

Mentalization mediates the relationship between borderline personality features and internalizing and externalizing psychopathology in adolescents

Ditte Aagaard Norup^{1*}, Sune Bo^{2,3}

¹Department of Child and Adolescent Psychiatry, Aarhus University Hospital, Central Denmark Region, Aarhus N, Denmark

²Psychiatric Research Unit, Region Zealand Psychiatry, Slagelse, Denmark

³Child and Adolescent Psychiatry, Region Zealand Psychiatry, Roskilde, Denmark

*Corresponding author: ditnor@rm.dk

Abstract

Background: Findings show that deficiencies in the ability to understand mental states are related to many forms of psychopathology. Mentalizing dysfunctions are suggested to be the core pathology underlying borderline personality disorder (BPD). Moreover, research suggests that BPD predicts psychopathology in general and findings display that diminished mentalization is related to a range of psychiatric disorders. As yet, no study has investigated the potential link between borderline personality features, mentalization and internalizing and externalizing psychopathology, and whether internalizing and externalizing psychopathology in BPD might be driven by impaired mentalization.

Objective: In a cross-sectional study, 109 patients referred to a child and adolescent psychiatric clinic were assessed with a battery of self-report instruments to assess borderline personality features, mentalization, and internalizing and externalizing psychopathology.

Method: Simple mediation model was used to examine whether mentalizing abilities mediated the relationship between borderline features and psychopathology in regard to externalizing and internalizing psychopathology in adolescents.

Results: The results indicated that mentalization mediated the relationship between borderline personality features and both externalizing and internalizing psychopathology in adolescents, indicating that mentalization underlies externalizing and internalizing psychopathology in adolescents with borderline personality features.

Conclusion: The current study is the first empirical study to evaluate mentalization as a mediating factor between adolescents who met full or sub-threshold criteria for BPD and psychopathology. Clinical implications are discussed.

Keywords: Mentalization, borderline personality features, psychopathology, adolescence, mediation analysis

Introduction

Research displays that mentalizing dysfunctions are related to different psychiatric conditions such as schizophrenia spectrum disorders (1), bipolar disorder (2), eating disorder (3), depression (4), and borderline personality disorder (BPD) (5-7) suggesting that reduced mentalization is associated with both internalizing as well as externalizing psychopathology.

According to the mentalization-based model of BPD, the core pathology underlying BPD is associated with dysfunctions in mentalizing (7) and

thus lie at the foundation of disturbances in interpersonal relations, impulsivity and affective instability that is part of the BPD concept (8-10), and is empirically supported in various studies (5,11). In fact, BPD is reported as the most severe psychiatric disorder compared to other clinical groups among adolescents (12). Furthermore, Chanen et al. in a study found that BPD consequently predicts both psychopathology and general psychological function over and above disruptive behavior, Axis I disorders, and other personality disorders (PD) (12). With reference to Achenbach's dimensional understanding

of symptoms, BPD is found to be a highly significant predictor of internalizing problems together with other PDs, mood and anxiety disorders as well as externalizing problems such as disruptive behavior disorders and substance use (12,13). Thus, the psychological, behavioral and social functioning are highly affected in patients with BPD. Findings show that enhancing the capacity to mentalize alleviates BPD symptomatology (14). Hence, mentalization seems to be the mechanism of change in BPD treatment in adolescents. However, little is known about the effect of mentalizing in regard to externalizing and internalizing psychopathology in BPD patients.

In sum, the literature suggests that dysfunctional mentalizing is linked to a range of psychiatric disorders representing both internalizing vis-a-vis externalizing psychopathology, including BPD. Sparse, however, important research has shown BPD to be a significant predictor of both externalizing and internalizing psychopathology, but to our knowledge no study has investigated the potential role of mentalizing as the mediator between borderline personality features and both internalizing and externalizing psychopathology in a clinical sample of adolescents. Thus, the model we propose is that diminished mentalizing in adolescents with

borderline personality features is responsible for externalizing and internalizing psychopathology. The model is in line with other studies investigating mentalization as the underlying core feature in different kinds of psychopathologies (e.g., 1,4). Hence, the focus in this study is not on the widely known developmental psychopathology model of BPD (15) but on adolescents with borderline personality features with comorbid internalizing and externalizing psychopathologies. The potential finding could have important clinical implication, in the sense that targeting mentalizing in regard to BPD not only reduces borderline personality features as research has shown (16), but might also be responsible for a reduction in externalizing and internalizing psychopathology in BPD patients.

Methods

Participants

Data were collected from 109 patients aged 13 to 18 years referred to a Danish child and adolescent psychiatric clinic for the purpose of diagnostic assessment. As part of standard assessment, the patients also filled out self-report questionnaires measuring borderline features, mentalization, and general psychopathology. Sociodemographic features of the participants are presented in Table 1.

TABLE 1. Sociodemographic characteristics of the total sample

Sociodemographic characteristics	Total sample (<i>N</i> = 109)
Age (Mean +/- SD)	16.1 ± 1.1
Range in years	13–18
Gender	
Male	44 (40.4%)
Female	65 (59.6%)
Educational level	
Primary School	55 (50.5%)
High School	18 (16.5%)
Youth Education	14 (12.8%)
None	22 (20.2%)
Upbringing	
Both parents	59 (54.1%)
Mother	44 (40.4%)
Father	2 (1.8%)
Foster care	4 (3.7%)
Current living arrangements	
Parents	89 (81.7%)
Apartment	2 (1.8%)
Foster care	18 (16.5%)
Civil Status	
Single	77 (61.5%)
In a relationship	42 (38.5%)
Job-status (beside school)	
In a job	31 (38.4%)
Not in a job	78 (71.6%)

Measures

The Borderline Personality Features Scale for Children (BPFS-C) (17) is a 24-item self-report measure rated on a 5-point Likert scale. Crick et al. (17) established evidence for the construct validity and demonstrated high internal consistency. In this sample, internal consistency was good with a Cronbach's alpha of 0.90.

Reflective Function Questionnaire for Youth (RFQ-Y) is a 46-item self-report questionnaire measuring the general capacity to mentalize rated on a 6-point Likert scale. It has shown good psychometric properties, including construct validity (18). Cronbach's alpha in the current study was 0.88.

Youth self-report (YSR) (13) is a widely used questionnaire to examine a broad range of internalizing and externalizing psychiatric conditions in young people aged 11 to 18 years. It includes 112 items, each of which can be rated 0 (not true), 1 (somewhat or sometimes true) or 2 (very true or often true). The internalizing scale is composed of the anxious/depressed, withdrawn/depressed and somatic complaints scales, whereas the externalizing scale includes two subscales: aggressive behavior and rule-breaking behavior. The YSR has shown excellent psychometric properties and good correspondence with specific DSM diagnostic categories (19). Cronbach's alpha in this study was 0.88 on the internalizing dimension and 0.83 on the externalizing dimension. The results are in line with previous research showing that YSR probably is a two-dimensional construct, also in youth samples (20).

Statistical analysis

First we conducted bivariate and correlational analysis of the self-reporting questionnaires. Then we conducted simple mediation analyses to examine whether mentalizing abilities mediated the relationship between borderline features and externalizing and internalizing psychopathology. In line with the recommendations of Hayes (21) for causal step analyses, we conducted Structural Equation Modeling (SEM). SEM provides a direct effect, an indirect effect, and a total effect. When assessing mediation, it is important to make a distinction between the various effects and their corresponding weights. The total effect (weight c) of an independent variable (IV) on the dependent variable (DV) is composed of a direct effect (c') of IV on DV and an indirect effect (weight $a \times b$) of the IV on DV through a proposed mediator (M). Weight a represents the effect of IV on M and weight b is the effect of M on DV partialling out the effect of IV. In the current analysis, we employed bias-corrected bootstrapping (with $n = 5,000$ re-samples) to access the indirect effect. As a string test of our hypothesis, we considered point estimates of indirect effects significant when zero was not contained in all confidence intervals. Criticism has been raised toward using mediation analysis on cross-sectional data (22). However, comprehensive statistical arguments have been put forward acknowledging the use of mediation analysis in cross-sectional data (23). The datasets analyzed in the current study are available from the corresponding author upon request. Stata version 15.1 was used to conduct all the statistical analyses.

TABLE 2. Bivariate correlations between main study variables

Variables	BPFS-C	RFQ-Y	YSR-Externalizing	YSR-Internalizing
BPFS-C	1.00			
RFQ-Y	-0.72** [-0.80, -0.62]	1.00		
YSR-Externalizing	0.68** [0.55, 0.80]	-0.65** [-0.74, -0.54]	1.00	
YSR-Internalizing	0.73** [0.64, 0.81]	-0.63** [-0.71, -0.53]	0.43** [0.24, 0.61]	1.00

Note. BPFS-C, Borderline Personality Scale for Children; RFQ-Y, Reflective Function Questionnaire for Youth; YSR, Youth Self-Report. Bias corrected and accelerated bootstrap 95% CIs are reported in square brackets

Results

First, we conducted bivariate and correlational analysis of the self-report questionnaire. The bivariate correlations indicated that more borderline pathology was correlated with increased dysfunctional mentalization and internalizing and externalizing psychopathology (see Table 2).

We conducted two mediation analyses to determine whether mentalizing mediated the relationship between borderline personality features and internalizing and externalizing psychopathology (see Table 3). The analyses revealed a significant total effect size of borderline personality features on externalizing psychopathology (total effect = 0.45, $p < 0.001$, 95% BC bootstrap CI 0.33, 0.50). The

analysis also revealed a significant indirect effect (point estimate = 0.16, $p = 0.05$, 95% BC bootstrap CI 0.07, 0.26), suggesting that mentalization mediates the relationship between borderline personality features and externalizing psychopathology, explaining 45% of the total effect between borderline personality feature and psychopathology of externalizing symptoms (Figure 1). A significant total effect size was also found on internalizing psychopathology (total effect = 0.54, $p < 0.001$, 95% BC bootstrap CI 0.44, 0.63). Moreover, the results

revealed a significant indirect effect (point estimate = 0.11, $p = 0.01$, 95% BC bootstrap CI 0.04, 0.21), suggesting that mentalizing mediates the relationship between borderline personality features and internalizing psychopathology, explaining 54% of the total effect between borderline personality feature and internalizing psychopathology (Figure 2). In sum, the findings suggest that mentalization mediates the relationship between borderline personality features and internalizing and externalizing psychopathology.

FIGURE 1. Mediation analyses with borderline personality feature, mentalization, and externalizing psychopathology symptoms

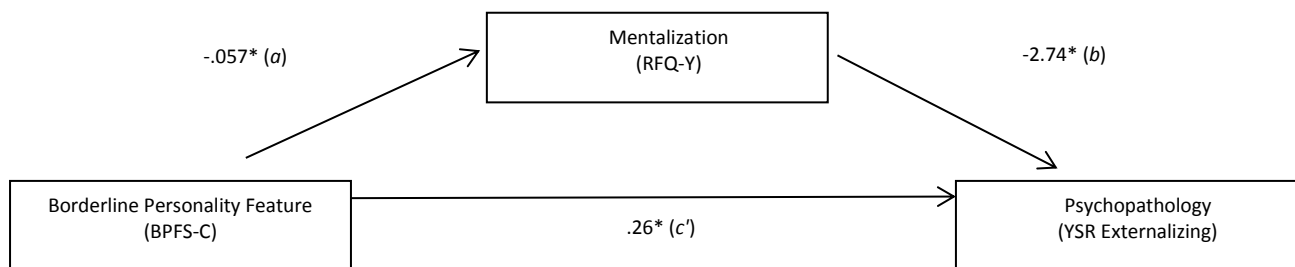


FIGURE 2. Mediation analyses with borderline personality feature, mentalization, and internalizing psychopathology symptoms

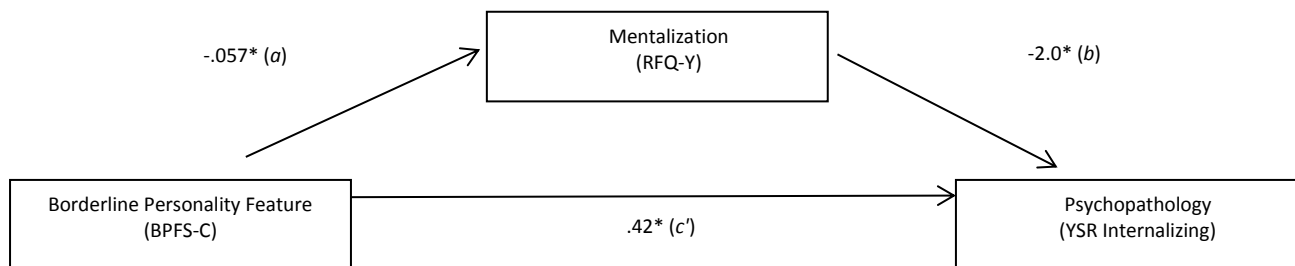


TABLE 3. Summary of mediation analyses with borderline personality feature, mentalization, and externalizing and internalizing psychopathology

Independent variable (IV)	Mediating variable (M)	Dependent variable (DV)	Effect of IV on M (a)	Effect of M on DV (b)	Indirect effect (a×b)	95% CI		Direct effect (c')	Total effect (c)
						Lower	Upper		
BPFS-C	RFQ-Y	YSR (ext.)	-0.057*	-2.74*	0.16*	0.07	0.26	0.26*	0.45*
BPFS-C	RFQ-Y	YSR (int.)	-0.057*	-2.0*	0.11*	0.04	0.21	0.42*	0.54*

Note. *Significant point estimate (0 not contained in the 95% bootstrap CI)

Discussion

In this study, we sought to explore in a clinical sample of adolescents, whether mentalization mediated the relationship between borderline personality features and internalizing and externalizing psychopathology. The bivariate and correlational analyses of the self-reporting questionnaires were all significant showing that the more borderline personality features the more psychopathology and less mentalization (Table 2).

The three forms of psychopathology overlap to a considerable degree. This fact is addressed in the literature through the HiTOP approach (24) and furthermore by Caspi et al. (25) introducing the p -factor that also highlights how high rates of comorbidity are problematic for the mental health system. However, research also display that the psychopathologies are different constructs (15).

The results also display a quite small effect of borderline personality features on mentalization.

This is probably due to the fact that half the patients met sub-threshold criteria for BPD whereas the other part met full criteria for BPD. Thus, the effect of borderline personality features on mentalization is smaller than the other effects. A large effect might probably have been the case if all patients had higher BPD scores. Even though the effect is small, it is still significant and relevant.

The results from the mediation analyses revealed that mentalization mediated the relationship between borderline personality features and psychopathology across the internalizing-externalizing spectrum (Table 3). Moreover, the mediation analysis showed that mentalization accounted for 45% of the total effect size of the association between borderline personality features and externalizing psychopathology (Figure 1) and 54% of the total effect size of the association between borderline personality features and internalizing psychopathology (Figure 2), proposing that the relationship between borderline personality features and psychopathology is partially driven by impaired mentalization.

We did expect that mentalization would mediate the relationship between borderline personality features across the internalizing-externalizing spectrum in that, an increasing amount of research finds mentalization as a mediating factor across different diagnoses (1-4) including BPD (26), and that deficiencies in the ability to understand mental states are thought to be affected in many forms of psychopathology (27,28). Though many psychiatric disorders can be organized on the internalizing-externalizing spectrum, it has been discussed how BPD fits into this model. The available literature indicates that BPD is highly comorbid with major depression, dysthymia, and anxiety disorders on the internalizing spectrum as well as antisocial personality disorder, substance use disorders, and conduct disorder on the externalizing spectra (e.g. 29,30). Similarly, findings from two factor analytic studies demonstrate that BPD lie at the junction of externalizing and internalizing pathology (31,32). In support of the findings, Ha et al. (33) display that adolescents with BPD score higher on the YSR than controls. However, BPD is comorbid with, but not fully explained by, internalizing and externalizing psychopathology (32) and internalizing and externalizing psychopathology is argued to be developmental antecedents of BPD (34). Finally, Sharp (15) emphasizes in their paper examining the relationship between BPD, internalizing and externalizing psychopathology in adolescents “[...] that borderline disorder seems to denote unique disorder beyond internalizing and externalizing disorders despite high rates of comorbidity is further

supported by longitudinal studies in adolescents” (p. 673).

Clinical implications

In line with the results from the current study, the findings are of clinical relevance whereby targeting mentalization can ameliorate psychopathology precipitated by borderline personality features. Thus, it can be suggested that reducing borderline personality features and psychopathology symptoms in general might be achieved by addressing treatment directly at the functional level of mentalization. The hypothesis is in line with Fonagy and Luyten’s mentalization-based approach to the understanding and treatment of BPD (7). In sum, we know from extant literature that enhancing mentalization reduces borderline pathology in BPD patients, but this study suggests that working on mentalization might also reduce externalizing and internalizing psychopathology in patients with BPD, suggesting a transdiagnostic character of mentalizing.

Moreover, the fact that borderline personality features predict psychopathology in this study is consistent with the findings from Chanen et al. (12). More research is needed to confirm the results from our study, since it is the first study empirically examining the relationship between borderline personality features and psychopathology in adolescents through mentalization as a mediator. The results are important in several ways in that, the findings contribute to the understanding of BPD in adolescents as well as it has substantial implications for treatment.

Limitations

Several limitations of the current study should be acknowledged. First, all measures are based on self-report questionnaires and therefore subject to shared method variance. In addition to this point, it is an important issue having patients with diminished mentalizing self-report on their own capacity to mentalize, and it would have been more adequate with an experimental measure of mentalizing. However, research has shown good correlation between self-reported RF and AAI-based RF (35). Second, the design is cross-sectional and correlational in nature and therefore, the results should be interpreted with care. Third, the small sample size did not allow us to robustly test the potential effect between adolescents who met full criteria for BPD compared to those who only met sub-threshold criteria. Neither did analyses of potential effect of gender or age. Despite the aforementioned limitations, the study provides the first empirical evidence of mentalization as a mediating marker between borderline personality

features and internalizing and externalizing psychopathology in adolescents.

Ethics

Permission to use data from patients' journals was obtained by the Danish Health Authority (3-3013-1540/1), hence no written consent or ethical approval of the project was necessary.

Informed consent followed the Helsinki declaration.

Conflicts of interest

The authors declares no conflicts of interest.

References

- Bo S, Abu-Akel A, Kongerslev M, Haahr UH, Bateman A. Mentalizing mediates the relationship between psychopathy and type of aggression in Schizophrenia. *J Nerv Ment Dis* 2014;202(1):55-63.
- Bora E, Yucel M, Pantelis C. Theory of mind impairment: a distinct trait-marker for schizophrenia spectrum disorders and bipolar disorder? *Acta Psychiatr Scand* 2009;120(4):253-64.
- Jewell T, Collyer H, Gardner T, Tchanturia K, Simic M, Fonagy P, et al. Attachment and mentalization and their association with child and adolescent eating pathology: a systematic review. *Int J Eat Disord* 2016;49(4):354-73.
- Belvederi Murri M, Ferrigno G, Penati S, Muzio C, Piccinini G, Innamorati M, et al. Mentalization and depressive symptoms in a clinical sample of adolescents and young adults. *Child Adolesc Ment Health* 2017;22(2):69-76.
- Sharp C, Pane H, Ha C, Venta A, Patel AB, Sturek J, et al. Theory of mind and emotion regulation difficulties in adolescents with borderline traits. *J Am Acad Child Adolesc Psychiatry* 2011;50(6):563-73.
- Dimaggio G, Brüne M. Dysfunctional understanding of mental states in personality disorders: what is the evidence? *Compr Psychiatry* 2015;64:1-3.
- Fonagy P, Luyten P. A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. *Dev Psychopathol* 2009;21(4):1355-81.
- Gunderson JG. Borderline personality disorder: ontogeny of a diagnosis. *Am J Psychiatry* 2009;166(5):530-9.
- Gunderson JG. Disturbed relationships as a phenotype for borderline personality disorder. *Am J Psychiatry* 2007;164(11):1637-40.
- Lieb K, Zanarini MC, Schmahl C, Linehan MM, Bohus M. Borderline personality disorder. *Lancet* 2004;364(9432):453-61.
- Bo S, Kongerslev M. Self-reported patterns of impairments in mentalization, attachment, and psychopathology among clinically referred adolescents with and without borderline personality pathology. *Borderline Personal Disord Emot Dysregul* 2017;4(1):4.
- Chanen AM, Jovev M, Jackson HJ. Adaptive functioning and psychiatric symptoms in adolescents with borderline personality disorder. *J Clin Psychiatry* 2007;68(2):297-306.
- Achenbach TM A. Integrative guide for the 1991 CBCL. Burlington, VT: University of Vermont; 1991.
- Rossouw TI, Fonagy, P. Mentalization-based treatment for self-harm in adolescents: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry* 2012;51(12):1304-13.
- Sharp C, Vanwoerden S, Wall K. Adolescence as a sensitive period for the development of personality disorder. *Psychiatr Clin North Am* 2018;41(4):669-83.
- Bo S, Sharp C, Beck E, Pedersen J, Gondan M, Simonsen E. First empirical evaluation of outcomes for mentalization-based group therapy for adolescents with BPD. *Personal Disord* 2017;8(4):396-401.
- Crick NR, Murray-Close D, Woods K. Borderline personality features in childhood: a short-term longitudinal study. *Dev Psychopathol* 2005;17(4):1051-70.
- Ha C, Sharp C, Ensink K, Fonagy P, Cirino P. The measurement of reflective function in adolescents with and without borderline traits. *J Adolesc* 2013;36(6):1215-23.
- Achenbach TM, Dumenci L, Rescorla LA. DSM-Oriented and empirically based approaches to constructing scales from the same item pools. *J Clin Child Adolesc Psychol* 2003;32(3):328-40.
- Achenbach TM, Rescorla LA. *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families; 2001.
- Hayes AF. Beyond Baron and Kenny: statistical mediation analysis in the new millennium. *Commun Monogr* 2009;76(4):408-20.
- Cole DA, Maxwell SE. Testing mediational models with longitudinal data: questions and tips in the use of structural equation modeling. *J Abnorm Psychol* 2003;112(4):558-77.
- MacKinnon DP. *Introduction to statistical mediation analysis*. New York, NY: Lawrence Erlbaum Associates; 2008.
- Kotov R, Krueger RF, Watson D, Achenbach TM, Althoff RR, Bagby RM, et al. The Hierarchical Taxonomy of Psychopathology (HiTOP): a dimensional alternative to traditional nosologies. *J Abnorm Psychol* 2017;126(4):454-77.
- Caspi A, Houts RM, Belsky DW, Goldman-Mellor SJ, Harrington H, Israel S, et al. The p Factor: one general psychopathology factor in the structure of psychiatric disorders? *Clin Psychol Sci* 2014;2(2):119-37.
- Sharp C, Venta A, Vanwoerden S, Schramm A, Ha C, Newlin E, et al. First empirical evaluation of the link between attachment, social cognition and borderline features in adolescents. *Compr Psychiatry* 2015;64:4-11.
- Schilling I, Wingenfeld K, Löwe B, Moritz S, Terfehr K, Köther U, et al. Normal mind? Reading capacity but higher response confidence in borderline personality disorder patients. *Psychiatry Clin Neurosci* 2012;66(4):322-7.
- Semerari A, Carcione A, Dimaggio G, Nicolò G, Procacci M. Understanding minds: different functions and different disorders? The contribution of psychotherapy research. *Psychother Res* 2007;17(1):106-19.
- Zanarini MC, Frankenburg FR, Dubo ED, SICKEL AE, Trikha A, Levin A, et al. Axis II comorbidity of borderline personality disorder. *Compr Psychiatry* 1998;39(5):296-302.
- Zanarini MC, Frankenburg FR, Dubo ED, SICKEL AE, Trikha A, Levin A, et al. Axis I comorbidity of borderline personality disorder. *Am J Psychiatry* 1998;155(12):1733-9.
- James LM, Taylor J. Revisiting the structure of mental disorders: borderline personality disorder and the internalizing/externalizing spectra. *Br J Clin Psychol* 2008;47(Pt 4):361-80.
- Eaton NR, Krueger RF, Keyes KM, Skodol AE, Markon KE, Grant BF, et al. Borderline personality disorder co-morbidity: relationship

to the internalizing? Externalizing structure of common mental disorders. *Psychol Med* 2011;41(5):1041-50.

33. Ha C, Balderas JC, Zanarini MC, Oldham J, Sharp C. Psychiatric comorbidity in hospitalized adolescents with borderline personality disorder. *J Clin Psychiatry* 2014;75(5):e457-e464.
34. Stepp SD, Lazarus SA, Byrd AL. A systematic review of risk factors prospectively associated with borderline personality disorder: taking stock and moving forward. *Personal Disord* 2016;7(4):316-23.
35. Fonagy P, Target M, Steele H, Steele M. Reflective-functioning manual version 5 for application to adult attachment interviews. London; 1998.