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The relationship between mentalization and borderline personality features in adolescents: mediating role of emotion regulation

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ABSTRACT

Dysfunctions in both emotion regulation and mentalization capacity might be reasons behind borderline personality features. This study investigated the mediating role of emotion regulation between mentalization and borderline personality features in adolescents. We recruited 218 adolescents (mean of age = 16.45 ± 1.01 years old, 62.0% girls) based on convenience sampling from high school students. We evaluated mentalization using reflective functioning questionnaire (RFQ), emotion regulation with difficulties in emotion regulation scale (DERS), and borderline personality features with borderline personality features scale for children (BPFSC). There were significant associations between mentalization, emotion regulation, and borderline personality features. Difficulties in emotion regulation mediated between mentalization and borderline personality features. Mentalization deficits and emotion dysregulation contribute significantly to borderline personality features in adolescents. Mentalization deficits might affect borderline personality features' development via its effect on emotion regulation. Prevention and treatment plans for borderline personality disorder should focus on emotion regulation and mentalization.

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Borderline personality; mentalization; emotional dysregulation

Key practitioner message

- **What is known?** Mentalization deficits and emotional dysregulation are important in borderline personality disorder derived from insecure attachment.
- **What is new?** Uncertainty about mental states is positively associated with emotional dysregulation and borderline personality features. It seems that emotional dysregulation mediates between mentalization deficits and borderline personality features.
- **What is significant for clinical practice?** Prevention and treatment plans for borderline personality disorder in adolescents should focus on emotional regulation and mentalization.

Adolescence is a critical life period for the onset of psychological problems. A psychological disorder that might begin in this period is borderline personality disorder (BPD) (Bradley et al., 2005). Some evidence shows that borderline personality features present in adolescence can show the risk for the development of BPD in adulthood (Belsky et al., 2012; Winograd et al., 2008). Also, this personality disorder is most severe among adolescents compared to the other age groups (Chanen et al., 2007).

Most theoretical and developmental models of BPD suggest that attachment problems or interpersonal difficulties are associated with the later development of BPD (Bo & Kongerslev, 2017).

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A developmental model for understanding BPD is a mentalization-based model. According to this model, the main pathology underlying BPD is related to break down mentalization, where insecure attachment causes mentalizing impairments (Fonagy & Luyten, 2009).

Literature and theoretical overview

Mentalization is defined as the capacity to understand and make sense of self and others' behaviours in terms of underlying mental states and intentions (Fonagy et al., 1991). It is a broad concept that contains some social-cognitive functions, including the reflective function. Reflective function (RF) refers to the ability to think deeply about the mind of self and others regarding the attachment relationship (Fonagy & Luyten, 2009). Fonagy and colleagues believed that children could develop this ability through secure attachment with caregivers who reflect on their children's mental states without interfering (Fonagy & Target, 1996). The lower levels of RF, as assessed by a self-report measure of RF, are significantly correlated with borderline personality features in adolescent inpatients (Duval et al., 2018; Ha et al., 2013). Bo and Kongerslev (2017) indicated that BPD is a severe psychological condition characterized by poor mentalization among adolescents. Sharp et al. (2020) found out that there is a significant negative relationship between RF and borderline features that is moderated by externalizing problems. When a parent does not consider the child as an individual who has a mind him/herself, this undermines the development of mentalizing abilities in the child. Thus, this increases the risk of psychopathology (Ensink et al., 2017), including borderline pathology (Bender & Skodol, 2007; Hopwood et al., 2013).

In addition to impairments in mentalizing, emotional dysregulation has been suggested as a further core domain in BPD derived from insecure attachment (Linehan et al., 2006). Emotional dysregulation in BPD includes a lack of awareness of emotions and inappropriate and insufficient regulation and management of emotions that result in disturbed behaviour under distress (Carpenter & Trull, 2014).

Conceptual framework

In their model of BPD, Linehan et al. (2006) stated that responsiveness and availability of attachment figures support the development of emotional stability and emotional regulation abilities in a child, while suboptimal attachment relations contribute to disequilibrium and disruption of the optimal development of emotional regulation strategies. Moreover, Jurist (2018) suggests a theory called mentalized affectivity in which mentalization takes into account in the regulatory process. According to this theory, emotional regulation relies on the ability of mentalization. Without the capacity to understand and interpret mental states, emotional regulation might be inappropriate or inadequate, which may contribute to inappropriate behaviours in BPD patients (Allen et al., 2008). So, mentalization and emotional regulation seem to correlate with BPD (Sharp & Vanwoerden, 2015), and both result from insecure attachment. In their research, Sharp et al. (2011) concluded that difficulties of mentalizing in borderline patients are more apparent in those with excessive inaccurate mentalizing (hypermentalizing). Moreover, hypermentalizing exerts its influence on borderline features through the mediating role of emotion dysregulation.

Purpose of the study

In this study, we aimed to contribute to the understanding of the role of mentalization and emotion regulation on borderline personality features in adolescents. Specifically, we investigated whether emotion dysregulation mediates the relationship between mentalization and borderline personality features. Previously, mentalizing was examined in either early childhood or adulthood, ignoring adolescence, while adolescence is a critical period for the development of mentalizing abilities and its associated emotional regulation. The findings might have important clinical implications because

identifying potential factors and their interactions in the development of borderline personality features in adolescents could lead to prevention and early intervention programmes to reduce subsequent PBD and other psychiatric disorders.

Method

Study design and participants

We used a correlational research design for this study. Participants were 218 adolescents (62% girls) aged between 15 to 18 years old. They were selected from six high schools of two cities of Iran (Tehran and Shahriyar) through a convenience sampling. Mean age of participants was 16.45 years old ($SD = 1.01$). In terms of parents' level of education, 70.8% of the mothers and 63.1% of fathers had higher education.

Procedure

Participants were recruited through high schools in Tehran and Shahriyar, Iran. In total, six high schools in different regions were visited by two research assistants. After the consent of the school principals, the study and its objectives were explained to adolescents. No economic incentives were given for participating in the study. It was emphasized that participation in the study was entirely voluntary. Full anonymity was guaranteed, and participants were told they could stop their participation in the study at any time. When participants agreed to participate, after providing informed consent, they were requested to complete a booklet of questionnaires. Confidentiality was ensured by replacing personal information with a numeric code. All Participants completed the questionnaires on the same day. To avoid any potential information bias, the students sat separately with distance in a room to fill the questionnaire. Questionnaires were then collected by the research assistants. The study was reviewed and approved by the attachment and interpersonal studies research group of the institution.

Measures

Reflective functioning questionnaire (RFQ)

RFQ (Fonagy et al., 2016) is a self-report measure with eight items to assess reflective functioning in a two-dimension model: certainty (RFQc) and uncertainty (RFQu) about mental states. Scores of both subscales are calculated by recoding six items. The RFQc subscale is measured by how much an individual disagrees with statements such as '*People's thoughts are a mystery to me*'. The items are rescored (3, 2, 1, 0, 0, 0, 0 with 3 indicating disagree strongly). RFQu subscale is measured by how much the individual agrees with statements such as '*Sometimes I do things without really knowing why*' and is rescored (0, 0, 0, 0, 1, 2, 3; with 3 indicating agree strongly). According to Badoud et al. (2015) and Duval et al. (2018), RFQ has a satisfactory reliability and validity. Seyed-Mousavi and colleagues have examined the psychometric properties of the Persian version of RFQ among a sample of Iranian adolescents (Seyed-Mousavi et al., unpublished). They have assessed internal consistency (Cronbach's $\alpha = 0.71$ for RFQc, and 0.63 for RFQu), and test-retest reliability (correlation coefficient = 0.78 for RFQu and 0.81 for RFQc). In the present study, Cronbach's α was .75 for RFQc and .66 for RFQu.

Difficulties in emotional regulation scale (DERS)

DERS (Gratz & Roemer, 2004) is a 36-item self-report questionnaire that assesses clinically relevant difficulties in emotional regulation (with a particular emphasis on negative emotions). Participants answer the questions on a 5-point Likert scale, where 1 stands for almost never and 5 stands for almost always. Evidence supports the reliability of DERS scores. Specifically, DERS scores have been

found to demonstrate good test–retest reliability over a period of four to eight weeks in a sample of college students ($r = .88$; Gratz & Roemer, 2004). Both the overall DERS score and its subscale scores have been found to have high internal consistency in clinical (Gratz & Roemer, 2008) and nonclinical populations (Gratz & Roemer, 2004). The construct and predictive validity of DERS scores have also been supported in both clinical and nonclinical populations (Gratz & Roemer, 2004). Neumann et al. (2010) have used DERS in a non-clinical sample of adolescents. Their results suggested that DERS scores show promising internal consistency and validity in a community sample of adolescents. Psychometric properties of the Persian version of DERS has been reported in several studies (e.g. Kermani Mamazani & Tale Passand, 2018; Khanzadeh et al., 2012). They show its validity and reliability. In this study, Cronbach’s alpha of the Persian DERS was .91.

Borderline personality features

Borderline features were measured using the borderline personality features scale for children (BPFSC; Crick et al., 2005). This scale has four subscales assessing core borderline personality symptoms: emotional instability, identity problems, negative relationships, and self-harm. This 24-item self-report measure was designed specifically for youth and includes items such as ‘I go back and forth between different feelings, like being mad or sad or happy’ and ‘I get upset when my parents or friends leave town for a few days’. Items are rated on a 5-point Likert scale, with 1 indicating ‘not true at all’ and 5 indicating ‘always true.’ Item scores are summed up to give a total score, with higher scores showing greater levels of borderline features. This questionnaire has good validity, test-retest, and internal consistency reliability (Crick et al., 2005). Zargar et al. (2014) examined the psychometric properties of its Persian version. Their results supported the four-factor model, showing that it has a satisfactory internal consistency (between .76 to .78 for the four subscales) and validity. In this study, Cronbach’s alpha was between .67 to .74 for the four subscales.

Statistical analysis

First, the correlations were calculated to explore the relationships between the variables. Then, a structural equation model was used to investigate the theoretical model presented in Figure 1. The significance of indirect effects was tested using bootstrapping procedures. Unstandardized indirect effects were computed for each of the 10,000 bootstrapped samples. To investigate the model

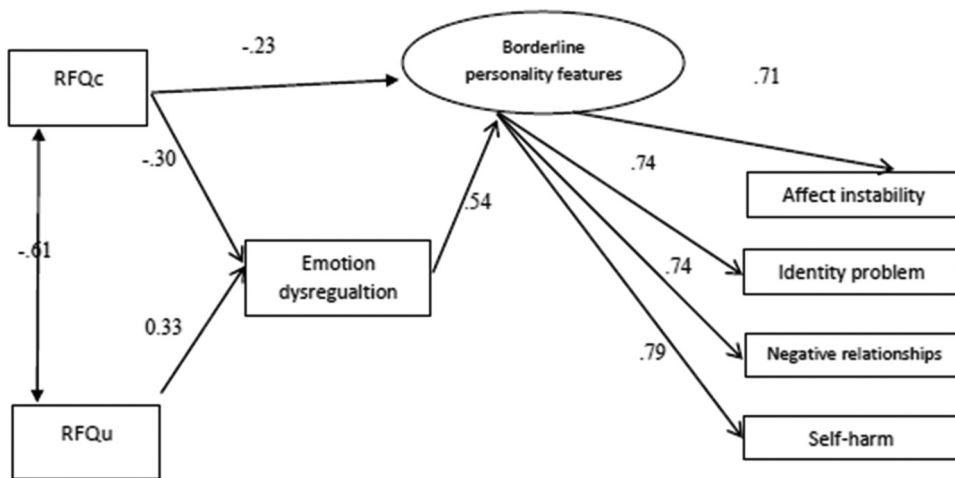


Figure 1. The structural equation model assessing the mediating role of emotional dysregulation between borderline personality features and mentalization. Note. RFQc: Certainty about Mental states; RFQu: Uncertainty about Mental States; p -value for all standardized values was less than 0.001.

Table 1. Correlations among RFQ subscales, emotional dysregulation, and borderline personality features.

	1	2	3	4	5	6	7	Mean (SD)
1. RFQc	1							1.07 (.77)
2. RFQu	-.61	1						.70 (.58)
3. Emotional dysregulation	-.50	.50	1					85.11 (21.71)
4. Total score of borderline personality features	-.45	.42	0.60	1				53.66 (13.03)
5. Affective instability	-.35	.38	.54	.78	1			13.79 (3.56)
6. Identity problem	-.35	.32	.50	.81	.56	1		12.74 (3.90)
7. Negative relationships	-.37	.32	.43	.83	.51	.54	1	13.59 (4.09)
8. Self-harm	-.32	.36	.50	.85	.52	.55	.64	13.54 (4.41)

RFQc: Certainty about Mental states; RFQu: Uncertainty about Mental States; all correlation coefficients are significant at the level 0.01.

fitness, the following fit indices were used: χ^2/df , comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). The following cut-off values were used: $\chi^2/df \leq 2$ for an excellent fit; $CFI > .90$, as well as $RMSEA < 0.08$ (acceptable fit) and < 0.06 (good fit) (Byrne, 1998; Hu & Bentler, 1999).

Results

Zero-order correlations

RFQc was significantly correlated with emotional dysregulation ($r = -.50, p < .001$). It was also correlated with all subscales of borderline personality features scale including: affective instability ($r = -.35, p < 0.001$), identity problems ($r = -.37, p < 0.001$), negative relationships ($r = -.32, p < 0.001$), and self-harm ($r = -.43, p < 0.001$) and total score of borderline personality features ($r = -.45, p < 0.001$) (Table 1). RFQu was also significantly correlated with emotional dysregulation ($r = .50, p < 0.001$), affective instability ($r = .38, p < 0.001$), identity problems ($r = .32, p < 0.001$), negative relationships ($r = .32, p < 0.001$), and self-harm ($r = .36, p < 0.001$) and total score of borderline personality features ($r = .42, p < 0.001$).

Structural equation modelling

When examining the model, the theoretical model (Figure 1) provided a good fit to the data ($\chi^2 = 21.84, df = 12, p = 0.39; \chi^2/df = 1.82, CFI = .98, RMSEA = .06$). In this model, the direct path from RFQu to borderline personality features was insignificant and it was removed from the model. There were significant total, direct, and indirect effects of RFQc and significant total and indirect effects of RFQu on borderline personality features with the mediating role of emotion dysregulation. The standardized regression coefficients are presented in Figure 1. The predictors of borderline personality features explained 47% of its variance.

Discussion

In this study, we investigated whether emotional regulation mediates the relationship between mentalization ability and borderline personality features in adolescents, including self-harm, identity problems, negative relationships and affective instability.

Regarding mentalization, extreme responses on both ends of this Likert-type questionnaire may show different deficits. Being too certain about one's mental states is a sign of hypermentalization (Fonagy et al., 2005). On the other hand, having less awareness of one's own mental states or being uncertain about it is a sign of hypomentalization (Fonagy et al., 2016). Regarding RFQc subscale, strong disagreement in the items of this scale shows hypermentalization, and agreement to any degree (or a neutral response) indicates genuine mentalization characterized by modesty in relation to understanding one's own and others' mental states (Fonagy et al., 2005). Regarding RFQu

subscale, high scores show lack of knowledge about mental states, or 'hypo-mentalization'. Lower scores indicate opaqueness of mental states which is a characteristic of good mentalization (Cucchi et al., 2018).

While other studies have investigated mentalization deficits in adolescents with borderline personality features, to our knowledge this was the first to examine the relationship between mentalization (measured by reflective functioning questionnaire) and borderline personality features with a mediating role of emotional regulation in nonclinical adolescents. Our results showed that certainty about mental states have an inverse correlation with dysregulation and borderline personality features. In our nonclinical sample, this subscale's scores were not extreme. They reflect appropriate level of certainty about mental states. This ability of mentalization has an important role in emotional regulation and the development of an integrated sense of self (Fonagy et al., 2005) impaired in BPD (Ibraheim et al., 2017). These findings are consistent with Chiesa & Fonagy's findings (Chiesa & Fonagy, 2014). They reported a significant relationship between RF and BPD features in adults.

According to our results, hypomentalization was positively associated with borderline personality features and emotional dysregulation in adolescents. Our findings are consistent with the previous works showing that mentalization deficits are correlated with emotional dysregulation (Gambin et al., 2021; Marszał & Jańczak, 2018), and borderline personality features (Both et al., 2019; Quek et al., 2017). Our results support the BPD mentalization model and also Linehan's BPD model, emphasizing on the role of breaks in mentalizing and emotional dysregulation in BPD development (Fonagy & Luyten, 2009; Linehan et al., 2006).

Also, hypomentalization indicates having problems in developing models of one's own and other's mind. It is related to concrete thinking and a psychic equivalent mode of functioning (Fonagy et al., 2016), which are characteristics of PBD (McClure et al., 2016; Thomsen et al., 2017)

We examined a structural model to estimate the data fit to the hypothesized model. The results support the mediating role of emotional dysregulation between uncertainty and borderline personality features. They also suggest that emotional dysregulation might be a mechanism for the relation between uncertainty about mental states and borderline personality symptoms in adolescents. The reason is that the direct path from RFQu to borderline personality features was insignificant. Only the indirect effects of uncertainty about mental states (RFQu) had a significant effect when mediated by emotional dysregulation on borderline personality features. This finding is consistent with the findings of Sharp et al. (2011) that reported the mediator role of the emotion dysregulation in relation between mentalization and borderline personality features in adolescent inpatients. But they used the theory of mind task to measure mentalizing abilities in adolescents. These findings are consistent with the suggestion that mentalization deficits in some adolescents could indicate their problems in managing their emotional responses to social situations (C. Sharp et al., 2011), because they are uncertain about mental or emotional states of self and others. This uncertainty could impair emotional regulation, which in turn develops BPD symptoms.

On the other hand, impairments in emotional regulation may elicit hyperarousal in social situations, which in turn is associated with the premature automatic mentalization process (C. Sharp & Vanwoerden, 2015). As a result, affective instability and negative relationships and difficulties in interpersonal interaction may emerge that are common in BPD patients (Fonagy et al., 2015). Moreover, it is likely that adolescents who have difficulties in emotional regulation may be at risk of a temporary loss of mentalization, making self-harm a concrete way to regulate strong emotions. Evidence also shows that deficits in mentalization and emotional dysregulation are related to self-harm in adolescents (Brereton & McGlinchey, 2019; Rossouw & Fonagy, 2012).

Furthermore, the mentalization model essentially suggests that adolescents with a history of poor mentalization are at higher risk when confronted with the typical social challenges of adolescence period (Fonagy & Luyten, 2016). Limited abilities to regulate the emotions because of mentalization deficits seriously impairs the ability to understand one's own and other's mental states (Marszał & Jańczak, 2018). They also cannot understand the developmental changes in their own mind and

others. In severe cases, this could result in feelings of identity diffusion (Fonagy & Luyten, 2016) that is a typical feature of borderline personality. Therefore, it seems that uncertainty about mental states could predict borderline personality features only via emotional regulation.

From a developmental perspective, early emotional dysregulation might impair an individual's ability to use social situations to increase mentalization abilities (Fonagy et al., 2005), particularly in family environments (Dunn et al., 1999), resulting in mentalization deficits. Deficits in mentalization, in turn, impair the emotional regulation system and may spin the adolescent into a cycle of confusion about one's own and others' mental states, being unable to regulate the intense emotions caused by this confusion (C. Sharp et al., 2011).

Limitations

First, the diagnosis of borderline personality features was based on self-report. So, they need to be confirmed by a clinician or parent report in future studies. Also, the questionnaires that we used to measure emotion dysregulation and reflective functioning were self-report. This may lead to reporter bias and not showing the full picture of reflective functioning and emotion regulation. Second, the mediational analyses demonstrated that difficulties in emotion regulation can explain a significant part of the variety in the relationship between hypermentalization and borderline features. In other words, hypermentalization exerts its influence on borderline features partially through the effects of difficulties on emotion regulation. This finding should be interpreted with caution since causal relationships (e.g. $mz \rightarrow$ emotion regulation \rightarrow BPD) can be inferred with greater confidence when they are shown to develop over time; thus, not having longitudinal data in this study limits inference of causality or directionality. Third, the mediational model is cross-sectional and correlational in nature. Therefore, the results should be interpreted with caution and cannot explain its causality or directionality. Fourth, our sample size constrained us from using more complicated models to discover effect sizes. Thus, using a larger sample can enable researchers to apply more complex models to investigate the constructs used in this study.

Implications for future research and practice

Future studies may benefit from doing a longitudinal study and prospective designs to investigate the dynamic interplay of mentalization, emotional regulation, and borderline personality features in addition to observational, experimental, and interview measures. It would also be important to include other important factors that may mediate the relationship between reflective functioning and emotion regulation, including identity problems.

This study has important implications in clinical practice. It emphasizes the role of reflective functioning and emotion dysregulation in development of BPD in adolescents. So, we suggest designing prevention programmes targeting mentalization deficits and emotional regulation in at-risk adolescents with borderline personality features.

Conclusions

Beside the limitations mentioned above, this was an important study since it seems to be the first to investigate reflective functioning, BP features and emotion dysregulation on non-clinical adolescents. To our knowledge, there is no study about the potential role of emotion dysregulation as the mediator between borderline personality features and mentalizing abilities amongst nonclinical adolescents. Emotional dysregulation and mentalization deficits are interlinked components of borderline personality features in adolescents. As such, the results provide empirical evidence for the interplay of these variables, which are well considered in diagnostic approaches and targeted in current psychotherapies for BPD. By extending previous studies on the implication of impaired mentalization on BPD patients, our results suggest that borderline personality features induced by

hypo- and hyper-mentalizations might manifest themselves throughout emotional regulation. We suggest designing prevention programmes targeting mentalization deficits and emotional regulation in at-risk adolescents with borderline personality features. We also recommend doing a longitudinal study to investigate the dynamic interplay of mentalization, emotional regulation, and borderline personality features.

Disclosure of potential conflicts of interest

No potential conflict of interest was reported by the authors.

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Informed consent

Informed consent was obtained from all individual participants included in the study.

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