

Reflective Functioning in Postpartum Depressed Women With and Without Comorbid Personality Disorder

Katharina Cordes, MSc,
Johanne Smith-Nielsen, PhD, Anne Tharner, PhD,
and Hannah Katznelson, PhD
University of Copenhagen

Howard Steele, PhD
New School For Social Research

Mette Væver, PhD
University of Copenhagen

Mentalization or Reflective Functioning (RF), that is, the ability to reflect upon ones' own and others behavior in terms of underlying mental states, plays an important role in parenting behavior and children's socioemotional development. RF has been suggested to be impaired in psychopathology, and thus maternal psychopathology after birth, such as postpartum depression (PPD) and Personality Disorder (PD), may not only affect the mother's socioemotional functioning but also the development of the child. However, little is known about mentalizing abilities of PPD mothers, and mothers with PPD and comorbid PD. Therefore, the aim of this study was to evaluate RF in women presenting symptoms of PPD ($n = 13$), and women with PPD symptoms and comorbid PD ($n = 14$) compared with a nonclinical group ($n = 52$). Women were interviewed with the Adult Attachment Interview (AAI) before birth (nonclinical group), and 9–12 weeks after birth (clinical groups), and RF was assessed with the Reflective Functioning Scale applied to the AAI. ANCOVA results revealed no significant differences in mean RF abilities among the 3 groups. Possible reasons for the lack of differences in RF between the 3 diagnostic groups are discussed.

Keywords: mentalization, personality disorder, postpartum depression, psychopathology, reflective functioning

Reflective Functioning (RF) is the ability to reflect upon ones' own and others behavior in terms of underlying mental states (Fonagy, Steele, Steele, Moran, & Higgitt, 1991). RF is central to affect regulation, interpersonal relationships, and social functioning (Fonagy, Gergely, Jurist, & Target, 2004). In turn, RF has repeatedly been found to be impaired in patients with mental disorders, and is often targeted in psychotherapeutic interventions.

However, only little is known about RF abilities of mothers with depression with and without comorbid personality disorder (PD) in the postpartum period. This is particularly important, as mood disorders and PD often co-occur, and in both disorders impaired mentalizing is hypothesized to play a central role, and may affect treatment response (e.g., Luyten & Fonagy, 2015). Moreover, in

women who experience mental problems shortly after birth, impaired mentalizing may not only affect the women, but also have negative consequences for the mothers' ability to provide sensitive caregiving for her child (Vliegen, Casalin, & Luyten, 2014). Indeed, it has been suggested that RF is a key aspect of maternal sensitivity (Slade, 2005), which is one of the most important predictors of child socioemotional development (e.g., De Wolff & van IJzendoorn, 1997). To be sensitively responsive to the child's signals and needs, a mother first needs to be able to detect the child's behavior, and interpret it in terms of underlying mental states. Impaired mentalizing abilities may thus partly explain negative effects of postpartum depression on maternal caregiving and children's socioemotional development.

Postpartum depression (PPD) is an episode of depressive disorder following childbirth, and meta-analytic evidence suggests that up to 19% of women in Western societies may experience depressive symptoms in the first three months after delivery (Gavin et al., 2005). Previous research on mentalizing abilities in depressed patients outside the postpartum period has shown that depression is often associated with lowered mentalizing levels (e.g., Fischer-Kern et al., 2013; Ekeblad, Falkenström, & Holmqvist, 2016). Furthermore, research has shown that PPD mothers are a heterogeneous group in terms of comorbid psychopathology, and that mothers suffering from PPD often have comorbid PD (e.g., Smith-Nielsen et al., 2015). Particularly borderline personality disorder (BPD), has also frequently been found to be associated to mental-

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Katharina Cordes, MSc, Johanne Smith-Nielsen, PhD, Anne Tharner, PhD, and Hannah Katznelson, PhD, Department of Psychology, University of Copenhagen; Howard Steele, PhD, Department of Psychology, New School For Social Research; Mette Væver, PhD, Department of Psychology, University of Copenhagen.

Anne Tharner is now at the Department of Psychology, Education and Child Studies (DPECS), Erasmus University Rotterdam.

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Correspondence concerning this article should be addressed to Katharina Cordes, MSc, Department of Psychology, University of Copenhagen, Copenhagen, Denmark. E-mail: katharina.cordes@psy.ku.dk

izing impairments (e.g., Fischer-Kern et al., 2010; Gullestad, Johansen, Høglend, Karterud, & Wilberg, 2013). To further clarify the role of mentalizing in psychopathology in the postpartum period, the current study aims at comparing RF abilities of women presenting postpartum depressive symptoms, and women with postpartum depressive symptoms as well as comorbid PD in comparison to nonclinical women.

In the following, we give an overview over previous findings on RF in depression, PD, and motherhood. In research contexts mentalization is often operationalized as Reflective Functioning (RF) in the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). RF captures mentalizing in verbal expression, and is measured with the RF Scale (Fonagy, Target, Steele, & Steele, 1998). Ratings are undertaken by evaluating interview passages in regard to the level of reflection. Scores in the range of -1 to 3 indicate low RF, the scores 4 and 5 indicate moderate RF, and scores ranging from 6 to 9 indicate high RF.

In our overview, we only include studies which use the RF scale as measured on the AAI and which report means and standard deviations for RF. Two exceptions to this rule are the studies by Stacks et al. (2014) and Suchman, DeCoste, Leigh, and Borelli (2010), which measured RF on the Parent Development Interview Revised (PDI-R; Slade, Aber, Berger, Bresgi, & Kaplan, 2003) and reported correlations between RF and PPD. To the best of our knowledge, these two studies are the only ones assessing mentalizing abilities in postpartum depressed women, which is why these findings are important in relation to our sample, and thus, have been included in the following overview.

Several studies have examined RF in relation to depression and found levels of RF ranging from low to moderate (e.g., Ekeblad, Falkenström, & Holmqvist, 2016; Fischer-Kern et al., 2013; Fonagy et al., 1996; Taubner et al., 2011). Interestingly, one of the studies did not find a significant difference in RF between the patient group ($M = 4.0$, $SD = 1.0$; $n = 20$) and the nonclinical control group ($M = 3.6$, $SD = 1.5$; $n = 16$; Taubner et al., 2011), even though the patient group tended to have lower scores in relation to loss-related topics. Taken together, findings on RF level in women with depressive disorders suggest that mean RF scores for depressive patients range from low to moderate.

When looking at associations between depression and RF in the postpartum period, two previous studies surprisingly found positive correlations between RF and maternal depression. The first one by Suchman et al. (2010) assessed RF in substance abusing mothers who also showed symptoms of depression according to the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996). They assessed parents' capacities to mentalize both in relation to themselves and their child. Results from this study showed that self-mentalization was positively correlated with maternal depression, leading the authors to speculate whether self-mentalization contains a ruminative or self-absorbent component. The second study by Stacks et al. (2014) assessed a sample of 83 women, of which 24% met diagnostic criteria for current Major Depression according to the Postpartum Depression Screening Scale (PPDS; Beck & Gable, 2000). In contrast to their hypothesis, Stacks et al. (2014) found that RF was positively correlated with concurrent maternal depressive symptoms. However, these two studies measured RF on the Revised PDI-R (Slade et al., 2003), thus capturing mentalizing abilities in regard to the child, not to the parents' own attachment history. As mentalizing has been shown

to be largely relationship specific (e.g., Slade, 2005), it is important to be cautious when comparing results obtained from the PDI and AAI, respectively. Furthermore, several studies of RF in depressed individuals presented high comorbidity with other psychopathologies, making it difficult to disentangle RF levels in relation to depression in particular. This further illustrates the need for more studies to investigate levels of RF in different psychopathologies to eventually provide norms and reference points.

Mentalizing has also been proposed to be lower in patients with PD, and particularly in BPD. The first study of RF in a clinical sample found significantly lower RF scores for BPD patients ($M = 2.7$, $SD = 1.6$) compared to nonclinical patients ($M = 4.3$, $SD = 1.7$; Fonagy et al., 1996). Subsequently, some studies supported the finding of low RF in BPD patients (e.g., Fischer-Kern et al., 2010; Gullestad et al., 2013; Levy et al., 2006). However, RF in other forms of PDs is less studied.

When looking at RF in motherhood, Fonagy et al. (1991) also reported on mentalizing abilities for nonclinical mothers in their first study on RF. Fonagy et al. (1991) categorized mothers in regard to their state of mind in regard to attachment and reported mean RF scores of 3.72 ($SD = 0.70$; $n = 27$) for detached mothers, 5.87 ($SD = 1.0$; $n = 60$) for autonomous mothers, and 3.86 ($SD = 0.75$; $n = 15$) for entangled mothers. Arnott and Meins (2007) conducted the AAI in a small sample with 21 women in the third trimester, and found a mean RF score of 3.9 ($SD = 2.14$). In a dissertation study, Crumbley (2009) applied the RF scale to both (prepartum) AAI and (postpartum) PDI transcripts of 40 mothers. Mean RF score for AAI-RF was 5.1 ($SD = 1.6$), and for PDI-RF 5.2 ($SD = 1.5$). Also, RF scores were moderately strong, positive correlated, $r = .53$, $p = .001$, indicating that RF is a relatively stable capacity. In a study examining temporal pathways from maternal RF through parenting to infant attachment, Ensink, Normandin, Plamondon, Berthelot, and Fonagy (2016) assessed 88 mothers of which 30% reported histories of physical, sexual, or emotional abuse. Mean RF scores were reported in regard to adult attachment classifications, with secure mothers having a mean RF score of 4.62 ($SD = 1.16$), avoidant mothers having a mean score of 4.71 ($SD = .99$), resistant-ambivalent mothers having a mean score of 4.60 ($SD = 1.51$), and disorganized mothers having a mean RF score of 3.94 ($SD = 1.34$). Also, Ensink, Berthelot, Bernazzani, Normandin, and Fonagy (2014) evaluated RF of pregnant women with histories of childhood abuse and neglect, and found that these women had significantly lower RF in relation to trauma-related topics ($M = 2.78$, $SD = 1.96$), than general RF ($M = 4.14$, $SD = 1.95$). This finding suggests that women with trauma may not show RF impairments per se, but that lowered RF may specifically occur in relation to trauma-related topics. Other studies on mentalizing abilities in motherhood mostly measured RF on other interviews than the AAI (e.g., Pajulo et al., 2012; Stacks et al., 2014; Suchman et al., 2010).

Only few studies have taken into account background variables that might influence RF, such as sociodemographic status and educational level. Although findings with regard to RF and educational level have been inconclusive, two studies indicate that higher educational levels are associated with higher RF (Fonagy et al., 1991; Pajulo et al., 2012). Also, two studies on the impact of socioeconomic and psychosocial risk showed lower RF for socioeconomically, and psychosocially disadvantaged individuals (Bly et al., 2012; Stacks et al., 2014). These findings highlight the

importance of taking into account contextual factors when evaluating RF.

Summing up, when reviewing the literature on RF in psychopathology, most studies find RF impairments in mental disorders, although some few find close to normal mentalizing abilities. One explanation may be that lower mentalizing capacities are related to more severe forms of psychopathology, whereas less severe forms show more typical RF levels (Katznelson, 2014). Thus, there is a need for investigating RF in specific mental disorders, taking into account psychopathological comorbidity, and the sociodemographic context. To further investigate mentalizing in psychopathology in the postpartum period, the current study aims at comparing RF abilities in three groups of women: Women without psychopathology, with PPD symptoms, and with PPD symptoms and comorbid PD. Apart from psychological disturbances in the clinical groups, the current sample is a low risk sample with high educational level, high social support and no other forms of psychopathology. This homogeneity with regard to sociodemographic variables allows for isolation of the effects of comorbidity and low contextual risk related to RF.

Based on the assumption that more severe psychopathology is related to lower RF levels (Katznelson, 2014), we assumed that comorbid psychopathology would be associated to lower RF. In other words, we expected more RF impairments with increasing psychopathological characteristics. More specifically, it was hypothesized that (a) nonclinical women have higher RF levels than the diagnostic groups, (b) women with PPD symptoms without comorbid PD have lower RF levels than nonclinical women, and (c) women with PPD symptoms and comorbid PD have the lowest levels of RF.

Method

Participants

The present study is embedded in a longitudinal research project studying mother-infant interaction and child development at the University of Copenhagen Babylab. All mothers were primiparous from urban Copenhagen and gave their written informed consent to participate in the study at an introductory meeting. The study was in accordance to ethical standards and approved by the Danish Research Council.

The sample in the clinical group consisted of 30 mothers with their children, whereas the nonclinical group comprised 55 mothers and their children (for a more detailed description of the sampling strategy and participant flow see Smith-Nielsen et al., 2015). Because of preliminary analyses indicating a confounding relationship between Danish as a native language and RF, six non-native Danish women were excluded from the current study (three in the clinical and nonclinical group respectively). Therefore, the final sample of the current study comprised 52 women in the nonclinical group, and 27 women in the clinical group. The clinical group consisted of 13 mothers (48.1%) with only postpartum depressive symptoms, and 14 mothers (51.9%) with postpartum depressive symptoms and comorbid PD according to the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (*DSM-IV*; American Psychiatric Association, 2000). Of the 14 postnatally depressed mothers with a comorbid PD (PPD + PD group), 10 (71.4%) were diagnosed with a Per-

sonality Disorder Not Otherwise Specified (PDNOS). Following Verheul, Bartak, and Widiger (2007), PDNOS was diagnosed in the current study when women did not fulfill any specific PD, but met five or more criteria across the specific PDs, thereby causing clinical distress or impairment in functioning. The other women in the comorbid psychopathology group had depressive PD ($n = 2$; 14.3%), paranoid PD ($n = 1$; 7.1%), or avoidant, obsessive-compulsive, paranoid PD, and PDNOS ($n = 1$; 7.1%). Sample characteristics are shown in Table 1, and underline the low-risk nature of the sample. Apart from differences in depression scores and symptoms of PD, the clinical and nonclinical groups did not differ in standard demographic variables, such as education, age, single-parent status, child gender, birth weight, and gestational age at birth.

Procedure

The nonclinical group was recruited via Internet and advertisements at local obstetricians, and women turned voluntarily to the research unit if they were interested in participating in the project. The nonclinical group was assessed with the clinical interview Present State Examination (PSE; Wing, Cooper, & Sartorius, 1974) at baseline (in the third trimester), to exclude any Axis I psychopathology. Additionally, women were interviewed with the AAI (George et al., 1985) to assess attachment status, and with the Structured Clinical Interview for *DSM-IV* Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) to evaluate the existence of personality pathology. To ensure the absence of PPD symptoms, nonclinical mothers filled in the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) 6–8 weeks postpartum.

Participants for the clinical group were referred to the university clinic by public health visitors on the basis of screening for PPD symptoms after routine visits at home 8 weeks postpartum with the

Table 1
Sample Characteristics

Variable	Nonclinical group ($n = 52$)	Clinical group ($n = 27$)	p
Mean age (SD)	30.35 (4.21)	30.19 (4.10)	.87
Single mother, n (%)	1 (1.9)	1 (3.7)	.64
Years of education, n (%)			.44
9–12 (ISCED level 3)	5 (9.6)	3 (11.1)	
14 (ISCED level 4)	4 (7.7)	2 (7.4)	
15 (ISCED level 5–6)	18 (34.6)	13 (48.1)	
17 or more (ISCED level 7–8)	25 (48.1)	9 (33.3)	
Unemployed, n (%)	4 (7.7)	5 (18.5)	.15
Mean EPDS score (SD)	4.11 (2.50)	15.70 (4.06)	.00
Fulfilling clinical depression according to <i>DSM-IV</i> , n (%)	0 (0)	25 (92.5)	.00
Comorbidity status for one or more personality disorder, n (%)	0 (0)	14 (51.9)	.00
Mean symptoms within personality disorder clusters (SD)			.00
Cluster A	.02 (.14)	.74 (1.63)	
Cluster B	.08 (.33)	.85 (1.56)	
Cluster C	.23 (.61)	4.37 (3.44)	

Note. ISCED = International Standard Classification of Education by UNESCO.

EPDS. Mothers with a score of ≥ 10 were eligible for the current study, as a score from 10 to 12 is considered to indicate probable depression with the recommendation of further assessment on the EPDS (Cox et al., 1987). Eligible mothers were informed about the research project, and—if interested—referred to the research unit. At enrollment, mothers in the clinical group were screened again with the EPDS to ensure the existence of PPD symptoms. Also, the PSE (Wing et al., 1974) was conducted to assess Axis I psychopathology. Twenty-five women (93%) had clinical depression according to the *DSM-IV*, whereas 2 women (7%) had depressive symptoms on a subclinical level. Moreover, the AAI and the SCID-II were conducted (First et al., 1997). All interviews were conducted by trained AAI interviewers on a separate occasion at baseline after diagnostic interviews were completed (for more information see Smith-Nielsen et al., 2015).

Measures

Maternal postnatal depression. To screen for maternal postnatal depression we used the Danish version of the EPDS (Nielsen, Videbech, Hedegaard, Dalby, & Secher, 2000). The EPDS (Cox et al., 1987) is a 10-item questionnaire, providing self-reported information about existence and severity of depressive symptoms in the postpartum period. A score ranging from 10 to 12 is considered to indicate possible depression with the recommendation of further assessment.

Maternal personality disorder. To assess personality pathology, we used the SCID-II (First et al., 1997), a semistructured interview consisting of 119 items which present symptoms of specific personality disorders. All interviews were sound-recorded and conducted by trained clinical psychologists. After screening questions, the interviewer rechecks the items answered affirmatively, thereby identifying false-positives. The SCID-II provides information about the 10 *DSM-IV* personality disorders, depressive personality disorder, passive-aggressive personality disorder, and the existence of a personality disorder not otherwise specified (PDNOS). PDNOS has been described as an impairment in personality functioning, which cannot be classified into any other specific PD, but taken together cause clinical significant distress or impairment in one or more important areas of functioning (American Psychiatric Association, 2000).

The SCID-II can either be used dimensionally by assessing the numbers of symptoms met for a specific PD or categorically by measuring the presence or absence of a specific personality disorder. In the present study we used the dimensional approach, to relate RF levels to severity of disorder (i.e., number of symptoms met in the whole sample). Additionally, we used the categorical approach to compare RF in different diagnostic groups (PPD with or without comorbid PD). For interrater reliability, 28 interviews were randomly selected and rated by a second psychologist trained in the SCID-II with no previous knowledge of the study participants. For the categorical approach (presence of any PD), interrater agreement was 95% ($\kappa = .90$). Intraclass correlation for the dimensional approach (number of symptoms) Intraclass Correlation Coefficient (ICC) was 0.96, indicating a high level of agreement.

Reflective functioning. RF capacities were assessed with the RF Scale applied to transcripts of the AAI (George, Kaplan, & Main, 1985). For the purpose of rating RF, AAI questions were

divided into demand and permit questions. Demand questions *require* a response in terms of RF (e.g., “Why do you think your parents behaved the way they did during your childhood?”), whereas permit questions *allow* a reflective stance (e.g., “Briefly describe what it was like for you in your family as a young child”). Passages were rated in relation to their level of reflection based on a list of indicators illustrating negative or limited, moderate, and high RF. A score is assigned to each demand question, and to permit questions, if responses are characterized by RF. Ratings range from -1 to 9 with a score of “ -1 ” indicating negative RF, and a score of “9” indicating full or exceptional RF. The final score is based on the ratings of the passages and a consideration of the interview as a whole. The main coder of the interviews was the first author. The reliability coder of the interviews was the fifth author, who has a vast experience in coding RF. Both coders were trained by one of the developers of the RF Scale with good results when gaining reliability. Twenty percent ($n = 19$) of the interviews were randomly selected and rated independently by both coders. Interrater reliability revealed an excellent agreement with $ICC(2, 1) = .86$. Interviews with high RF in the clinical groups were rechecked by the reliability coder to exclude the possibility of coding mental state language per se or falsely coding hypermentalizing.

Statistical Analyses

First, we tested associations of RF and demographic variables (i.e., native Danish speaker, single parent status, educational level, unemployment status, and occupational status), using Pearson’s correlations and adjusted one-way ANOVAs where applicable. Second, we used an ANCOVA to investigate possible differences in RF-scores among the three diagnostic groups. To control for demographic factors, we included variables that were associated with RF-scores as covariates. Third, to examine associations of RF and severity of psychopathology, we conducted Pearson’s bivariate correlations between RF and symptoms of PD (number of SCID-II symptoms met) and PPD (EPDS scores) in the whole sample and each group respectively.

Results

RF and Contextual Factors

First, RF was not associated with single parent status, unemployment status, educational level, and occupational status in the whole sample. However, when we stratified the sample according to the three diagnostic groups, significant associations between contextual factors and RF emerged: Within the PPD + PD group, higher educational levels were related to higher RF scores, $F(3, 13) = 4.00, p = .04$. Within the nonclinical group, employed women had higher RF scores than unemployed women, $F(1, 51) = 4.51, p = .04$.

Mean RF Scores in the Three Diagnostic Groups

Because of associations between RF and educational level in the PPD + PD group, and RF and unemployment status in the non-clinical group, we conducted an ANCOVA, to adjust for these variables. There were no significant differences in mean RF scores

among nonclinical women ($M = 3.98$, $SD = 1.75$), women in the PPD group ($M = 4.08$, $SD = 1.55$), and women in the PPD + PD group ($M = 4.93$, $SD = 1.70$), $F(2, 65) = 2.57$, $p = .09$, partial $\eta^2 = 0.07$.

Associations Between RF and Severity of Psychopathology

Finally, to examine possible links of RF and severity of disorder, we correlated RF with EPDS scores and symptoms of PD in the whole sample and each group. There were no significant correlations between RF and EPDS score ($r = .06$, $p = .59$), or numbers of symptoms of PD ($r = .04$, $p = .72$) in the whole sample, or each group respectively.

Discussion

This study examined Reflective Functioning abilities in Danish women with different psychopathological characteristics in the postpartum period: nonclinical, postpartum depressed, and postpartum depressed with comorbid Personality Disorder. We hypothesized that RF would be lower in women with psychopathology. Also, we hypothesized that comorbid psychopathology would be associated with lower RF abilities than single psychopathology. Contrary to our expectation we did not find significant differences in RF scores among the nonclinical group, the PPD group, and the PPD + PD group. Thus, our findings in a well-resourced, Danish sample do not support the idea that more psychopathological characteristics are associated with lower RF. There are several potential explanations for this lack of an association.

First, it may be that the *types* of psychopathology present in our study (PPD, and mainly cluster C PD) are not associated with impairments, as they represent more transient and less severe forms of psychopathology. It is possible that RF is only impaired in more severe forms of depression and PD (i.e., chronic depression, and BPD). This idea may be supported by a study of Arntz, Bernstein, Oorschot, and Schobre (2009), who found higher mentalizing in patients with cluster C PD than in both nonclinical and BPD patients. This might indicate that less severe types of PD may coincide with close to normal (or even above average) mentalizing abilities. However, comparability with findings of our study is limited, as Arntz et al. (2009) used a different instrument to assess mentalizing capacities (Happé's advanced Theory of Mind test).

In general, previous studies on mentalizing in psychopathology differ with regard to a wide range of parameters, such as measurement instruments, sample size, existence of an adequate control group, and type of psychopathology. These differences make it difficult to compare findings of RF in psychopathology.

Second, another potential explanation for the lack of RF impairments in the psychopathological groups might be related to the way RF abilities develop. Steele and Steele (2008) suggest that RF can develop through two pathways: (a) Adults can gain moderate or high RF *because* they experience a sensitive, mirroring environment in which a focus on mental states is valued; (b) adults can develop moderate or even high RF *despite* experiencing a less sensitive and mirroring environment, in which a focus on mental states is not valued. The second pathway might explain the moderate RF scores in the clinical group. Mothers in the clinical group may have experienced difficult interpersonal situations, coinciding

with (recent) psychopathology. These psychological disturbances might have required reflective thinking, thus practicing and promoting RF abilities. In other words, the preoccupation with interpersonal problems associated to the mental disorder, might *in itself* have heightened RF abilities.

Third, women with psychopathology—especially those in the PPD + PD group—might be more likely to have received psychotherapeutic treatment than nonclinical women. Previous research has shown that psychotherapy can promote RF abilities (e.g., Levy et al., 2006; Rudden et al., 2006). Therefore, psychotherapeutic treatment might have led to an increase in RF in the diagnostic groups compared with the nonclinical group, which may not have received or participated in forms of psychological treatment in the past. Unfortunately we do not have information about psychotherapeutic history in the current study, which is why we can only speculate on this explanation.

Fourth, Luyten and Fonagy (2014) proposed that mentalization is a multidimensional construct with four polarities (focused on the self vs. others, automatic vs. controlled, externalized vs. internalized, and cognitive vs. affective). This multidimensionality may account for divergent findings in RF, as specific dimensions might be impaired in some psychopathologies, while others are intact. Accordingly, Luyten and Fonagy (2014) proposed that various psychopathology may have specific *patterns* of mentalizing impairments, and emphasize that different measurement instruments probe different aspects of mentalizing. Although the RF Scale captures all four dimensions of mentalizing, external and automatic mentalizing would only be measured partly or indirectly (Luyten & Fonagy, 2014). Thus, it might be that mentalizing impairments in mothers with PPD, and PPD + PD would show on dimensions, which are not fully ascertainable with the RF Scale. For example, it may be that PPD mothers in our sample are able to reflect upon the self, while they have difficulties reflecting adequately in relation to others, and particularly in relation to the child. Hence, a measurement instrument which directly assesses parents' abilities to mentalize about their child, such as the PDI, might capture those aspects of potential mentalizing impairments in mothers with PPD.

Furthermore, it may also be the case that for some disorders it would be more relevant to look into symptom-specific impairments rather than general deficits in the capacity to mentalize. Two previous studies (Rudden et al., 2006; Taubner et al., 2011) did not find impairments in general mentalizing abilities, but only in relation to disorder-specific topics (i.e., mentalizing in relation to panic disorder symptoms and depression related topics). Likewise, Berthelot et al. (2015) found in a sample of mothers with childhood histories of abuse and neglect, that not general RF per se, but trauma specific RF, predicted infant attachment. These findings suggest that it is important to capture RF disorder-specific in regard to topics, which are most relevant in relation to the psychopathology in question.

Fifth, another possible explanation for the lack of RF differences among the three groups may be that AAIs were conducted at different time points in the current study. More specifically, AAIs were conducted in the nonclinical group in the third trimester of pregnancy, and in the clinical groups 9–12 weeks postpartum. Although RF is generally seen as a relatively stable construct (e.g., Taubner et al., 2013), there is also evidence that mentalizing abilities may be subject to change (Sadler et al., 2013). This may

particularly be the case in transition to motherhood, where a woman often revisits the relationship to her own parents, and defines the relationship to her child as well as her new role as a mother. Accordingly, Wong et al. (2015) found an increase in RF across the transition to parenthood.

Also, the concept of primary parental preoccupation (PPP; Winnicott, 1956) may be important to take into account when evaluating RF obtained at different time points surrounding birth. Winnicott described PPP as a special maternal mental state of heightened attention and sensitivity toward the child during the time surrounding birth. According to Winnicott, PPP is necessary to develop an optimal relationship with the infant. Leckman et al. (1999) revisited the concept and showed empirically that a strong increase in PPP can be seen in mothers from eight months on and up to delivery. Peaking around the time of birth, PPP subsequently declines again in the course of a few months. The findings by Leckman et al. (1999) suggest that the heightened state of preoccupation with the child is normative and necessary in the transition to motherhood. On the other hand, Leckman, Feldman, Swain, and Mayes (2007) suggest that it is a negative indicator of the developing mother-infant relationship, if maternal preoccupation is focused on the self in the time period after birth. Accordingly, Feldman, Weller, Leckman, Kuint, and Eidelman (1999) found that depressed mothers reported lower levels of preoccupations in relation to the infant after birth. Relating this finding to maternal mentalizing abilities in the postpartum period, it may be that PPP inhibits mentalizing about the self. In other words: An increased preoccupation focused on the child in the time period surrounding birth might be at the expense of a mental preoccupation focused on the self. Taking this into account, the rather low scores in the nonclinical group in our study (obtained in the third trimester of pregnancy) might be explained with the normative, predominant preoccupation with the infant, which might lower the ability to reflect upon the self and the own attachment history. On the other hand, the rather high levels of RF in the clinical group (obtained postpartum), might be attributable to lower PPP in this group. PPD mothers may be more preoccupied with themselves (i.e., being able to elaborate on their own attachment history with the parents) than they are with their infant. This self-focus may be problematic postnatally, as those mothers might be more focused on their own internal states and less on the baby's state of mind. To further investigate this idea, future research should include both a measure for AAI-RF and PDI-RF and divide RF into focused on the self and on the child. Also, maternal transcripts could be explored qualitatively. In that way, knowledge about the normative changes in mentalizing toward the self and the infant in the postpartum period could be extended.

Sixth, the lack of differences among the three groups may also arise from the fact that the nonclinical group showed low to moderate RF scores. Usually, a mean score of 5 is considered the norm in nonclinical samples. However, two recent studies found mean scores of 3 to 4 in nonclinical samples (Morel & Papouchis, 2015; Rosso, Viterbori, & Scopesi, 2015). Thus, the mean score of the nonclinical group in our study ($M = 4.0$; $SD = 1.7$) is relatively low, but comparable to findings in other studies. Also, Fonagy, Steele, Steele, Higgitt, and Target (1994) rated 31 non-deprived middle class parents in the London Parent Child Project as low in RF, which indicates that it is not incompatible to find low to moderate RF scores in low-risk samples. A possible explanation

for finding rather low to moderate RF scores in nonclinical—even well educated—samples may be that *not* experiencing deprivation does not necessarily go along with high levels of mentalizing. Following this idea, it might be that the lack of challenging experiences, leaves an individual with needing to reflect less upon ones' own and others mental states than individuals with harsh, complicated past experiences. Future research should aim at providing more knowledge on what can be considered a normative level of RF—both in clinical and nonclinical samples.

Last, the current sample can be considered low-risk with regard to sociodemographic variables, which also might affect RF capacities. For example, it may be that the fact that only one woman in each group was living without a partner, promoted maternal RF abilities through support provided by the partner. In line with Fonagy et al. (1991) and Pajulo et al. (2012), we also found that educational level was significantly associated with RF, with women in the PPD + PD group with higher educational levels having higher RF scores in this group. Possibly, educational training promotes the ability to think reflectively, which could in turn support reflective thinking with regard to interpersonal topics. Also, in the nonclinical group unemployment status was associated with RF, with employed women having higher levels of RF in this group. Not only educational and occupational status might play a role, but future research should also look into the possibility that the relationship between RF and psychopathology is complex and potentially best explained in terms of an interaction with other variables, such as trauma, adversity, and temperament.

To ensure that our findings were not attributable to coding errors, in particular related to hypermentalizing in the clinical groups, we rechecked interviews with high RF in the PPD + PD group. Thus, besides having excellent interrater-reliability across the whole dataset, the reliability coder also confirmed the existence of genuinely high RF in the comorbid psychopathology group. The following example of an AAI passage of a woman with both PPD + PD illustrates these high RF abilities:

Interviewer: “How would you describe your relationship to your parents now as an adult?”

Interviewee: “Uhm, complicated I think. [. . .] I still have a strong desire [. . .] which comes from way back, uhm, to sort of save them. At the same time I have ((4 sec)) a lot of anger towards them, uhm, which I, at least not at the moment, don't express very much ((4 sec)) [. . .]. I also think I miss them quite a lot, sometimes I think it's almost a bit childish the way I miss them [. . .]. Well yes, I don't know, I think I just miss them quite a lot and, uhm, I have a wish for us to have a good relationship, and it's difficult because they don't want to make a wholeheartedly attempt to - - drink less or stop drinking ((7 sec)). So yes, it's pretty complicated how I feel about my parents ((4 sec)). I have a longing for them which I don't think other people have for their parents [. . .]. So sometimes we are very close, uhm, and then other times - - we are very far from each other, and I think maybe it is best described as sort of a rollercoaster [. . .].”

Our findings need to be interpreted in the light of several limitations. First, AAIs were conducted at different time points (before and after birth) in the nonclinical and clinical group as a result of our study design. As discussed earlier this might have influenced RF abilities on account of a normative process in transition to motherhood. Second, in our study we did not evaluate whether women were reflecting upon themselves or others as has been done in one prior study (Suchman et al., 2010). In line with a multidimensional conceptualization of RF (self vs. others), one could speculate that RF levels differ depending on if a woman is reflecting upon her own or other's mental states. Knowledge about potential, multidimensional impairment patterns might further elucidate psychopathology-specific difficulties in RF. Third, the current sample did not comprise a group of mothers having only PD. The lack of a comparison group with mothers showing only PD, makes it impossible to disentangle RF levels related to PD only. Fourth, the homogeneous, low-risk nature of the sample in regard to contextual factors, and the small group sizes limit the generalizability of the findings.

To conclude, in the current study we did not find significant differences in RF capacities among nonclinical women and clinical groups of PPD women with and without comorbid PD. The findings of the current study indicate that psychopathology and good RF abilities are not necessarily incompatible. Thus, our findings call for a more nuanced picture of RF in the context of psychopathology, and underline the importance of refining the concept of RF. Future research needs to conduct high quality studies (a) with different types of psychopathology, (b) with regard to different background variables (e.g., educational level, social support, etc.), (c) in similar contexts (e.g., online vs. offline), and (d) with comparable measures. Finding disorder-specific impairments may help to tailor interventions for patients with different therapeutic needs in regard to RF, and shed light on "what works for whom." By investigating RF in parents with PPD, not only the parent, but also the child might benefit from these tailored interventions.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Arnott, B., & Meins, E. (2007). Links among antenatal attachment representations, postnatal mind-mindedness, and infant attachment security: A preliminary study of mothers and fathers. *Bulletin of the Menninger Clinic, 71*, 132–149. <http://dx.doi.org/10.1521/bumc.2007.71.2.132>
- Arntz, A., Bernstein, D., Oorschot, M., & Schobre, P. (2009). Theory of mind in borderline and cluster-C personality disorder. *Journal of Nervous and Mental Disease, 197*, 801–807. <http://dx.doi.org/10.1097/NMD.0b013e3181be78fb>
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
- Beck, C. T., & Gable, R. K. (2000). Postpartum Depression Screening Scale: Development and psychometric testing. *Nursing Research, 49*, 272–282. <http://dx.doi.org/10.1097/00006199-200009000-00006>
- Berthelot, N., Ensink, K., Bernazzani, O., Normandin, L., Luyten, P., & Fonagy, P. (2015). Intergenerational transmission of attachment in abused and neglected mothers: The role of trauma-specific reflective functioning. *Infant Mental Health Journal, 36*, 200–212. <http://dx.doi.org/10.1002/imhj.21499>
- Bly, E. M., Wright, A. J., & Tuber, S. B. (2012). Unemployed and poor in New York: The impact of mentalization and Axis II psychopathology on job outcome. *Bulletin of the Menninger Clinic, 76*, 101–129. <http://dx.doi.org/10.1521/bumc.2012.76.2.101>
- Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry, 150*, 782–786. <http://dx.doi.org/10.1192/bjp.150.6.782>
- Crumbley, A. H. (2009). The relationship specificity of the reflective functioning: An empirical investigation (Doctoral Dissertation). Retrieved from ProQuest Dissertation & Theses Global, City University of New York, NY, New York.
- De Wolff, M. S., & van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*, 571–591. <http://dx.doi.org/10.1111/j.1467-8624.1997.tb04218.x>
- Ekeblad, A., Falkenström, F., & Holmqvist, R. (2016). Reflective functioning as predictor of working alliance and outcome in the treatment of depression. *Journal of Consulting and Clinical Psychology, 84*, 67–78. <http://dx.doi.org/10.1037/ccp0000055>
- Ensink, K., Berthelot, N., Bernazzani, O., Normandin, L., & Fonagy, P. (2014). Another step closer to measuring the ghosts in the nursery: Preliminary validation of the Trauma Reflective Functioning Scale. *Frontiers in Psychology, 5*, 1471. <http://dx.doi.org/10.3389/fpsyg.2014.01471>
- Ensink, K., Normandin, L., Plamondon, A., Berthelot, N., & Fonagy, P. (2016). Intergenerational pathways from reflective functioning to infant attachment through parenting. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement, 48*, 9–18. <http://dx.doi.org/10.1037/cbs0000030>
- Feldman, R., Weller, A., Leckman, J. F., Kuint, J., & Eidelman, A. I. (1999). The nature of the mother's tie to her infant: Maternal bonding under conditions of proximity, separation, and potential loss. *Journal of Child Psychology and Psychiatry, 40*, 929–939. <http://dx.doi.org/10.1017/S0021963099004308>
- First, M. B., Gibbon, M., Spitzer, R. L., Williams, J. B. W., & Benjamin, L. S. (1997). *Structured Clinical Interview for DSM-IV Axis I Personality Disorders (SCID-I)*. Washington, DC: American Psychiatric Press, Inc.
- Fischer-Kern, M., Buchheim, A., Hörz, S., Schuster, P., Doering, S., Kapusta, N. D., . . . Fonagy, P. (2010). The relationship between personality organization, reflective functioning, and psychiatric classification in borderline personality disorder. *Psychoanalytic Psychology, 27*, 395–409. <http://dx.doi.org/10.1037/a0020862>
- Fischer-Kern, M., Fonagy, P., Kapusta, N. D., Luyten, P., Boss, S., Naderer, A., . . . Leithner, K. (2013). Mentalizing in female inpatients with major depressive disorder. *Journal of Nervous and Mental Disease, 201*, 202–207. <http://dx.doi.org/10.1097/NMD.0b013e3182845c0a>
- Fonagy, P., Gergely, G., Jurist, E. L., & Target, M. (2004). *Affect regulation, mentalization and the development of the self*. London, UK: Karnac Books.
- Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R., Mattoon, G., . . . Gerber, A. (1996). The relation of attachment status, psychiatric classification, and response to psychotherapy. *Journal of Consulting and Clinical Psychology, 64*, 22–31. <http://dx.doi.org/10.1037/0022-006X.64.1.22>
- Fonagy, P., Steele, M., Steele, H., Higgitt, A., & Target, M. (1994). The Emanuel Miller memorial lecture 1992: Theory and practice of resilience. *Journal of Child Psychology and Psychiatry, and allied disciplines, 35*, 231–257.
- Fonagy, P., Steele, M., Steele, H., Moran, G. S., & Higgitt, A. C. (1991). The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal, 12*, 201–218. [http://dx.doi.org/10.1002/1097-0355\(199123\)12:3<201::AID-IMHJ2280120307>3.0.CO;2-7](http://dx.doi.org/10.1002/1097-0355(199123)12:3<201::AID-IMHJ2280120307>3.0.CO;2-7)

- Fonagy, P., Target, M., Steele, H., & Steele, M. (1998). *Reflective-Functioning Manual*, Version 5. Unpublished Manuscript, University College, London, England.
- Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: A systematic review of prevalence and incidence. *Obstetrics and Gynecology*, *106*, 1071–1083. <http://dx.doi.org/10.1097/01.AOG.0000183597.31630.db>
- George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview (AAI)*. [Unpublished manuscript.] University of California at Berkeley.
- Gullestad, F. S., Johansen, M. S., Høglend, P., Karterud, S., & Wilberg, T. (2013). Mentalization as a moderator of treatment effects: Findings from a randomized clinical trial for personality disorders. *Psychotherapy Research*, *23*, 674–689. <http://dx.doi.org/10.1080/10503307.2012.684103>
- Katznelson, H. (2014). Reflective functioning: A review. *Clinical Psychology Review*, *34*, 107–117. <http://dx.doi.org/10.1016/j.cpr.2013.12.003>
- Leckman, J. F., Feldman, R., Swain, J. E., & Mayes, L. C. (2007). Primary parental preoccupation: Revisited. In M. Target (Ed.), *Developmental science and psychoanalysis* (pp. 89–108). London, UK: Karnac Press.
- Leckman, J. F., Mayes, L. C., Feldman, R., Evans, D. W., King, R. A., & Cohen, D. J. (1999). Early parental preoccupations and behaviors and their possible relationship to the symptoms of obsessive-compulsive disorder. *Acta Psychiatrica Scandinavica*, *100*, 1–26. <http://dx.doi.org/10.1111/j.1600-0447.1999.tb10951.x>
- Levy, K. N., Meehan, K. B., Kelly, K. M., Reynoso, J. S., Weber, M., Clarkin, J. F., & Kernberg, O. F. (2006). Change in attachment patterns and reflective function in a randomized control trial of transference-focused psychotherapy for borderline personality disorder. *Journal of Consulting and Clinical Psychology*, *74*, 1027–1040. <http://dx.doi.org/10.1037/0022-006X.74.6.1027>
- Luyten, P., & Fonagy, P. (2014). Assessing mentalising in attachment contexts. In S. Farnfield & P. Holmes (Eds.), *The Routledge handbook of attachment: Assessment*. New York, NY: Routledge.
- Luyten, P., & Fonagy, P. (2015). Psychodynamic treatment for borderline personality disorder and mood disorders: A mentalizing perspective. In L. W. Choi-Kain & J. G. Gundersen (Eds.), *Borderline personality disorder and mood disorders: Comorbidity and controversy*. New York, NY: Springer Science+Business Media. http://dx.doi.org/10.1007/978-1-4939-1314-5_13
- Morel, K., & Papouchis, N. (2015). The role of attachment and reflective functioning in emotion regulation. *Journal of the American Psychoanalytic Association*, *63*, NP15–NP20.
- Nielsen, D., Videbeck, P., Hedegaard, M., Salvig, J., & Secher, N. J. (2000). Postpartum depression: Identification of women at risk. *BJOG*, *107*, 1210–1217. <http://dx.doi.org/10.1111/j.1471-0528.2000.tb11609.x>
- Pajulo, M., Pyykkönen, N., Kalland, M., Sinkkonen, J., Helenius, H., Punamäki, R.-L., & Suchman, N. (2012). Substance-abusing mothers in residential treatment with their babies: Importance of pre- and postnatal maternal reflective functioning. *Infant Mental Health Journal*, *33*, 70–81. <http://dx.doi.org/10.1002/imhj.20342>
- Rosso, A. M., Viterbori, P., & Scopesi, A. M. (2015). Are maternal reflective functioning and attachment security associated with preadolescent mentalization? *Frontiers in Psychology*, *6*, 1134. <http://dx.doi.org/10.3389/fpsyg.2015.01134>
- Rudden, M., Milrod, B., Target, M., Ackerman, S., & Graf, E. (2006). Reflective functioning in panic disorder patients: A pilot study. *Journal of the American Psychoanalytic Association*, *54*, 1339–1343. <http://dx.doi.org/10.1177/00030651060540040109>
- Sadler, L. S., Slade, A., Close, N., Webb, D. L., Simpson, T., Fennie, K., & Mayes, L. C. (2013). Minding the Baby: Enhancing reflectiveness to improve early health and relationship outcomes in an interdisciplinary home visiting program. *Infant Mental Health Journal*, *34*, 391–405. <http://dx.doi.org/10.1002/imhj.21406>
- Slade, A. (2005). Parental reflective functioning: An introduction. *Attachment & Human Development*, *7*, 269–281. <http://dx.doi.org/10.1080/14616730500245906>
- Slade, A., Aber, J. L., Berger, B., Bresgi, I., & Kaplan, M. (2003). Parent development interview revised short version. Unpublished manuscript, City College of New York, New York, NY.
- Smith-Nielsen, J., Steele, H., Mehlhase, H., Cordes, K., Steele, M., Harder, S., & Væver, M. S. (2015). Links among high EPDS scores, state of mind regarding attachment, and symptoms of personality disorder. *Journal of Personality Disorders*, *29*, 771–793. http://dx.doi.org/10.1521/pedi_2014_28_173
- Stacks, A. M., Muzik, M., Wong, K., Beeghly, M., Huth-Bocks, A., Irwin, J. L., & Rosenblum, K. L. (2014). Maternal reflective functioning among mothers with childhood maltreatment histories: Links to sensitive parenting and infant attachment security. *Attachment & Human Development*, *16*, 515–533. <http://dx.doi.org/10.1080/14616734.2014.935452>
- Steele, H., & Steele, M. (2008). On the origins of reflective functioning. In F. Busch (Ed.), *Mentalization: Theoretical considerations, research findings, and clinical implications: Psychoanalytic inquiry book series* (Vol. 29, pp. 133–158). New York, NY: The Analytic Press.
- Suchman, N. E., DeCoste, C., Leigh, D., & Borelli, J. (2010). Reflective functioning in mothers with drug use disorders: Implications for dyadic interactions with infants and toddlers. *Attachment & Human Development*, *12*, 567–585. <http://dx.doi.org/10.1080/14616734.2010.501988>
- Taubner, S., Hörz, S., Fischer-Kern, M., Doering, S., Buchheim, A., & Zimmermann, J. (2013). Internal structure of the reflective functioning scale. *Psychological Assessment*, *25*, 127–135. <http://dx.doi.org/10.1037/a0029138>
- Taubner, S., Kessler, H., Buchheim, A., Kächele, H., & Staun, L. (2011). The role of mentalization in the psychoanalytic treatment of chronic depression. *Psychiatry: Interpersonal and Biological Processes*, *74*, 49–57. <http://dx.doi.org/10.1521/psyc.2011.74.1.49>
- Verheul, R., Bartak, A., & Widiger, T. (2007). Prevalence and construct validity of personality disorder not otherwise specified (PDNOS). *Journal of Personality Disorders*, *21*, 359–370. <http://dx.doi.org/10.1521/pedi.2007.21.4.359>
- Vliegen, N., Casalin, S., & Luyten, P. (2014). The course of postpartum depression: A review of longitudinal studies. *Harvard Review of Psychiatry*, *22*, 1–22. <http://dx.doi.org/10.1097/HRP.0000000000000013>
- Wing, J. K., Cooper, J. E., & Sartorius, N. (1974). *Measurement and classification of psychiatric symptoms: An instruction manual for the PSE and Catego program*. Cambridge, UK: Cambridge University Press.
- Winnicott, D. W. (1956). Primary maternal preoccupation. In *Collected papers: Through pediatrics to psychoanalysis*. New York, NY: Basic Books.
- Wong, K., Stacks, A. M., Ghrist, F., Vila, A., Antilla, C., & Beeghly, M. (2015, August). *Is reflective functioning stable from pregnancy to postpartum?: Preliminary findings*. Poster presented at the International Attachment Conference, New York, NY.