion regulation in the post-test stage, and only in the dimension of clarification of goals was unified transdiagnostic therapy more effective than reality therapy in the post-test.

**Table 4**

*Follow-up Test Results for Comparing Three Groups Across Research Variables at the Follow-up Stage*

Variable	Groups	Mean Difference	p	Effect Size
Social Information Processing	Unified Transdiagnostic vs. Control	37.87	.001	.49
	Reality Therapy vs. Control	39.6	.001	.53
	Unified Transdiagnostic vs. Reality Therapy	1.73	.769	.02
Encoding Information	Unified Transdiagnostic vs. Control	3	.001	.38
	Reality Therapy vs. Control	3.27	.001	.42
	Unified Transdiagnostic vs. Reality Therapy	0.267	.654	.05
Interpretation and Representation	Unified Transdiagnostic vs. Control	6.4	.001	.53
	Reality Therapy vs. Control	7.73	.001	.63
	Unified Transdiagnostic vs. Reality Therapy	1.33	.155	.04
Clarification of Goals	Unified Transdiagnostic vs. Control	0.267	.299	.03
	Reality Therapy vs. Control	-0.067	.794	.02
	Unified Transdiagnostic vs. Reality Therapy	0.33	.196	.04
Search for Responses	Unified Transdiagnostic vs. Control	15.27	.001	.28
	Reality Therapy vs. Control	12.53	.002	.21
	Unified Transdiagnostic vs. Reality Therapy	-2.73	.472	.012
Selection of Responses	Unified Transdiagnostic vs. Control	12.93	.001	.414
	Reality Therapy vs. Control	16.13	.001	.524
	Unified Transdiagnostic vs. Reality Therapy	3.2	.185	.042
Positive Emotion Regulation	Unified Transdiagnostic vs. Control	16.67	.001	.324
	Reality Therapy vs. Control	12.8	.001	.22
	Unified Transdiagnostic vs. Reality Therapy	-3.87	.304	.025
Negative Emotion Regulation	Unified Transdiagnostic vs. Control	-5.66	.02	.121
	Reality Therapy vs. Control	-6.47	.009	.152
	Unified Transdiagnostic vs. Reality Therapy	-0.8	.736	.03

As shown in Table 4, both experimental groups—unified transdiagnostic therapy and reality therapy—differ significantly from the control group at the follow-up stage in the variable of social information processing and all its dimensions except for clarification of goals, as well as for the variables of positive and negative emotion regulation ( $p < .01$ ). The effects of these therapies at the follow-up stage on social information processing were 49% for unified transdiagnostic therapy and 53% for reality therapy. The effects on positive emotion regulation were 32.4% for unified transdiagnostic therapy and 22% for reality therapy, and on negative emotion regulation, they were 12.1% for unified transdiagnostic therapy and 15.2% for reality therapy. Moreover, both therapies did not have a significant impact on the dimension of clarification of goals at the follow-up stage. The comparison of the two therapy methods also showed that there was no significant difference between the therapy groups across the three variables of social information processing and positive and negative emotion regulation at the follow-up stage.

#### 4. Discussion and Conclusion

The purpose of this study was to compare the effectiveness of unified transdiagnostic therapy and reality therapy on social information processing and emotion regulation in students with disruptive mood dysregulation disorder. The findings indicated that both unified transdiagnostic therapy and reality therapy significantly improved social information processing and both positive and negative emotion regulation in students with disruptive mood dysregulation disorder at the post-test stage, and these effects remained at the follow-up stage. No significant differences were found between the two therapy methods in this regard. Unified transdiagnostic therapy was effective in the dimension of clarification of goals at the post-test stage, showing greater efficacy than reality therapy, though this efficacy was not significant at the follow-up stage.

These results regarding the effectiveness of unified transdiagnostic therapy on social information processing are consistent with the study by Mehrdadfar and colleagues (2023), which showed that online unified transdiagnostic therapy protocols are effective on socio-emotional skills (Mehrdadfar et al., 2023), and findings by Alavi and colleagues (2022) regarding the effectiveness of the unified transdiagnostic therapy protocol on social skills of students in a broader context (Alavi et al., 2022). This can be explained by the fact that as mentioned, transdiagnostic

models propose that psychopathology mechanisms, such as emotion regulation and social information processing, serve as factors maintaining psychological pathology. Therefore, unified transdiagnostic therapy targets these mechanisms, emphasizing the role of emotions and their processing. This therapy helps individuals confront their distressing emotions adaptively, offering techniques for managing emotions and processing cognitive information. Cognitive inflexibility may result in biased information processing and hostile interpretation of ambiguous information. Unified transdiagnostic therapy, with a focus on cognitive flexibility and reality testing of cognitive schemas, helps individuals maintain non-judgmental awareness and avoid biased information processing. In fact, this therapy occurs at the cognitive level (objective processing style) because it focuses on how metacognitive schemas are formed and tested against the reality testing of common cognitive schemas (Mehdi Akbari et al., 2015). In this regard, after introducing students to emotions, thoughts, bodily sensations, and their interactions, unified transdiagnostic therapy assists them in gaining better awareness of their experiences, challenging their negative cognitive assessments and emotions, and ultimately processing information without bias and providing more adaptive responses. In the dimension of clarification of goals, unified transdiagnostic therapy had a greater effect than reality therapy.

Results regarding the effectiveness of reality therapy on emotion regulation are aligned with the findings by Behmanesh and colleagues (2021) on the effectiveness of group training based on choice theory in enhancing cognitive emotion regulation and parent-child relationships among adolescents (Behmanesh et al., 2021), and Ghoreishi and Behboodi (2017) on the effectiveness of group reality therapy on emotion regulation of students in a broader context (Ghoreishi & Behboodi, 2017). Reality therapy encourages individuals to face reality, take responsibility for their behavior, as they cannot control others' behavior, only their own. Therefore, by shifting focus away from uncontrollable issues, individuals can regulate their emotions. Reality therapy focuses on the here and now, facing reality, accepting responsibility, understanding needs, assessing the effectiveness of behavior, and finding alternative strategies for emotion regulation. In a systemic view of reality therapy, parents, by establishing good communication and giving their children the freedom of choice, foster internal control and responsibility, becoming

a suitable model for choosing better life scenarios for their children.

## 5. Limitations & Suggestions

This study's limitations include the use of purposive sampling and the restriction of the sample to boys with disruptive mood dysregulation disorder in Isfahan. Therefore, it is recommended that the results be generalized to other populations with caution and that further studies be conducted on girls and other communities, as well as using random sampling methods. Given the effectiveness of both unified transdiagnostic therapy and reality therapy on students with disruptive mood dysregulation disorder, both therapies can be utilized to assist in the therapy and reduction of problems in these students at counseling and specialized therapy centers.

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## Declaration

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

## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Throughout the research stages, ethical principles were observed. Participants were given the freedom to choose to participate and assured of confidentiality principles, and care was taken to respect personal privacy. This research was approved by the Ethics Committee of the Islamic Azad University, Isfahan (Khorasgan) Branch under the ethics code IR.IAU.KHUISF.REC.1401.114.

## 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

All authors contributed equally.

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