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Comparison of Neuropsychological Factors and Childhood Maltreatment Between Children with DMDD and ODD: A Cross-Sectional Comparative Study

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A B S T R A C T

Objective: The present study aimed to compare executive function domains and childhood maltreatment experiences between children diagnosed with Disruptive Mood Dysregulation Disorder (DMDD) and those diagnosed with Oppositional Defiant Disorder (ODD).

Methods and Materials: This cross-sectional comparative study was conducted during 2024–2025 among children and adolescents referred to psychiatric clinics in Fars Province, Iran. The final sample consisted of 63 participants, including 30 children with DMDD and 33 children with ODD, selected through purposive sampling. Diagnoses were confirmed according to DSM-5 criteria by a child and adolescent psychiatrist. Data collection involved the parent-report Behavior Rating Inventory of Executive Function (BRIEF) and the child self-report Child Maltreatment Questionnaire. Executive functioning was assessed across eight domains, including inhibition, working memory, initiation, planning, and emotional control. Childhood maltreatment was evaluated in three domains: neglect, physical abuse, and psychological/emotional abuse. Data were analyzed using SPSS version 28. Multivariate analysis of variance (MANOVA) was employed to compare executive function and maltreatment scores between the two groups.

Findings: The findings demonstrated significant differences between the DMDD and ODD groups in several executive function domains. Children with ODD obtained significantly higher scores, indicating greater dysfunction, in initiation ($F=5.79$, $p=0.019$), working memory ($F=10.09$, $p=0.002$), planning ($F=5.61$, $p=0.021$), and organization of materials ($F=6.14$, $p=0.016$). Working memory showed the largest effect size ($\eta^2=0.142$). No significant differences were observed in inhibition, emotional control, attention shifting, or self-monitoring. Regarding childhood maltreatment, children with ODD reported significantly higher levels of physical abuse ($F=11.98$, $p<0.001$) and psychological/emotional

abuse (F=4.14, p=0.046) compared with children with DMDD, whereas neglect did not significantly differ between the groups.

Conclusion: The results suggest that although both DMDD and ODD are associated with executive dysfunction and adverse childhood experiences, children with ODD exhibited more severe impairments in specific executive function domains and reported greater exposure to childhood maltreatment. These findings highlight important neuropsychological and environmental distinctions between the two disorders and emphasize the need for comprehensive trauma-informed and neuropsychological assessment in the differential diagnosis and treatment planning of disruptive behavioral disorders in children and adolescents. Longitudinal studies are recommended to clarify causal pathways and developmental mechanisms underlying these associations.

Keywords: *Childhood Maltreatment, Executive Function, Neuropsychological Factors, Disruptive Mood Dysregulation Disorder, Oppositional Defiant Disorder, Child Psychiatry*

1. Introduction

Disruptive behavioral and emotional disorders in childhood and adolescence represent a major challenge for clinicians, educators, and families because of their pervasive effects on emotional regulation, social functioning, academic achievement, and long-term psychological adjustment. Among these disorders, Disruptive Mood Dysregulation Disorder (DMDD) and Oppositional Defiant Disorder (ODD) have received growing attention due to their high prevalence and overlapping symptomatology. DMDD is characterized by persistent irritability, chronic angry mood, and recurrent severe temper outbursts that are disproportionate to developmental expectations, whereas ODD is primarily defined by patterns of argumentative, defiant, hostile, and oppositional behaviors directed toward authority figures (Hawes et al., 2023; Muerner-Lavanchy et al., 2023). Although these disorders share several clinical features, particularly irritability and emotional dysregulation, the Diagnostic and Statistical Manual of Mental Disorders differentiates them conceptually and diagnostically because of differences in developmental trajectories, emotional mechanisms, and associated psychopathology (Copeland et al., 2014; Sorter et al., 2022).

The introduction of DMDD in DSM-5 was partly intended to reduce the overdiagnosis of pediatric bipolar disorder and to provide a more accurate classification for chronically irritable children who do not exhibit episodic mania (Muerner-Lavanchy et al., 2023). Nevertheless, differentiating DMDD from ODD remains a complex task because many children diagnosed with DMDD also demonstrate oppositional and disruptive behaviors commonly associated with ODD (Hawes et al., 2023). Clinical evidence suggests that irritability is central to DMDD, whereas deliberate defiance and interpersonal conflict are more characteristic of ODD (Lin et al., 2022). However, substantial symptom overlap continues to create diagnostic ambiguity, particularly in clinical settings where children present with emotional outbursts, aggression, and social difficulties simultaneously (Frankovich et al., 2015). Consequently, identifying neuropsychological and environmental distinctions between DMDD and ODD has become an important area of investigation.

One of the most important constructs implicated in disruptive disorders is executive functioning. Executive functions refer to a broad set of higher-order cognitive processes responsible for regulating behavior, attention, emotion, planning, working memory, inhibition, cognitive flexibility, and goal-directed behavior (Dorrenbacher-Ulrich & Bregulla, 2024; Yang et al., 2022). These processes enable individuals to adapt to changing environmental demands, regulate impulses, solve problems, and engage in socially appropriate behaviors. Deficits in executive functioning have consistently been linked to externalizing and internalizing psychopathology in childhood and adolescence (Yang et al., 2022). Executive dysfunction may impair a child's ability to control emotional reactions, interpret social information accurately, and regulate aggressive impulses, thereby contributing to disruptive behavioral patterns.

Research examining executive functioning in children with DMDD has demonstrated substantial impairments in emotional regulation, cognitive flexibility, and working memory (Goldstein, 2024; Sharifi et al., 2021). Children with DMDD frequently struggle to modulate emotional responses, especially under stressful or ambiguous conditions, which may contribute to chronic irritability and recurrent temper outbursts (Vidal-Ribas et al., 2018). Neuropsychological studies further suggest that deficits in emotion recognition and information processing may

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increase vulnerability to depressive symptoms and social maladjustment in these children (Lin et al., 2021; Vidal-Ribas et al., 2018). Goldstein emphasized that executive dysfunction in DMDD is closely linked to impairments in emotional self-regulation and cognitive control mechanisms, particularly within prefrontal cortical systems responsible for behavioral inhibition and adaptive functioning (Goldstein, 2024).

Similarly, executive dysfunction has also been identified as a central feature of ODD. Children with ODD often demonstrate impairments in inhibitory control, planning, emotional regulation, and cognitive flexibility, which may contribute to oppositional behaviors and interpersonal conflict (Hawes et al., 2023; Stadler et al., 2024). These children frequently experience difficulties following rules, controlling aggressive impulses, and adapting behavior to situational demands. Neural investigations have revealed abnormalities in frontostriatal and limbic networks involved in emotional processing and behavioral regulation among children with ODD (Zhang et al., 2024). Such neuropsychological vulnerabilities may explain why children with ODD often display persistent defiance and hostility toward authority figures and peers.

Comparative studies examining executive functioning across DMDD and ODD have produced important findings regarding similarities and distinctions between the two disorders. Braenden and colleagues found that children with DMDD demonstrated more pronounced impairments in emotional regulation and social cognition, whereas children with ODD exhibited greater behavioral dysregulation associated with interpersonal interactions and environmental responses (Braenden et al., 2024a, 2024b). These findings suggest that while both disorders involve executive dysfunction, the nature and underlying mechanisms of these deficits may differ substantially. In particular, executive dysfunction in DMDD may be more strongly linked to mood dysregulation and irritability, whereas executive deficits in ODD may relate more closely to learned behavioral patterns and oppositional interaction styles (Braenden et al., 2024b). Furthermore, Sharifi et al. reported that children with disruptive mood dysregulation display significant deficits in executive domains compared with other psychiatric populations, supporting the notion that executive functioning represents an important component of emotional and behavioral pathology (Sharifi et al., 2021).

The relationship between executive functioning and emotion regulation has also become an important focus of recent research. Executive control processes are fundamentally involved in regulating emotional responses, especially in stressful social contexts (Schulze et al., 2026). Deficits in cognitive control may reduce the ability to suppress inappropriate emotional reactions, contributing to aggression, irritability, and impulsive behavior. Schulze et al. demonstrated that impairments in cognitive control are strongly associated with emotional dysregulation across psychiatric disorders, highlighting the importance of executive functioning in adaptive emotional behavior (Schulze et al., 2026). Similarly, Nuno et al. found that executive dysfunction is closely related to depressive symptomatology and impaired information processing speed, suggesting overlapping neurocognitive pathways between mood disorders and disruptive behavioral disorders (Nuno et al., 2021).

In addition to neuropsychological vulnerabilities, environmental and familial factors play a major role in the development and maintenance of disruptive disorders. Childhood maltreatment, including physical abuse, emotional abuse, neglect, and exposure to family violence, has consistently been associated with increased risk for emotional dysregulation, behavioral problems, and psychiatric disorders (Abursu et al., 2024; Warren et al., 2024). Early adverse experiences can profoundly affect emotional development, attachment security, stress regulation systems, and cognitive functioning. Psychoanalytic and developmental theories emphasize that early childhood experiences significantly shape emotional and behavioral development throughout life (McQuade et al., 2018). Exposure to unstable or traumatic family environments during critical developmental periods may impair emotional regulation capacities and increase vulnerability to psychopathology.

Several studies have demonstrated a strong relationship between childhood trauma and disruptive behaviors in children and adolescents. Wang et al. reported that childhood trauma is highly prevalent among youth with DMDD and may contribute to chronic irritability and mood dysregulation (Wang et al., 2023). Similarly, Abursu et al. found that trauma, maltreatment, and bullying experiences are strongly associated with irritability and mood disorders in children and adolescents (Abursu et al., 2024). Exposure to abuse and neglect may alter neural systems responsible for stress regulation and emotional processing, thereby increasing vulnerability to emotional instability and aggression. Feifer further argued that traumatic experiences may impair neuropsychological functioning and intensify

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emotional dysregulation among children with DMDD (Feifer, 2024).

Childhood maltreatment has also been repeatedly linked to ODD. Family conflict, inconsistent parenting, harsh discipline, and exposure to violence are among the strongest environmental predictors of oppositional and defiant behavior (Lin et al., 2022). Children exposed to chronic stress and family dysfunction may learn maladaptive interaction patterns characterized by hostility, aggression, and resistance to authority. Zhang et al. demonstrated that disrupted mother-child neural synchrony is associated with ODD symptoms, suggesting that dysfunctional interpersonal interactions may contribute to the development of oppositional behavior (Zhang et al., 2024). Additionally, qualitative findings indicate that caregivers in stressful and unstable family contexts often experience difficulties providing consistent emotional support and behavioral management, thereby increasing the risk of disruptive behaviors in children (Sandhu et al., 2025).

Exposure to childhood maltreatment not only contributes to disruptive behavior but also affects broader psychological functioning and mental health outcomes. Adverse childhood experiences have been associated with increased psychological distress, suicidal ideation, impaired interpersonal relationships, and emotional dysregulation (Bhargav & Swords, 2022). Trauma-related impairments in self-regulation may reduce the child's ability to cope adaptively with stress, thereby increasing vulnerability to aggression, irritability, and oppositional conduct. Family violence and neglect can also impair social learning processes and disrupt emotional development, leading to persistent maladaptive behavioral patterns (Warren et al., 2024).

Given the substantial overlap between DMDD and ODD in clinical presentation, examining both executive functioning and childhood maltreatment may provide valuable insight into the differential mechanisms underlying these disorders. Existing literature suggests that executive dysfunction and adverse childhood experiences are important contributors to both conditions, yet relatively few studies have directly compared neuropsychological factors and maltreatment experiences between children with DMDD and those with ODD (Braenden et al., 2024a; Goksu et al., 2024). Moreover, previous findings remain inconsistent regarding whether emotional dysregulation in DMDD is primarily associated with neurobiological vulnerabilities or whether environmental adversity contributes equally to symptom development. Clarifying these relationships may improve diagnostic accuracy and facilitate more targeted intervention strategies.

Reliable assessment tools are essential for investigating these constructs in clinical populations. The Behavior Rating Inventory of Executive Function (BRIEF) has demonstrated strong psychometric properties for assessing executive functioning in children and adolescents (Abdolmohamadi et al., 2018; Salimi Nave et al., 2022). Likewise, the Child Abuse Questionnaire developed by Hosseinkhani and colleagues provides a culturally appropriate measure for assessing childhood maltreatment experiences among Iranian children and adolescents (Hosseinkhani et al., 2014). Using validated measures may enhance the accuracy of identifying neuropsychological and environmental differences between DMDD and ODD populations.

Considering the increasing prevalence of disruptive disorders among children and adolescents, the significant functional impairments associated with these conditions, and the continuing diagnostic ambiguity between DMDD and ODD, further comparative research is necessary. Understanding the role of executive functioning deficits and childhood maltreatment experiences may contribute to more accurate differential diagnosis, more individualized treatment planning, and the development of trauma-informed and neuropsychologically informed interventions. Therefore, the present study aimed to compare neuropsychological factors and childhood maltreatment between children with Disruptive Mood Dysregulation Disorder and children with Oppositional Defiant Disorder.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a cross-sectional comparative design to investigate differences in executive functioning and childhood maltreatment between children diagnosed with Disruptive Mood Dysregulation Disorder (DMDD) and those diagnosed with Oppositional Defiant Disorder (ODD). The study was conducted during 2024–2025 in Fars Province, Iran. Participants were recruited from child and adolescent psychiatric clinics using purposive sampling. Children and adolescents who met the DSM-5 diagnostic criteria for DMDD or ODD during routine psychiatric evaluations were initially screened for eligibility. Diagnostic confirmation was performed by a board-certified child and adolescent psychiatrist through comprehensive clinical interviews and review of medical and psychiatric histories. The executive function assessment was completed by

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parents, whereas the childhood maltreatment questionnaire was completed by the children themselves. Initially, 74 participants were screened for participation. Eight individuals were excluded due to incomplete questionnaires or failure to meet inclusion criteria, and three participants declined participation. Consequently, the final sample consisted of 63 children and adolescents, including 30 participants with DMDD and 33 participants with ODD. Inclusion criteria included a confirmed diagnosis of DMDD or ODD based on DSM-5 criteria, normal intellectual functioning according to clinical assessment, provision of written informed consent by parents or legal guardians and assent by the child, and stable psychiatric medication status for at least six weeks prior to participation if medication was being used. Exclusion criteria included withdrawal of consent, emergence of severe psychiatric disorders such as psychosis or bipolar disorder during the study period, substantial changes in psychiatric medication, incomplete participation in assessments, serious neurological or medical conditions interfering with participation, major protocol violations, unreliable reporting, and sensory or language impairments that interfered with testing procedures. Ethical approval for the study was obtained from the Ethics Committee of Islamic Azad University, Shiraz Branch, under the approval code IR.IAU.SHIRAZ.REC.1404.028. After obtaining the required permissions, eligible participants completed the study measures individually in a quiet clinical setting.

2.2. Instruments

Executive functioning was assessed using the parent-report form of the Behavior Rating Inventory of Executive Function (BRIEF), developed by Gioia, Isquith, Guy, and Kenworthy in 2000. The BRIEF is one of the most widely used standardized instruments for evaluating executive function behaviors in everyday environments such as home and school settings. The parent-report version used in the present study contains 86 items designed for children and adolescents aged 5 to 18 years. Each item is rated on a three-point Likert scale ranging from “Never” to “Often,” reflecting the frequency of executive functioning difficulties observed in daily life. The instrument evaluates two major domains of executive functioning. The behavioral regulation domain includes inhibition, shifting or cognitive flexibility, and emotional control, whereas the metacognition domain includes initiation, working memory, planning, organization of materials, and self-monitoring. Completion of the questionnaire typically requires approximately 10 to 15 minutes. Previous psychometric investigations of the Persian version of the BRIEF in Iranian samples have demonstrated satisfactory validity and reliability, with Cronbach’s alpha coefficients reported between 0.68 and 0.86, indicating acceptable internal consistency across subscales.

Childhood maltreatment was assessed using the Child Maltreatment Questionnaire developed by Hosseinkhani et al. in 2013 and subsequently validated in Iranian populations by Mohammadian and colleagues. This instrument is a self-report measure designed to evaluate adverse childhood experiences and maltreatment exposure among children and adolescents. The questionnaire consists of 26 items assessing three major domains of maltreatment, including neglect with 6 items, physical abuse with 10 items, and psychological or emotional abuse with 10 items. Responses are scored using a three-point Likert scale reflecting the frequency of maltreatment experiences. Higher scores indicate greater exposure to childhood maltreatment. The instrument has demonstrated strong psychometric properties in Iranian samples, with reliability coefficients ranging from 0.92 to 0.98 across the three subscales, supporting its suitability for clinical and research purposes involving child and adolescent populations.

2.3. Data analysis

Data analysis was performed using SPSS software version 28. Initially, descriptive statistics including means and standard deviations were calculated separately for the DMDD and ODD groups to summarize demographic characteristics and primary study variables. Prior to inferential analyses, statistical assumptions were examined to ensure the appropriateness of parametric testing procedures. Normality of distributions was evaluated using skewness and kurtosis indices, homogeneity of variances was assessed using Levene’s test, and homogeneity of variance-covariance matrices was examined through Box’s M test. Following confirmation of assumptions, multivariate analysis of variance (MANOVA) was conducted to compare the two diagnostic groups across executive functioning domains and childhood maltreatment variables. Statistical significance was considered at a p-value lower than 0.05.

3. Findings and Results

The demographic characteristics of the participants indicated relatively similar distributions across the DMDD and ODD groups. In the DMDD group, 63.3% of

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participants were girls and 36.7% were boys, whereas in the ODD group, 54.5% were girls and 45.5% were boys. Regarding fathers' educational level, most fathers in both groups had a diploma or postgraduate diploma, followed by a bachelor's degree or higher. Mothers' educational levels also showed a similar pattern, with the majority possessing a bachelor's degree or higher in the DMDD group and a diploma/postgraduate diploma in the ODD group. The most common paternal occupation was employee status in both groups, while most mothers were housewives. In terms of family size, the majority of families in both groups had two children. The mean age of participants was 10.50 years in the DMDD group and 9.62 years in the ODD group. Additionally, the mean ages of fathers and mothers were relatively comparable between the two groups.

Table 1

Descriptive statistics of executive function and childhood maltreatment variables in children with DMDD and ODD

Variable	DMDD Mean	ODD Mean
Inhibition	18.37	20.91
Attention Shifting	14.40	15.64
Emotional Control	14.70	15.24
Initiation	10.33	12.27
Working Memory	12.73	15.97
Planning	18.70	21.94
Organization of Materials	10.10	11.94
Self-monitor	12.53	13.21
Neglect	13.70	13.24
Physical Abuse	17.00	21.57
Psychological and Emotional Abuse	20.57	22.82

The descriptive findings demonstrated that children with ODD generally obtained higher scores across most executive function domains compared to children with DMDD, indicating greater executive dysfunction in the ODD group. The largest mean differences were observed in working memory and planning. Regarding childhood maltreatment, the ODD group also showed higher mean scores in physical abuse and psychological/emotional abuse, whereas neglect scores were relatively similar between the two groups.

Table 2

Multivariate analysis of variance examining differences in executive function and childhood maltreatment between children with DMDD and ODD

Dependent Variable	DMDD Mean	ODD Mean	Mean Difference	Sum of Squares	F	p	Eta-squared
Inhibition	18.37	20.91	2.54	101.58	3.09	0.084	0.048
Attention Shifting	14.40	15.64	1.24	24.02	1.49	0.228	0.024
Emotional Control	14.70	15.24	0.54	4.62	0.49	0.488	0.008
Initiation	10.33	12.27	1.94	59.11	5.79	0.019	0.087
Working Memory	12.73	15.97	3.24	164.59	10.09	0.002	0.142
Planning	18.70	21.94	3.24	164.90	5.61	0.021	0.084
Organization of Materials	10.10	11.94	1.84	53.17	6.14	0.016	0.091
Self-monitor	12.53	13.21	0.68	7.24	0.57	0.453	0.009
Neglect	13.70	13.24	0.46	3.29	0.66	0.421	0.011
Physical Abuse	17.00	21.57	4.58	329.02	11.98	<0.001	0.164
Psychological and Emotional Abuse	20.57	22.82	2.25	79.66	4.14	0.046	0.064

The results of the multivariate analysis of variance revealed significant differences between children with DMDD and children with ODD in several executive function and childhood maltreatment variables. Significant differences were observed in initiation (F=5.79, p=0.019), working memory (F=10.09, p=0.002), planning (F=5.61, p=0.021), and organization of materials (F=6.14, p=0.016), with children in the ODD group demonstrating higher levels of executive dysfunction compared to those in the DMDD group. Among these domains, working memory showed the

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largest effect size (η^2=0.142). No significant group differences were found in inhibition, attention shifting, emotional control, or self-monitoring. Regarding childhood maltreatment, significant differences emerged for physical abuse (F=11.98, p<0.001) and psychological/emotional abuse (F=4.14, p=0.046), indicating that children with ODD reported higher levels of maltreatment experiences than children with DMDD. However, no statistically significant difference was identified in neglect scores between the two groups.

4. Discussion

The present study aimed to compare neuropsychological factors and childhood maltreatment experiences between children diagnosed with Disruptive Mood Dysregulation Disorder (DMDD) and those diagnosed with Oppositional Defiant Disorder (ODD). The findings demonstrated that children with ODD exhibited significantly greater impairments in several executive functioning domains, including initiation, working memory, planning, and organization of materials, compared with children with DMDD. In addition, children with ODD reported significantly higher levels of physical abuse and psychological/emotional abuse than children with DMDD. However, no statistically significant differences were found between the two groups in inhibition, attention shifting, emotional control, self-monitoring, or neglect. These findings indicate that although both disorders are associated with executive dysfunction and adverse childhood experiences, ODD may involve more severe impairments in specific neuropsychological domains and greater exposure to childhood maltreatment.

One of the most important findings of this study was the significant difference between the two groups in executive functioning domains, particularly working memory, planning, initiation, and organization of materials. Children with ODD demonstrated higher levels of dysfunction across these domains than children with DMDD. This finding is consistent with previous literature indicating that executive dysfunction is strongly associated with oppositional and disruptive behavioral disorders (Hawes et al., 2023; Yang et al., 2022). Executive functions are essential cognitive mechanisms responsible for organizing behavior, regulating impulses, maintaining goal-directed actions, and adapting to changing environmental demands (Dorrenbacher-Ulrich & Bregulla, 2024). Deficits in these processes may impair the child's ability to control emotional reactions and behavioral responses, thereby contributing to aggressive, oppositional, and defiant behaviors.

The significant impairment in working memory observed among children with ODD is particularly noteworthy because working memory is closely associated with emotional regulation, problem-solving, and social functioning. Children with impaired working memory may experience difficulty retaining and manipulating information needed for adaptive responses in interpersonal situations, resulting in impulsive and maladaptive reactions. Similar findings have been reported by Braenden et al., who found that executive functioning deficits are more strongly associated with behavioral dysregulation and interpersonal conflict in ODD populations (Braenden et al., 2024b). Furthermore, Goldstein emphasized that executive dysfunction may reduce cognitive flexibility and impair the ability to regulate emotional responses effectively, thereby increasing the risk of disruptive behaviors (Goldstein, 2024). The current findings also align with Sharifi et al., who reported substantial executive functioning deficits among children with disruptive mood-related disorders, especially in working memory and cognitive regulation processes (Sharifi et al., 2021).

The greater impairment in planning and organization of materials among children with ODD may also reflect broader difficulties in adaptive functioning and self-regulation. Planning skills involve anticipating future consequences, sequencing behaviors, and maintaining goal-directed actions. Children who struggle in these areas often exhibit poor behavioral organization, increased impulsivity, and difficulty complying with social expectations. Previous studies have demonstrated that executive dysfunction in ODD is associated with reduced behavioral control and increased oppositional interactions with authority figures (Stadler et al., 2024). These difficulties may further intensify academic problems, peer conflicts, and emotional instability over time. Moreover, children with ODD may develop maladaptive coping styles that reinforce oppositional behaviors when faced with stress or frustration.

Interestingly, no significant differences were observed between the groups in inhibition, emotional control, attention shifting, and self-monitoring. This finding suggests that some aspects of executive dysfunction may be common to both DMDD and ODD. Emotional dysregulation, irritability, and impaired behavioral control are central features of both disorders, which may explain the lack of significant differences in these domains (Sorter et al., 2022). DMDD is fundamentally characterized by chronic

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irritability and severe emotional outbursts, indicating substantial impairment in emotional regulation mechanisms (Muerner-Lavanchy et al., 2023). Likewise, ODD involves persistent hostility, anger, and behavioral dysregulation directed toward authority figures (Hawes et al., 2023). Therefore, both disorders may share underlying impairments in inhibitory control and emotional monitoring, despite differing in broader executive functioning profiles.

The findings can also be interpreted within the context of contemporary neuropsychological theories linking executive control with emotional regulation. Schulze et al. argued that cognitive control processes are strongly interconnected with emotional regulation capacities, and impairments in executive functioning may reduce the ability to suppress maladaptive emotional reactions (Schulze et al., 2026). Children with disruptive disorders often struggle to regulate negative emotions under stressful conditions, resulting in aggressive outbursts and interpersonal conflict. In this regard, the emotional dysregulation observed in both DMDD and ODD may emerge from overlapping impairments in cognitive control systems. Additionally, deficits in information processing and executive functioning have been associated with mood-related disorders and depressive symptoms, which are highly prevalent among children with chronic irritability (Nuno et al., 2021).

Another major finding of this study was the significantly higher levels of physical abuse and psychological/emotional abuse reported by children with ODD compared with those with DMDD. This finding supports previous research emphasizing the critical role of family adversity and childhood trauma in the development of oppositional behaviors (Lin et al., 2022; Warren et al., 2024). Children who experience harsh parenting, emotional neglect, abuse, and family violence are more likely to develop maladaptive behavioral patterns characterized by hostility, aggression, and defiance. Exposure to chronic stress during childhood may impair emotional development and increase vulnerability to externalizing disorders.

The present findings are consistent with studies demonstrating a strong relationship between childhood maltreatment and disruptive behavioral disorders. Wang et al. found that traumatic experiences are highly prevalent among youth with DMDD and contribute significantly to emotional dysregulation and chronic irritability (Wang et al., 2023). Similarly, Abursu et al. emphasized that trauma, maltreatment, and bullying experiences are strongly associated with mood instability and irritability among children and adolescents (Abursu et al., 2024). However, the present study suggests that children with ODD may experience greater exposure to physical and emotional abuse than children with DMDD. One possible explanation is that oppositional behaviors may develop partly as learned responses within hostile or inconsistent family environments. Children exposed to harsh disciplinary practices may adopt aggression and defiance as coping mechanisms or interpersonal strategies.

Family dynamics appear to play an especially important role in ODD. Lin et al. reported that inconsistent parenting, family conflict, and poor emotional support are among the strongest predictors of oppositional and defiant behavior (Lin et al., 2022). Likewise, Zhang et al. demonstrated that disrupted mother-child interaction patterns are associated with ODD symptoms and impaired emotional communication (Zhang et al., 2024). Exposure to abusive or emotionally invalidating environments may impair the child's sense of security and trust, thereby increasing hostility toward caregivers and authority figures. Furthermore, Sandhu et al. highlighted that family stress and unstable caregiving environments may reduce the consistency of emotional support and behavioral guidance provided to children (Sandhu et al., 2025). Such environmental conditions may reinforce maladaptive behaviors and increase oppositional conduct.

The lack of a significant difference between the groups in neglect is also important. This finding may indicate that neglect is broadly associated with both disorders rather than representing a distinguishing factor between them. Early neglect may impair attachment security, emotional development, and social functioning across multiple psychiatric conditions (McQuade et al., 2018). Children who experience emotional deprivation or insufficient caregiving may struggle with self-regulation, interpersonal relationships, and adaptive coping regardless of specific diagnostic categories. Therefore, neglect may function as a general risk factor for psychopathology rather than a disorder-specific predictor.

The present findings also support developmental theories emphasizing the interaction between neuropsychological vulnerabilities and environmental adversity in the emergence of disruptive disorders. Childhood trauma may alter neural systems involved in stress regulation, emotional processing, and executive functioning, thereby increasing vulnerability to emotional dysregulation and behavioral problems (Feifer, 2024). Executive dysfunction may further reduce the child's ability to cope adaptively with traumatic experiences, creating a reciprocal relationship between

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neuropsychological impairment and environmental stress. Consequently, children exposed to maltreatment may experience worsening emotional and behavioral symptoms over time.

The social and functional consequences of executive dysfunction and childhood maltreatment are also considerable. Children with DMDD and ODD frequently experience academic difficulties, peer rejection, interpersonal conflict, and reduced social competence (Lin et al., 2021). Executive functioning deficits may impair attention, behavioral organization, and emotional regulation within school settings, whereas trauma-related emotional instability may disrupt interpersonal relationships. Vidal-Ribas et al. found that children with DMDD often demonstrate impairments in emotion recognition and social information processing, contributing to depressive symptoms and social maladjustment (Vidal-Ribas et al., 2018). Similarly, ODD-related behavioral difficulties may result in peer exclusion and chronic conflict with caregivers and teachers.

From a clinical perspective, the findings emphasize the importance of comprehensive neuropsychological and trauma-informed assessments in children presenting with disruptive symptoms. The overlap between DMDD and ODD often complicates diagnostic decision-making, yet the present findings suggest that executive functioning profiles and maltreatment histories may provide clinically meaningful distinctions between the two disorders. Early identification of executive dysfunction and adverse childhood experiences may improve treatment planning and intervention outcomes. Cognitive-behavioral interventions targeting emotional regulation, working memory, and behavioral organization may be particularly beneficial for children with ODD, whereas interventions for DMDD may require greater emphasis on mood regulation and irritability management (Sorter et al., 2022; Stadler et al., 2024).

5. Conclusion

The findings highlight the importance of culturally appropriate and psychometrically valid assessment tools. The BRIEF has demonstrated strong reliability and validity for assessing executive functioning in Iranian children (Abdolmohamadi et al., 2018; Salimi Nave et al., 2022), while the Child Abuse Questionnaire developed by Hosseinkhani et al. provides a culturally relevant measure of childhood maltreatment experiences (Hosseinkhani et al., 2014). Utilizing validated instruments enhances the accuracy of identifying cognitive and environmental factors associated with disruptive disorders and supports more reliable clinical interpretation.

6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings of the present study. First, the cross-sectional design limits the ability to establish causal relationships between executive dysfunction, childhood maltreatment, and diagnostic status. Second, participants were recruited from psychiatric clinics in a single geographic region, which may reduce the generalizability of the findings to broader populations. Third, the reliance on parent-report and self-report measures may have introduced response bias or shared method variance. Fourth, the relatively small sample size may have limited statistical power for detecting smaller differences between the groups. Finally, psychiatric diagnoses were confirmed through clinical evaluation rather than structured diagnostic interviews, which may have influenced diagnostic precision.

Future research should employ longitudinal designs to clarify developmental and causal relationships between executive functioning deficits, childhood maltreatment, and disruptive behavioral disorders. Studies with larger and more diverse samples from multiple regions would improve generalizability and strengthen external validity. Future investigations should also incorporate multi-informant and neurobiological assessment methods, including neuroimaging and behavioral observation procedures, to better understand the mechanisms underlying DMDD and ODD. Additionally, examining protective factors such as resilience, family support, and emotion regulation skills may provide insight into pathways that reduce vulnerability to disruptive psychopathology.

The findings of this study suggest several practical implications for clinicians, educators, and mental health professionals. Comprehensive assessment of executive functioning and childhood trauma should be integrated into routine evaluations of children presenting with disruptive behaviors and emotional dysregulation. Intervention programs should incorporate trauma-informed approaches and cognitive-behavioral techniques aimed at improving emotional regulation, working memory, planning, and adaptive coping skills. Parent training and family-based interventions may also help reduce hostile family interactions and improve emotional communication within the household. Furthermore, early prevention programs

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targeting at-risk children exposed to adverse childhood experiences may reduce the long-term psychological and behavioral consequences associated with disruptive disorders.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

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 equally contributed in this article.

Declaration

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

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