Psychological Achievements

(Psychol Achiev), 2023
30(*Special Issue*), 11-24
Received: 26 Apr 2023
Accepted: 04 Oct 2023
Doi: 10.22055/psy.2023.43591.3017

ISSN (E): 2588-6649
https://psychac.scu.ac.ir/

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Research Article

Temperament, Emotion Regulation, and Affective Family Climate in Predicting Oppositional Behaviors in Male Adolescents

Parsa Javanmard[1], Farnaz Farshbaf[2]

1- Ph. D. student in Clinical Psychology, Faculty of Psychology and Educational Sciences, Department of Psychology, University of Tehran, Tehran, Iran.

2- Assistant Professor, Department of Psychology Faculty of Islamic Azad University, Islamic Azad University of Urmia, Urmia, Iran.

Article Info

Corresponding Author:
Parsa Javanmard

Email:
Javanmardparsa@gmail.com

Keywords:
Oppositional defiant disorder, temperament, affective family climate, emotion regulation

Citation:
Parsa Javanmard, P., & Farshbaf, F. (2023). Temperament, Emotion Regulation, and Affective Family Climate in Predicting Oppositional Behaviors in Male Adolescents, *Psychological Achievements, 30*(Special Issue), 11-24.

Abstract

Aim: Oppositional defiant disorder (ODD) is a condition in which children display a pattern of uncooperative, defiant, and angry behavior toward people in authority. The present study aimed to determine the predictors of ODD among male teenagers in the city of Urmia, Iran.

Methods: For this descriptive-analytical study, 384 male students between the ages of 13-16 were selected through cluster sampling. The instruments used comprised Hill Burns' (1964) Affective Family Climate, Garnefski's Emotion Self-Regulation (2006), Cloninger's (1994) Temperament and Character Inventory, and Achenbach's (1991) Youth Self-Report questionnaires. Data were analyzed in SPSS v.19 using descriptive statistics, Pearson's comparison, and regression at a significance level of $p \leq 0.05$

Results: The results showed a direct and significant correlation between emotion regulation and symptoms of ODD (0.19, $p<0.01$). A direct and significant relationship was also found between temperament and ODD symptoms (-0.20, $p<0.01$). Pearson's correlation analyses revealed a meaningful relation between the family's emotional atmosphere and symptoms of ODD (-0.53, $p<0.01$). Furthermore, multiple linear regression models indicated that 39.9% of the variance of ODD is predicted by emotion regulation, family emotional atmosphere, and temperament.

Conclusion: Based on the results of this study, it seems likely that ODD is influenced by emotion regulation, temperament, and affective family climate; to prevent the formation of this disorder, it is recommended that these three variables be addressed.

1. Background

Oppositional defiant disorder (ODD) is oftentimes viewed as a disorder specific to children that most commonly occurs at early school ages (Aebi et al., 2016). Some of the symptoms of this disorder often develop into decidedly normative behavior in adolescence (e.g., short temper, quarreling with adults) (Fernández-Sogorb et al., 2022), and higher degrees of such symptoms in teens have had negative correlations with vital developmental functions such as educational attainments (Flores et al., 2022), emotional development, and quality of peer relationships (Munkvold et al., 2011). Adolescents with ODD are at heightened risk for an assortment of adverse outcomes, including lawbreaking, unemployment, school dropout, and mental disorders such as anxiety and depression (Gutman & Codiroli McMaster, 2020). Although the prevalence of this psychiatric disorder ranges from 1% to 11%, the average prevalence rate is 3–4% (Cooper, 2018). Some studies have proven that children with ODD have a genetic disposition towards this disorder; this psychiatric disorder can be identified in early childhood and persist into early adulthood, if not longer (Burke & Jeffrey, 2018). Cavanagh et al. recently suggested that ODD may be a regulatory disorder and proposed that a lack of affect and emotion regulation could be an important risk factor in the development of ODD symptoms (Cavanagh et al., 2017).

Prior research has pointed to various elements across multiple domains as facilitating the development of ODD symptoms (Derella et al., 2020), comprising environmental, biological, individual, and demographic factors and interactions among them (Derella et al., 2020). Nonetheless, ODD has a substantial environmental etiology (Ghosh et al., 2017) and is more common in families with disruptive childcare or in families where harsh, erratic, or neglectful parenting is a frequent practice (Lavigne et al., 2015). The family's affective atmosphere is a crucial context for adolescent-parent relations in particular and teenagers' development in general (Soenens et al., 2019). The goals and attributes that parents bring to their parental socialization in addition to previous interactions between parents and their offspring rest within the context of a family's affective atmosphere (Soenens et al., 2019), and family factors such as familial psychopathology, abuse, poor child-rearing, and disciplinary practices are known to have significant associations with disruptive behaviors in adolescents (Cooper, 2018).

It has recently been suggested that emotion regulation difficulties are, perhaps, important factors associated with behavioral problems in ODD (Cavanagh et al., 2014). The methods through which individuals affect which emotions they feel when they have them and how and where they express and experience such emotions refer to emotion self-regulation (Cole et al., 2019). The formation of adaptive emotion regulation strategies is of vital importance to children's early development (Paley & Hajal, 2022).

When children persistently fail to deal with negative emotions, they may become beset with frustration and anxiety (Paley & Hajal, 2022), thus placing them at higher risk for developing psychopathology and experiencing maladaptive outcomes (Beauchaine & Cicchetti, 2019). Emotion regulation is vitally important for an individual's function in society and mental well-being (Cole et al., 2019). Maladaptive and impaired emotion regulation strategies in adolescents have been associated with reduced pro-social behavior (Acar et al., 2015), academic achievement (Harrington et al., 2020), social competence (Denham 2019) self-efficacy (Nourali et al., 2018), and inter-personal aggression (Mahmoodnejad et al., 2018) as well as heightened risk for psychopathology (Beauchaine & Cicchetti, 2019).

Another variable that may play an important role in ODD symptoms, including the emotional aspects and confrontational behaviors, is temperament (Ezpeleta et al., 2019). Cloninger's theory, which focuses on biological parameters, has created a solid theoretical framework about personality that conceptualizes both normal and abnormal personality.

According to Cloninger's theory and point of view, personality consists of the dimensions of temperament and character. In his neuro-biological model, Cloninger proposes that the innate systems in the brain are functionally organized and consist of different and independent systems for the activation, continuation, and inhibition of behavior in response to certain groups of stimuli. He introduces the four dimensions of Harm Avoidance (i.e., fearful, pessimistic vs. risk-taking, optimistic), Novelty Seeking (i.e., impulsive, exploratory (curious) vs. deliberate, reserved), Reward Dependence (i.e., friendly, sentimental vs. detached, objective), and Persistence (i.e., determined [persevering], ambitious vs. easily discouraged, underachieving) (Cloninger et al., 1993).

Disruptive behavior disorders, including ODD and conduct disorder (CD), have been reported to have temperamental patterns including high novelty seeking (Nielsen et al., 2019) and high emotionality/low persistence (Forbes et al., 2017). Individuals with high scores on Harm Avoidance may show reduced emotional processing and reappraisal (Lu et al., 2018), while reward dependence is hypothesized to regulate the tonic opposition of social attachment and aloofness through its role in selective attention to salient emotional events (Cloninger & Svrakic, 2008).

2. Methods

The present descriptive-correlational study was designed to predict ODD symptoms based on temperament, emotion regulation, and family affective atmosphere.

2.1. Sample and procedure

The study population was male students of the first and second-district middle schools, living in Urmia, Iran, in the academic year of 2022-2023. The sample size comprised 384 public and private school students selected through cluster sampling.

Being over thirteen and under sixteen years of age, lacking a history of mental illness other than ODD, and having the willingness to participate in the study as well as providing the consent of the school's principal, teachers, and the student were the inclusion criteria. Any student with a substance-related disorder or a prescribed medical therapy were excluded from the study. Questionnaires relevant to the study were physically distributed to the students.

All subjects answered the questions related to externalized behaviors in Hill Burns' Family Affective Climate, Garnefski's Emotion Self-Regulation, Cloninger's Temperament and Character Inventory, and Achenbach's Youth Self-Report questionnaires.

To conduct this study, approval from the Department of Psychology, Ethics committee (Ethics code: IR. IAU.URMIA. REC. 1401.032), a referral letter from the Vice Chancellor for Research in the Azad University of Urmia, and a referral from the Department of Education were obtained, after which a permit was granted from the Departments of Education in the first and second districts of Urmia city. Sampling was then conducted in comprehensive schools using a multi-stage sampling method. First, Urmia city was divided into two districts, with 12 schools in the first district and 15 schools in the second district. Eight schools were selected randomly from the

first and second districts. Then, in each cluster, a list of eligible individuals was extracted and individuals were selected using a random number table. Next, the selected individuals were invited to the exam halls of the relevant schools, where the researcher introduced himself and gave a brief explanation of the questionnaires and the study's objectives and methodology. Anything about the questionnaire that caused the students' confusion was resolved. After consent to participate in the study was obtained from the relevant individuals, the students read and completed the questionnaires. In the middle of filling out the questionnaires, the students were given a 15-minute break in which they could ask any questions they had and obtain explanations about particular items.

The completed questionnaires were collected, and the data were entered into SPSS v.19. After confirming the normality of the data, descriptive statistical methods (minimum, maximum, mean, and standard deviation) and an analytical test (Pearson correlation coefficient) were used in the Kolmogorov-Smirnov test. Multivariate analysis (linear multivariate regression) was used to evaluate the predictive power of the independent variables and to match and control the effects of interfering variables. Statistical analyses were performed with a significance level of p=0.05 (Honarvar et al., 2022).

2.2. Research Tools

2.2.1. The Cognitive Emotion Regulation Questionnaire – CERQ – short

Tthis questionnaire was first developed by Garnefski & Kraaij in 2006, and is a short form of the longer version of the questionnaire developed in 1999 (Garnefski et al., 2002). It measures an individual's style of cognitive response to stressful events or the use of cognitive emotion regulation strategies in a particularly stressful event or situation. It consists of nine scales with 18 items: Self-Blame, Blaming Others, Rumination, Catastrophizing, Positive Refocusing, refocus on Planning, Positive Reappraisal, Putting into Perspective, and Acceptance. The items are in a 5-point Likert response format (1-almost never, 5-almost always). The CERQ can be used to measure cognitive strategies that characterize the individual's style of responding to stressful events as well as cognitive strategies used in particularly stressful events or situations. The CERQ is designed to be a self-report questionnaire that can be administered to people aged 12 years and older, as from that age, people can be considered to have the cognitive abilities to grasp the meaning of the items. The psychometric properties of the CERQ (used as both a more general coping style and as a more specific response to a specific event) have been proven to be good (Garnefski et al., 2005), with Cronbach's alpha coefficients well over .70 and even over .80 in many cases. The CERQ has further been shown to have good factorial validity, discriminative properties, and construct validity (Garnefski et al., 2002). In a study conducted in Iran, Cronbach's alpha coefficients of general coping styles also appeared to be good, ranging from .77 to .99, which showed a reliable measure, and in a Factor analysis this measure showed a GFI indicator of .87, which showed this scale to be valid (Mohsenabdi & Fathi-Ashtiani, 2021).

2.2.2. The Parent-Child Interaction Rating Scales

This questionnaire was developed by Alfred Heilbrun in 1964 to measure parent-child interaction and family affective atmosphere. It consists of eight scales with 18 items: Affection I (degree of affection felt for child), Affection II (degree of affection physically expressed toward child), approval of child and their behavior, sharing of personal feelings and experiences, concrete

giving (e.g., gifts, money, etc.) to the child, encouragement of child in meeting responsibilities and pursuing personal interests, amount of trust placed in child, and sense of security felt by the child in relations with parents. Each scale is presented with a five-point Likert rating scale (1-very low, 5-very high), with each point being anchored by a descriptive phrase, and five always represents the highest degree of perceived nurturance. The mother and father nurturance scores derived from the Interaction Rating Scales represent the cumulative rating total over the eight scales (Heilbrun, 1964). The psychometric properties of the Parent-Child Interaction Rating scales have been proven to be good (Asgari et al., 2011), with Cronbach's alpha coefficients ranging from .77 to .89 which showed this test's reliability, and a validity value of .934 (Asgari et al., 2011).

2.2.3. The Temperament and Character Inventory (TCI)

This questionnaire (Cloninger, 2006) was used in this study to measure the temperament dimensions described by Cloninger's psychobiological model: novelty seeking (22 items), harm avoidance (19 items), reward dependence (15 items), and persistence (18 items). The TCI is scored on a five-point scale from 1 (completely false) to 5 (completely true). High scores in this measure indicate a higher tendency for Reward-seeking, Novelty-seeking, Harm-avoidance, and persistence. The opposite also holds for lower scores in this questionnaire. The psychometric properties of the TCI have been proven to be good (Cloninger, 2006), with Cronbach's alpha coefficients ranging from .71 to .96, which indicates this scale's reliability. The validity of this scale ranged from .72 to .80, which indicated good validity for this measure (Kaviani, 2007).

2.2.4. Achenbach's Youth Self-Report

This questionnaire (Achenbach & Rescorla, 2006) was used to measure the participants' levels of externalizing problems which were computed by summing the scores of the Rule-Breaking (14 items) and Aggressive Behavior (16 items) subscales. The YSR was scored on a three-point scale (0 = not true: 1 = sometimes true; 2 = often true). High scores in this questionnaire indicate externalizing problems such as rule-breaking and aggression, while low scores indicate a relatively normal range of behavior for youths in this age range. In a study conducted in Iran, Cronbach's alpha of YSR appeared to be good, with coefficients ranging from .72 to .95, which showed this test's reliability. In a factor analysis, the validity of this measure was .93 (Minaee, 2006).

2.3. Ethical consideration

Participants' voluntary, written informed consent was obtained, emphasizing confidentiality. Participants were questioned privately, minimizing social desirability bias. Debriefing followed to address participant feelings, correct misconceptions, and provide relevant counseling referrals.

Precautions were taken to ensure no harm was caused (e.g. no leading questions, no expectation of a "right" answer). Participants were informed that they were free to withdraw at any time. In addition, participant data was coded or anonymized to ensure confidentiality. The data was stored securely and accessed only by authorized personnel. Finally, the research was approved by an Institutional Review Board (IRB), which ensures that studies are conducted ethically and legally, which requires written documentation to prove adherence to ethical guidelines.

2.4. Data analysis

The data were entered into SPSS v.19. After confirming the normality of the data, descriptive statistical methods (minimum, maximum, mean, and standard deviation) and an analytical test (Pearson correlation coefficient) were used in the Kolmogorov-Smirnov test. Multivariate analysis (linear multivariate regression) was used to evaluate the predictive power of the independent variables and to match and control the effects of interfering variables. Statistical analyses were performed with a significance level of p=0.05, similar to another study.

3. Results

In this study, the symptoms of ODD, temperament, emotion self-regulation, and affective family climate of the subjects were evaluated by first calculating the mean and standard deviation of the variables and their various aspects according to Table 1. The mean scores were determined to be 5.88 $\pm$ 4.92 for destructive behavior, 8.22 $\pm$ 6.23 for aggressive behavior, 30.13 $\pm$ 7.23 for father-child relationship, 31.83 $\pm$ 6.92 for mother-child relationship, 21.34 $\pm$ 4.93 for negative emotion self-regulation, 30.59 $\pm$ 6.35 for positive emotion self-regulation, 31.25 $\pm$ 2.87 for novelty seeking, 30.48 $\pm$ 3.14 for harm avoidance, 22.22 $\pm$ 2.01 for reward dependence, and 6.75 $\pm$ 1.40 for persistence.

As shown in Table 2, ODD symptoms have a negative and moderate relationship with the variables of father-child relationship (r= -0.50) and mother-child relationship (r=-0.47), a positive and moderate relationship with novelty seeking (r= 0.43), a negative and weak relationship with positive emotion regulation (r=-0.19), a positive and weak relationship with the variables of reward dependence (r=0.18), persistence (r=0.15), and negative regulation (r=0.13), and an insignificant relationship with harm avoidance (r= -0.07).

Multivariate regression analysis identified the ODD symptom predictors (Table 3). The variables of Total Family affective atmosphere (P-value=.001, ß=-0.429), Total Emotion regulation (P-value=.003, ß=1.444), Total temperament (P-value=.001, ß=-.0360),Father-child relationship (P-value=.001, ß=-0.345), Mother-child relationship (P-value=.001, ß=-0.345), Negative regulation strategies (P-value=.001, ß=0.352), Positive regulation strategies (P-value=.024, ß=-.216), New Seeking (P-value=.001, ß=-1.016), Harm Avoidance (P-value=.034, ß=-1.210), Reward Seeking (P-value=.002, ß=.635), and Persistence (P-value=.048, ß=.484) were concurrently entered into the model. The analysis was performed using the backward analysis method. The regression model showed that the variables of temperament, family affective atmosphere, and emotional self-regulation could predict 39.9% of the variance of oppositional defiant symptoms. The Beta values for family affective climate, emotional regulation, and temperament were -0.54, 0.12, and -0.15 subsequently. Therefore the best predictor for symptoms of Oppositional defiant disorder was family affective climate, and it's subscales, which were Father-child relations, and mother-child relaitons.

3.1. Demographic Information

Among the mothers of the 384 participants, 187 (48.7%) had an education level of below a diploma, 149 (38.8%) had a diploma, 12 (3.1%) had an associate degree, and 6 (1.6%) had a master's degree or higher. Among the participants' fathers, 184 (48%) had an education level of below a diploma, 131 (34.1%) had a diploma, 34 (8.9%) had an associate degree, and 18 (4.7%) had a master's degree or higher. The minimum and maximum ages of the students were 13 and

16, respectively, with a mean of 14.93 ± 0.99. All students had a minimum of zero to a maximum of 10 siblings, with the average number being 2.35 ± 1.05.

3.2. Results Tables

Table 1. Descriptive statistics of the research variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Novelty Seeking	25	38	31.25	2.87
Harm Avoidance	21	38	30.48	3.14
Reward Dependence	17	29	22.22	2.01
Persistence	5	10	6.750	1.40
Father-child	8	40	30.13	7.23
Mother-child	8	40	31.83	6.92
Negative regulation	8	34	21.34	4.93
Positive regulation	11	48	30.59	6.35
Destructive behavior	0	27	5.888	4.92
Aggressive behavior	0	29	8.229	6.23
Oppositional defiant disorder	0	53	14.13	10.3

Table 2. Matrix of correlation coefficients of research variables

	1	2	3	4	5	6	7	8	9
Novelty Seeking (1)	1								
Harm Avoidance (2)	-.12	1							
Reward Dependence (3)	-.05	-.05	1						
Persistence (4)	-.18**	-.09	-.06	1					
Father-child relationship (5)	.36**	-.01	-.08	-.27**	1				
Mother-child relationship (6)	.28**	-.03	-.09	-.23**	.71**	1			
Positive regulation (7)	.16**	.06	-.01	-.23**	.26**	.25**	1		
Negative regulation (8)	.02	-.14**	.02	-.14**	.02	.04	.47**	1	
Oppositional defiant disorder (9)	.43**	-.07	.18**	.15**	-.50**	-.47**	-.19**	.13**	1

*=0.05, **=0.01

Table 3. Predictors of ODD symptoms in students

	ß	Beta	t	Std. Error	*P*-value
(Constant)	66.551	51.13	7.192	9.330	.001
Total Family affective atmosphere	-0.429	-0.54	-12.5	.294	.001
Total Emotion regulation	1.444	0.127	2.951	.189	.003
Total temperament	-0.360	-0.15	-3.68	.211	.001
Father-child relationship	-0.345	-0.24	-4.05	.085	.001
Mother-child relationship	-0.319	-0.21	-3.71	.086	.001
Negative regulation strategies	0.352	0.162	3.647	.096	.001
Positive regulation strategies	-0.216	-0.11	-2.971	.077	.024
New Seeking	-1.016	-0.28	-6.498	.156	.001
Harm Avoidance	-1.210	-0.16	-2.534	.137	.034
Reward seeking	0.635	0.16	3.055	.208	.002
Persistence	0.484	0.11	1.264	.318	.048
F=60.487, df1=3, df2=380, Adjusted R^2=0.399, R=0.632					

4. Discussion

The present study found emotion self-regulation to be one of the predictors of oppositional defiant disorder; therefore, negative emotion regulation strategies (i.e., self-blame, other-blame, rumination, and catastrophizing) had a weak and positive relationship with symptoms of ODD, and positive emotion regulation strategies (i.e., positive refocusing, planning, positive

reappraisal, acceptance, and putting into perspective) had a weak and negative relationship with symptoms of ODD. This indicates that increased usage of positive emotion regulation strategies could be associated with a decrease in ODD symptoms in students. Therefore, any increase in negative emotion regulation strategies could be related to an increase in ODD symptoms and vice versa. These findings are in line with the results of a similar study which found a similar relationship between these variables (Schoorl et al., 2016). Schoorl et al. believed emotion dysregulation to be an important problem in those with oppositional defiant disorder, because boys with this disorder may have difficulties reflecting on their emotion regulation skills, and improving these skills would help reduce aggressive and antisocial behavior, which supported the findings of this study considering the similar gender, education, and socio-economical status of the participants. Cavanagh et al. conducted a study, in which parents reported symptoms of ODD in their children. They yielded similar results and proposed that emotion dysregulation and ODD probably tap into the same underlying construct representing headstrong behavior and emotionality, which can further support this finding, considering that Cavanagh et al's study used different scales to measure ED and ODD, but had similar findings to this study (Cavanagh et al., 2017). The results of another study conducted in Virginia, USA, suggest that children with adaptive emotion regulation skills would have more adaptive behavior and insight into how their behavior compares with that of their peers and therefore rate their behaviors based on such comparisons. Therefore, emotional coaching may be a valid treatment for symptoms of ODD; therefore highlighting the importance of ER in relation to ODD, which is in line with the current study (Dunsmore et al., 2016). A study conducted in China showed that problems in a child's emotion regulation can exacerbate symptoms of ODD, and children may show depressive symptoms. Reports from mothers and teachers were used in measuring children's emotional regulation, and although measuring and evaluating the participants' emotional dysregulation problems was indirect, this study provided valuable findings that further support the existing literature, and the current study (Jiang et al., 2020). Chen et al. evaluated primary school children and suggested that oppositional defiant symptoms make it difficult for children with this disorder to develop and improve their emotion regulation skills (Chen et al., 2020).

Based on these findings, emotional dysregulation, which involves difficulties in effectively managing emotions, can be linked to various behavioral and mental health problems related to ODD. Children with ODD may struggle to appropriately regulate their emotional responses, leading to a range of symptoms such as defiant behavior, opposition to authority figures, and angry outbursts. Poor emotional regulation could also lead to an inability to control impulses, which may further exacerbate ODD symptoms. In contrast, effective emotional regulation skills, such as identifying and expressing emotions healthily, may be used to predict lower ODD symptoms in children.

Temperament was the second predictor of ODD symptoms; therefore, symptoms of ODD had a positive and moderate relationship with novelty seeking, a negative relationship with harm avoidance, and a positive and weak relationship with both persistence and reward dependence. This means that lower values of harm avoidance and higher values of novelty seeking, persistence, and reward dependence were associated with an increase in ODD symptoms and vice versa. The results regarding temperament are in line with the results of other similar studies. Kim et al. determined that independent of ADHD, ODD was associated with specific temperament patterns and comorbid psychopathology. While subjects with ODD symptoms demonstrated temperament and character profiles that included high novelty seeking, reward dependence, and

low persistence, which when considering the average age of the participants in that study was 10.4, which could be one of the reasons for the difference between persistence correlations (Kim et al., 2010). Cloninger's dimension of novelty seeking refers to behavioral activation in response to novelty, reward, or avoidance of punishment (Cloninger et al., 1993), and it was suggested as the best predictor of stable, highly delinquent behavior (Godinet et al., 2014). According to Lui et al., the temperament of children with ADHD and ODD, as reported by teachers, showed higher values of novelty seeking compared to norms (Lui et al., 2023), supporting the results of the current study. Aitken et al. showed that children with Child Behavior Checklist Dysregulation Profile had a temperamental profile characterized by high novelty seeking, which indirectly supports the results of the current study (Aitken et al., 2019). Kerekes and her colleagues (2017), in a similar study, found that High persistence had a negative correlation with aggressive behaviors, which contradicts the findings of this study. However, these findings can be explained by the fact that the participants in that particular had reportedly higher maturity levels, which could have heightened their control over their behavior.

ODD symptoms may be predicted by Cloninger's dimensions of temperament, as individuals with high novelty seeking and low Harm Avoidance may exhibit impulsive and risky behaviors. These behaviors, such as defiance, aggression, and irritability, are hallmark signs of ODD. Children and adolescents with ODD often engage in risky behaviors and have difficulty inhibiting their impulses, which may be related to a lack of harm avoidance. Additionally, individuals with ODD may struggle to regulate their emotions and demonstrate low persistence in tasks or activities. Alternatively, those with high reward dependence may struggle with the frustration of not getting their way, leading to outbursts and confrontations. By considering these temperament dimensions, clinicians can better identify and treat ODD symptoms. For example, interventions such as cognitive-behavioral therapy could help individuals with ODD increase harm avoidance and regulate their emotions, reducing impulsive behaviors and defiance.

Family affective climate was the third predictor of ODD symptoms; mother-child and father-child relationships had a moderate and negative correlation with symptoms of ODD; hence, a strong parent-child relationship was related to a decrease in symptoms of ODD and vice versa. This result was in line with those of Miller-Slough et al., who suggested that parent-child synchrony was associated with less aggression in children with ODD symptoms and fewer conduct problems and may be of assistance with practicing skills learned in the treatment of this disorder (Miller-Slough et al., 2016). Another study in China assessed mother-child relationship quality through conflict and dependency. Its results suggested that children's negative perceptions of their parental relationship could cause an incompatibility in their relations and may further compromise children's emotion dysregulation and exacerbate ODD symptoms (Jiang et al., 2020). In a similar study by Lin et al., it was found that families of oppositional defiant disorder youths were characterized by significantly poorer cohesion and significantly higher rates of conflict; therefore, children with ODD had significantly impaired social interactions across all domains of social functioning, including relations with parents and siblings (Lin et al., 2022). Another study performed by Chen et al. indirectly supports this finding. In that study, researchers found that parental violence and alienation in conjunction with children's challenging oppositional behaviors converge to reinforce the severity of children's ODD symptoms (Chen et al., 2020). Research conducted by Lin et al. suggested that the interactions between parents and children and high family conflict not only had a unilateral effect on the child's development but also influenced parent relationships and functioning (Lin et al., 2018). A positive affective

climate is characterized by warmth, support, and positive interactions, while a negative affective climate is characterized by hostility, conflict, and negative reactions. This research's findings have shown that a negative family affective climate is a significant predictor of externalizing behavior problems, particularly Oppositional Defiant Disorder (ODD) symptoms, in children and adolescents. Parents who frequently exhibit negative affective expressions and fail to provide supportive and nurturing environments can increase the risk of their children developing ODD symptoms. The constant exposure to negative family interactions can lead to the development of defiant and obstinate behavior and difficulties in regulating emotions. In contrast, children raised in a positive and supportive family environment are more likely to develop appropriate social and emotional skills and better regulate their emotions, resulting in lower rates of ODD symptoms. Therefore, the family's affective climate can play a crucial role in shaping children's development and behavior, particularly concerning ODD symptoms.

5. Limitation and Recommendation

This study was carried out among male students. Because of cultural, social, and ethnic differences, caution should be exercised in generalizing these findings to female students and other subjects living in other parts of the world. In this research, temperament, emotion regulation, and affective family climate were used to predict symptoms of ODD, and it would be beneficial to conduct further research to extract other significant factors that can be used to predict ODD symptoms using both quantitative and qualitative research methods.

6. Conclusion

The present study showed that childhood temperament, emotion regulation, and affective family climate could predict different trajectories of aggression and rule-breaking, which are symptoms of ODD. In addition, it was shown that rule-breaking and aggressive behavior depends on both individual and contextual factors such as temperament and family atmosphere. High novelty seeking, reward dependence, and the use of maladaptive emotion regulation strategies combined with lower-quality child-parent relationships could be associated with an increase in ODD symptoms. These findings may have practical implications for prevention and intervention programs for children at risk of ODD. For school psychologists, temperament, affective family climate, and emotion dysregulation could act as early warning signs of ODD, and information about children's temperament could help them tailor a specific intervention plan that has increased effectiveness for said child.

7. Author Contributions

Conception and design of the study: F. F, and P. J.; acquisition of data: P. J.; analysis and/or interpretation of data: P. J.; drafting the manuscript: P.J. All authors have read and approved the manuscript.

8. Ethical moral code

This study was performed in the form of a dissertation (IR. IAU.URMIA. REC. 1401.032) and was approved by the Vice Chancellor for Research, Azad University of Urmia, and the Research Ethics Committees of Islamic Azad University-Urmia Branch. All methods were performed per the relevant guidelines. Informed consent was obtained from all participants.

9. Acknowledgment

The authors would like to express their gratitude to Urmia's Department of Education and the relevant

schools as well as the participants in this study for their cooperation.

10. Conflicts of interest

No conflicting interest

Author Contributions: Author 1, general framework planning, content editing and analyzing, submission and correction. Author 2, collaboration in general framework planning, conception and design of the study, and final review. All authors discussed the results, reviewed and approved the final version of the manuscript.

Acknowledgments: The authors thank all dear colleagues and professors who have helped us in this research.

Conflicts of Interest: The authors declare there is no conflict of interest in this article. This article extracted from the Ph.D. thesis, with the guidance of Dr. Farnaz Farshbaf.

Funding: This article did not receive financial support.

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