

# The Preliminary Study of the Relationship Between Emotion Regulation Difficulties, Callous-Unemotional Traits and the Emergence of Oppositional Defiant Disorder in Outpatient Adolescents

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Received 2015 October 30; Revised 2016 January 12; Accepted 2016 January 17.

## Abstract

**Background:** Previous research has demonstrated that oppositional defiant is a strong predictor of mental illness that cause significant distress for adolescents who manifest the disorder and pose remarkable costs for society.

**Objectives:** The aim of this study was to investigate the role of callous-unemotional traits and emotion regulation difficulties in predicting oppositional defiant disorder.

**Materials and Methods:** This is a descriptive-correlative study performed on a sample of 320 male high school students, chosen via multi-stage random sampling. Instruments used to collect data are inclusive of oppositional defiant behavior inventory (ODBI), difficulties in emotion regulation strategies scale (DERS) and inventory of callous-unemotional traits (ICU).

**Results:** The results suggest a significant relationship between oppositional defiant behavior, impulse control difficulties and callousness. Regression analysis revealed that 16% variance of oppositional defiant behavior can be explained by impulse control difficulties and callousness.

**Conclusions:** Our findings highlight the importance of callousness and impulse control difficulties in development of oppositional defiant disorder. Moving forward, clinicians should consider the importance of these variables in their future research to identify mechanism through which callousness and impulse control difficulties enhances risk of oppositional defiant disorder.

**Keywords:** Oppositional Defiant Behavior, Callous-Unemotional Traits, Emotion Regulation

## 1. Background

Childhood anti-social behavior is of utmost importance to the mental health issues because of the disruptions it causes in families, schools, and communities and it is also a robust predictor of delinquency, crime, and drug abuse in adolescence and adulthood (1). Oppositional defiant disorder (ODD) is one of the anti-social behaviors with high prevalence in youth, has a high correlation with a wide range of psychiatric disorders, including emotional disorders and externalizing disorders (e.g. callous-unemotional traits) (2). According to the fifth edition of diagnostic and statistical manual of mental disorder (DSM-5) by American psychiatric association, the most important characteristic of ODD is a continuous and repeated pattern of hostility, anger, irritability, verbal battle, disobedience, stubbornness, defiant, and malice. ODB may occur before age three, but its usual course of incidence is from 8 to 12 years old (3). Although ODD is considered as one of the childhood disorders, yet evidence sug-

gest that the symptoms are not stopped by puberty but the patients are likely to continue their problematic behavior interacting with peers, colleagues, bosses, and customers and continue to have problems keeping their jobs and relationships (4). Therefore, the researchers found that ODD diagnosis is valid in adults with high prevalence rate (6.2 to 15.6% in non-clinical samples and 25 to 68% in clinical samples) among this age group (5, 6).

Research has suggested that emotion regulation difficulty is one of the core features of ODD (7, 8). Emotion regulation difficulty is defined as maladaptive response to emotions, including ones response to non-acceptance, impulse control difficulty along with emotional distress and defects in operational use of emotions as information (9). People's strategy to adjust their emotions, especially negative emotions is strongly associated with psychopathology (10). Since criteria for ODD consists of two aspects of emotions (anger and hurt) and behavior (challenging, arguing, and disobedience) (11), therefore, demonstrations of emo-

tion regulation difficulties are common in ODD such as anger and behavior outbursts, vandalism, aggression towards self and others, threatening to suicide, behavioral problems, unsuccessful social interaction, disturbed relationships at home and at school (12). Spencer et al. (13) found that 7 - 16 year old children with externalizing disorders and disruptive behavior have difficulties with organizing emotional experiences, understanding others' emotions and expressing their own emotions appropriately in different situations. They also use less positive emotion regulation strategies such as planning, re-evaluation, and acceptance. Freak factors associated with emotion regulation (such as high levels of emotional reactivity, poor frustration tolerance) are highly predictive of ODD, since the ability to regulate emotions is a successful aspect of children's development in social adaptation (14) and lack of emotion regulation skills during childhood is followed by aggressive behavior and social exclusion in adulthood (15).

A sign for different patterns of dysregulation may be the presence or absence of callous-unemotional traits. Callous-unemotional traits refer to specific emotional styles (e.g. lack of guilt, limited emotional expression) and interpersonal relationship styles (e.g. inability to express sympathy, using others for personal gain) (16). These characteristics are determined based on a consistent pattern of behavior indicating disregard for others as well as a lack of empathy. More specifically, adolescents with disruptive behavior spectrum such as conduct disorders and ODD indicating high levels of callous-unemotional traits (17), firstly, experience more severe symptoms, have numerous deviant behaviors, and will not be regretful with their behavior, and secondly, have less behavioral inhibition (18). These children, have the highest risk for anti-social behavior and criminality in adulthood (17).

According to up-to-date researches, it is indicated that the adulthood anti-social traits are the persist form of childhood anti-social characteristics (19, 20). Despite the stability of disruptive behaviors and callous-unemotional traits, early intervention can be effective (21, 22). Therefore, it is important to consider early callous-unemotional traits and emotion regulation difficulties in growth models of ODD and to use them for antisocial personality disorder assessment, prevention programs, intervention efforts, and treatment options.

## 2. Objectives

Thus, the purpose of this study was to examine the predictive role of callous-unemotional traits and emotion regulation difficulties as predictors of ODD and to explore the quality of the relationship in non-clinical population.

## 3. Materials and Methods

This is a cross sectional-descriptive study, investigating the relationship between callous-unemotional traits (callousness, uncaring and unemotional), emotion regulation difficulties (engaging goal-oriented behaviors, impulse controlling difficulties, lack of emotional awareness, limited access to emotion-regulation strategies, lack of emotional clarity), with ODB in high school students. Correlation and stepwise regression analysis were conducted using SPSS for windows, version 18. All participants completed oppositional defiant behavior inventory (ODBI), difficulties in emotion regulation strategies scale (DERS) and inventory of callous-unemotional traits (ICU).

### 3.1. Participants

350 male students studying in 2<sup>st</sup> and 3<sup>rd</sup> grades of high school in educational year 2014 - 2015 (Iranian year of 1393 - 1394), chosen via multistage random sampling, and one of their parents were participate in the questionnaire surveys. 10 high schools (out of thirty) were chosen randomly, then, two classes were selected in each one, and finally half of the students of each class were chosen randomly to answer the questionnaires. Difficulties in emotion regulation strategies scale (DERS) and inventory of callous-unemotional traits (ICU) were administered to groups of students and their parents participate in the survey by answering oppositional defiant behavior inventory (ODBI). Thirty respondents were eliminated from the sample due to not completing the questionnaire accurately. Therefore the final sample comprised of 320 male students. The age range of the participants was 15 to 18 years old, with an average (SD) of 16.34 (0.66). 44.7% of subjects were in 2<sup>st</sup> grade and 55.3% in 3<sup>rd</sup> grade of high school. The average CGPA (cumulative grade point average) of students in sample was 17.76, SD = 1.62.

### 3.2. Instruments

#### 3.2.1. Oppositional Defiant Behavior Inventory Pilot Version

This is an 18-item parent-report inventory which evaluate concrete oppositional behaviors (23). ODBI is scored on 4-point Likert scale ranging from 1 to 4 (1 (rarely, once a month), 2 (sometimes, once a week), 3 (often, twice or three times a week), 4 (always, four times or more a week)). Total score range from 0 to 54, and due to the point that the cut-off point is 20, scores above 20 is associated with oppositional defiant disorder. The higher the score, the more severe the ODB. The psychometric properties of the inventory reported to be sufficiently accurate ( $\alpha > 0.92$ ) (24). In present study Cronbach's  $\alpha$  was calculated to be 0.90.

### 3.2.2. Difficulties in Emotion Regulation Strategies Scale (DERS: Gratz and Roemer, 2004)

The DERS consist of 36 items that are rated on a 5-Likert scale, ranging from 1 to 5: 1 almost never, (0 - 10%), 2 (sometimes, 11 - 35%), 3 (about half the time, 36 - 65%), 4 (most of the time, 66 - 90%) and 5 (almost always, 91 - 100%). Higher scores indicate higher difficulties in emotion regulation. DERS provides a comprehensive assessment of difficulties in emotion regulation, including non-acceptance, difficulty in engaging goal-oriented behaviors (goals), impulse controlling difficulties (impulse), lack of emotional awareness (aware), limited access to emotion-regulation strategies (strategies) and lack of emotional clarity (clarity). Prior research examining this instruments with a clinical community sample ( $n = 111$ ) of boys and girls high internal consistency ( $\alpha > 0.86$ ) (25). Regarding its construct validity, DERS demonstrated a strong correlation with psychological problems reflecting emotion dysregulation, specifically anxiety, depression and suicidal ideation. Intercorrelations among the DERS subscales ranged from non-significant to high ( $r = 0.04$  to  $r = 0.68$ ), and potential problems with discriminant validity were noted (26). In Iranian sample, this scale has shown a good internal consistency ( $\alpha > 0.86$ ) (27). In the current sample Cronbach's  $\alpha$  was 0.84.

### 3.2.3. Inventory of Callous-Unemotional Traits

This is a 24-item self-, parent or teacher report questionnaire that assesses callous-unemotional traits among adolescents aged 13 - 18 years old. This measure is adopted from CU scale of the antisocial process screening device (28). Participants rate each item using a four-point Likert scale with responses ranging from 0 (not at all true) to 3 (definitely true) to evaluate callousness (11 items), uncaring (8 items) and unemotional (5 items). The higher the score, the more severe the callous-unemotional traits. ICU has shown enough internal consistency in a sample of 540 students aged 10-16 years old, ( $\alpha > 0.66$ ) (29). The temporal stability and construct validity of ICU was assessed using child psychopathology scale-revised (CPSr), and it shows a moderate correlation with affective facet of psychopathology ( $r = 0.49$ ,  $P < 0.001$ ) (17). In current study we used self-report version of the scale and the Cronbach's  $\alpha$  was 0.70 for total scale and 0.64, 0.68 and 0.48 for callousness, uncaring and unemotional dimensions, respectively.

## 4. Results

Table 1 summarizes the participant characteristics both for the full sample and 2<sup>st</sup> and 3<sup>rd</sup> grades students separately, including means, SDs, and minimum/maximum

scores on all measures. No significant differences were found between students in two grades in ODB, CUT and DER.

Table 2 summarizes the results of bivariate analyses (Pearson correlations) to determine the relationships between variables. Table 2 shows that ODB has the most significant correlation with impulse controlling difficulties ( $r = 0.34$ ;  $P < 0.001$ ) and the least significant correlation with unemotional ( $r = 0.11$ ;  $P < 0.001$ ). In addition, no significant relationship was found between age and research variables. As can be seen from Table 2, severity of ODB, callous-unemotional traits, difficulties in emotion regulation and its dimensions were mildly to moderately correlate with each other.

A series of regression analysis were conducted to examine the relationship between callous-unemotional traits (and its components) and difficulties in emotion regulation (and its components) as predictor variables and ODB as a criterion variable. One of the basic assumptions of multiple regression analysis is independence of predictive variables or to put it in other words, the lack of correlation between the independent variables errors. In next step we investigate this case by Durbin-Watson test. In sum, it can be said that if the value of test statistic was between 1.5 and 2.5, the independence of the observations can be accepted and perform the analysis. Since the result of Durbin-Watson test was equal to 2.04, the predictor variables are independent. Table 3 summarizes the result of linear regression analysis.

As Table 3 shows, Impulse controlling difficulties and callousness predicted the severity of ODB in linear regression analysis. More specifically,  $R$  and  $R^2$  reported to be 0.40 and 0.16 respectively, means that 16% of the variance related to ODB can be explained by impulse control difficulties and callousness.  $F$  for the multiple correlations calculated to be 30.83 ( $P < 0.001$ ).

## 5. Discussion

The current study aimed at further exploring the roles of callous-unemotional traits and emotion regulation difficulties in predicting ODD. Consistently with existing literature (13, 30-33) we have found that distorted emotional regulation especially impulse control difficulties associated with higher oppositional defiant traits. We also found that callousness was the best predictor of ODD; such findings are largely consistent with pioneering studies (34-37). The findings support the assumption that ODD associated with many kinds of risk factors but maybe the most related to the basic construct of ODD are impulse control difficulties and callousness. Indeed, emotional reactivity and inadequate affective growth, as well as difficulties in emo-

**Table 1.** Participant Characteristics and Descriptive Statistics on Main Study Variables<sup>a</sup>

Variable	Range	Full Sample (n = 320)	2 <sup>nd</sup> Grade (n = 140)	3 <sup>rd</sup> Grade (n = 178)
Age, y	15 - 18	16.34 ± 0.61	15.92 ± 0.41	16.66 ± 0.54
CGPA	11.50 - 20	17.76 ± 1.62	17.66 ± 1.73	17.87 ± 1.52
ODB	0 - 43	9.39 ± 7.85	9.27 ± 7.90	9.49 ± 7.82
CUI	7 - 42	21.11 ± 6.45	21.08 ± 6.36	21.14 ± 6.55
Callousness	1 - 20	20 ± 9.83	9.89 ± 3.26	9.78 ± 3.66
Uncaring	0 - 15	3.77 ± 2.91	3.93 ± 2.78	3.65 ± 3.02
Unemotional	2 - 15	7.50 ± 2.03	7.25 ± 2.003	7.70 ± 2.03
DER	44 - 154	87.64 ± 18.74	87.44 ± 19.14	87.80 ± 18.47
Goals	5 - 25	14.34 ± 5.07	14.40 ± 5.21	14.30 ± 4.97
Impulse	6 - 30	14.29 ± 5.21	14.40 ± 5.51	14.20 ± 4.97
Aware	6 - 26	15.73 ± 3.74	15.67 ± 3.97	15.77 ± 3.55
Strategies	8 - 37	17.80 ± 6.33	17.69 ± 6.47	17.89 ± 6.23
Clarity	5 - 25	10.76 ± 3.44	10.82 ± 3.26	10.70 ± 3.59
Non-acceptance	6 - 30	15.11 ± 4.50	14.93 ± 4.43	15.25 ± 4.56

Abbreviations: CGPA, cumulative grade point average; CUI, callous-unemotional traits; DER, difficulties in emotion regulation strategies; ODB, oppositional defiant behavior.

<sup>a</sup>Definitions: Goals = engaging goal-oriented behaviors; Impulse = impulse controlling difficulties; Aware = lack of emotional awareness; Strategies = limited access to emotion-regulation strategies; Clarity = lack of emotional clarity.

**Table 2.** Zero-Order Correlation Between Research Variables<sup>a</sup>

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
Age	-												
CGPA	-0.06	-											
ODB	0.005	-0.03	-										
CUI	-0.004	-0.17 <sup>b</sup>	0.27 <sup>b</sup>	-									
Callousness	-0.04	-0.2 <sup>b</sup>	0.28 <sup>b</sup>	0.86 <sup>b</sup>	-								
Uncaring	-0.007	-0.1	0.16 <sup>b</sup>	0.73 <sup>b</sup>	0.42 <sup>b</sup>	-							
Unemotional	0.08	0.04	0.11 <sup>c</sup>	0.57 <sup>b</sup>	0.34 <sup>b</sup>	0.14 <sup>b</sup>	-						
DERs	0.01	-0.007	0.28 <sup>b</sup>	0.31 <sup>b</sup>	0.28 <sup>b</sup>	0.17 <sup>b</sup>	0.22 <sup>b</sup>	-					
Goals	-0.01	0.04	0.25 <sup>b</sup>	0.14 <sup>b</sup>	0.16 <sup>b</sup>	0.03	0.11 <sup>c</sup>	0.75 <sup>b</sup>	-				
Impulse	0.009	-0.04	0.34 <sup>b</sup>	0.28 <sup>b</sup>	0.25 <sup>b</sup>	0.16 <sup>b</sup>	0.21 <sup>b</sup>	0.82 <sup>b</sup>	0.72 <sup>b</sup>	-			
Aware	0.08	-0.02	0.007	0.20 <sup>b</sup>	0.14 <sup>b</sup>	0.17 <sup>b</sup>	0.13 <sup>b</sup>	0.18 <sup>b</sup>	-0.11 <sup>c</sup>	0.07	-		
Strategies	0.001	-0.003	0.25 <sup>b</sup>	0.2 <sup>c</sup>	0.27 <sup>b</sup>	0.14 <sup>c</sup>	0.17 <sup>b</sup>	0.85 <sup>b</sup>	0.62 <sup>b</sup>	0.68 <sup>b</sup>	-0.04	-	
Clarity	0.004	-0.048	0.04	0.23 <sup>b</sup>	0.17 <sup>b</sup>	0.19 <sup>b</sup>	0.14 <sup>c</sup>	0.54 <sup>b</sup>	0.22 <sup>b</sup>	0.27 <sup>b</sup>	0.30 <sup>b</sup>	0.33 <sup>b</sup>	-
Non-acceptance	-0.004	0.04	0.09	0.06	0.08	-0.01	0.09	0.59 <sup>b</sup>	0.31 <sup>b</sup>	0.34 <sup>b</sup>	-0.04	0.41 <sup>b</sup>	0.19 <sup>b</sup>

<sup>a</sup>n = 320.

<sup>b</sup>p < 0.001.

<sup>c</sup>p < 0.05.

**Table 3.** The Results of Stepwise Regression in Predicting ODB<sup>a</sup>

Predictive Variable	R	R <sup>2</sup>	F	P	R Square Change	F Change	Regression Coefficients 1			Regression Coefficients 2		
							b	t	P	b	t	P
Impulse controlling difficulties	0.34	0.12	4.56	< 0.001	0.12	43.54	-	-	-	0.21	4	< 0.001
Callousness and impulse controlling difficulties	0.4	0.16	30.83	< 0.001	0.04	16.06	0.34	6.59	< 0.001	0.29	5.52	< 0.001

<sup>a</sup>Dependent variable: oppositional defiant behavior.

tional and behavioral regulation would result in overcoming reasoning power by emotions, thus in different situations individuals make decision on the basis of environmental and emotional atmosphere regardless of various possible solutions (38). Accordingly, these people often use disruptive disorders such as oppositional defiant behavior to deal with their negative emotions (39, 40). This issue may help to understand how impulse control difficulties will lead to oppositional defiant behaviors. Impulsivity is defined as impairment in behavioral inhibition (41), impulsive children, compared to their normal counterparts, are at the higher risk of externalizing behaviors such as compositionality, aggression and conduct disorder (42, 43). One of the contextual factors could be parenting behaviors. Since parents of impulsive children may use the violent interactions and inconsistent discipline in order to discipline and punish their children with impulsive behavior. This may increase the likelihood of exhibiting oppositional defiant behaviors (44). Moreover, there is evidence to suggest that ODD irritability dimensions (e.g. indignant and furious) was correlated with emotional disorders and ODD hurtful dimension was robustly associated with callousness (45).

Of note, adolescent with callous-unemotional traits (e.g. low empathy, callous use of others) are more likely to exhibit impairment in processing of negative emotional stimuli, which demonstrate low rate of anxious inhibitions and decreased sensitivity to punishment (46). Thus, callous-unemotional traits are not only one of the main components of affective, interpersonal and behavioral features indicating the existence of psychopathy (47), but also because of its correlation with emotion regulation difficulties, it's a robust predictor of ODD. Moreover, these individuals grow callous towards others by violent social experiences (e.g. childhood adversity, lack of support, poor social skill development and/or rejection). They are not affected by environment and they are less responsive to treatment (48). Another aspect especially worthy of note is that children with callous traits tend to be more agitated, less sensitive to punishment and less reactive to threatening painful stimuli, which are all features of ODD. These findings suggest that emotional dysregulation and callous traits may be important, not only for diagnosing the individuals with ODD, but for designating those who are at risk of ODD but do not yet show significant disruptive behavior.

It is important to place these interpretations in the context of a number of limitations in the study. Firstly, it is important to reiterate that our study is cross-sectional design with the sample consisted only of non-clinical male cases, so our finding must be interpreted in this context. Secondly, we relied upon singular questionnaire to assess research variables and ODD, which were rated only by par-

ents and might have been more influential if based on teacher/child reports or interviewer rating. Thirdly, emotion regulation difficulties, callous-unemotional traits and ODD were assessed concurrently; therefore, no casual inferences about ODD symptoms can be drawn. Furthermore, exploring alternative pathways linking impulsivity and emotional reactivity with ODD symptoms in clinical population is necessary. Stronger evidence in the form of longitudinal research would support our findings.

In summary, we found in this community sample of adolescent that impulse control disturbance and callousness are central psychopathological issues in developing ODD, and this characteristic should be carefully considered in the evaluation and treatment of these patients. The literature on this area is sparse and more research is needed in this field. The betterment of emotional regulation may become a core target of treatment procedure and may be correlated with stable treatment overtime.

## Acknowledgments

The authors are grateful to all the participants for their valuable cooperation in this study. This work was in part supported by the Shahid Chamran university of Ahvaz (department of psychology).

## Footnote

**Authors' Contribution:** Seyedeh Fatemeh Sajadi was responsible for analysis and interpretation of data, drafting the manuscript. Arezoo Palizyan was responsible for acquisition of data and administrative. Mahnaz Mehrabizade Honarmand and Nasrin Arshadi were responsible for study supervision.

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