



High degree of uncertain reflective functioning in mothers with substance use disorder



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ABSTRACT

Aims: Having a substance use disorder (SUD) is associated with impaired reflective functioning (RF) or mentalizing, implying reduced capacity to reflect on internal mental states of the self and others. This has adverse effects on parenting and the child's development. High uncertain RF style prevents an adequate RF due to a concrete, rigid way of mentalizing. High certain RF style prevents adequate RF by making individuals too certain that their view of the world is the true and only one, thereby implying no need to mentalize others' state of mind. We investigated the degree of certain RF and uncertain RF in mothers with SUD with the recently developed screening measure Reflective Functioning Questionnaire-8 (RFQ). Further, we measured the concurrent validity of the RFQ and the more commonly used Parent Development Interview (PDI) measuring a one-dimensional scale of RF.

Methods: We used the RFQ-8 to investigate the degree of certain RF (RFQc) and uncertain RF (RFQu) in 43 mothers with SUD. We measured the concurrent validity of the RFQ and the more commonly used PDI.

Results: Our sample had considerably higher uncertain RF compared to certain RF. The RFQu was significantly negatively associated with maternal RF measured with the PDI, while the RFQc was not.

Conclusion: High degree of uncertain RF in mothers with SUD was associated with an impaired maternal RF (PDI). Administering the RFQ-8 before treatment might be an effective way to screen for uncertain RF deficit, pinpointing what should be the focus in the mentalization-based therapy.

1. Introduction

Reflective functioning (RF) is the manifestation of the capacity to mentalize, and is referred to as the ability to understand, anticipate, and interpret one's own behavior and the behaviors of others in light of underlying mental states (Fonagy, Steele, Steele, Moran, & Higgitt, 1991). RF and Parental Reflective Functioning (PRF) are related capacities; however, they seem to capture slightly different aspects of mentalizing (Luyten, Nijssens, Fonagy, & Mayes, 2017). PRF is the operationalization of mentalizing in an attachment relationship with the child, meaning the caregiver's capacity to interpret behavior of oneself and the child in terms of mental states (Slade, 2005). PRF is important since mental representations of the current, ongoing relationship also affect parental behavior (Dollberg, Feldman, & Keren,

2010). A review including 47 studies found that higher PRF was associated with adequate caregiving and the child's attachment security, whereas low maternal RF was found in mothers whose children suffered from anxiety disorders, impairment in emotion regulation, and externalizing behaviors (Camoirano, 2017). In addition, higher PRF was associated with better mentalizing abilities in children. Studies show that mothers diagnosed with substance use disorder (SUD) have an increased risk of exhibiting PRF deficits (Håkansson, Söderström, Watten, Skårderud, & Øie, 2018; Suchman, DeCoste, Castiglioni, Legow, & Mayes, 2008), as well as an increased risk of maladaptive parenting practices, child abuse and neglect (Pajulo, Suchman, Kalland, & Mayes, 2006). Further, results on mothers with SUD from our research group indicate that IQ was not significantly associated with PRF, and health problems had significant negative association with PRF

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(Håkansson, Söderström, et al., 2018). We also found that when splitting the group in two, based on PRF levels, mothers with a negative to low PRF exhibited more severe difficulties in SUD related aspects, such as significantly earlier age at substance use onset, earlier age of acquiring a SUD diagnosis, as well as more often reporting multiple substance abuse compared with mothers with adequate to high PRF (Håkansson, Söderström, et al., 2018). Further, childhood trauma had significant negative associations with PRF (Håkansson, Watten, Söderström, Skårderud, & Øie, 2018).

The Reflective Functioning Scale (RFS) (Fonagy, Target, Steele, & Steele, 1998) rates the capacity to reflect (metalyze) on attachment relationships using transcripts of interviews. When used on the Parent Development Interview (PDI) it measures PRF (Slade, Bernbach, Grienerberger, Levy, & Locker, 2005). However, this interview is both labor- and time-intensive, and requires highly trained raters (Taubner et al., 2013). Thus, there is a need for a brief easy-to-administer self-report measure of RF. The Reflective Functioning Questionnaire (RFQ) was designed to provide an easy to administer self-report measure of mentalizing. Further, the PDI produces a unidimensional scale of RF while the RFQ is a multidimensional screening measure of RF style. In addition, the RFQ could potentially overcome some critical issues regarding the use of narrative interviews that necessarily rely on linguistic abilities and verbal patterns (Camoirano, 2017). A detailed description of the development of the RFQ can be found in Fonagy et al. (2016).

The RFQ measures the degree of certainty (RFQc)/uncertainty (RFQu) RF the respondents experience in relation to their own or someone else's mental state. It is important to notice that high levels of either style of mentalization are considered negative entities, since they both reveal a respondent's failure to appreciate the opaqueness of a person's mental state. The uncertain RF style prevents an adequate RF in these individuals due to their characteristic concrete, inflexible way of mentalizing, that leaves them unable to consider complex ways of understanding their own, or someone else's mind. The certain RF style prevents adequate RF by making individuals too certain that their view of the world is the true and only one, thereby implying no need to mentalize about anyone else's state of mind (Fonagy, 2006).

The certain and uncertain RF styles can be closely linked to the concepts of "psychic equivalence mode" and "pretend mode." Psychic equivalence mode is a mental mode in which individuals equate their outer reality with their inner mental reality, i.e., there is no mentalization yet (Fonagy & Target, 1996). Because this is seldom the case, individuals with this tendency are often intolerant of other, alternative perspectives, which in turn leads to an uncertain RF style characterized by individuals having concrete, inflexible understandings of mental states. The uncertain RF style often causes these individuals to refrain from attempting to mentalize (Sharp et al., 2011). For instance, answering "strongly agree" to the question "*Sometimes I do things without really knowing why*" reflects a high uncertainty score on the RFQ. In the certain RF style, ideas often form no relationship between outer and inner reality, so that an individual's mental representations are missing a link to their external reality, making them certain in their mentalization. Thus, in pretend mode mentalizing is possible, but it is not connected to reality. Answering "strongly disagree" to the question "*Sometimes I do things without really knowing why*" reflects a high certainty score on the RFQ. The integration of these modes during an individual's development result in proper RF, and trauma is known to make individuals regress to either of these modes (Weinberg, 2006). When the uncertain RF deficit is predominant, therapy should address the lack of *distinction* between mental representations and reality. When the certain RF deficit is predominant, therapy should address the lack of *relationship* between them.

The RFQ was originally a 54-item questionnaire, but was shortened to 8 items following factor analyses conducted because the researchers wanted to develop a brief screening measure of RF (Fonagy et al., 2016). De Meulemeester, Vansteelandt, Luyten, and Lowyck (2018)

investigated the association between changes in RF using the RFQ (8 items) and outcome in a sample of 175 patients with borderline personality disorder (BPD). They used data from a naturalistic study of the effectiveness of hospitalization-based treatment for BPD. Results showed that treatment was associated with significant decreases in uncertain RF style and symptomatic distress. In a study by Fonagy et al. (2016) only the uncertain RF was found to have a high correlation with the borderline features in BPD-patients. This was also replicated in the recent study by De Meulemeester et al. (2018).

As far as we know, the RFQ has not been used to measure RF in mothers with SUD. This may be important based on the research showing that mothers with SUD as a group have low levels of RF (Suchman et al., 2008). There is a need for less labor-intensive approaches than those currently in practice, which involve lengthy interviews requiring clinical skill and then labor-intensive coding. The RFQ-8 is a long-awaited supplement in the research field of RF due to its time- and labor-saving qualities as a short self-report questionnaire. Administering the RFQ-8 before treatment might be an effective way to screen for a predominant certain or uncertain RF deficit, pinpointing what should be the focus in the mentalization-based therapy.

1.1. Aims and hypotheses

We wanted to investigate the degree of certain RF (RFQc) and uncertain RF (RFQu) in 43 Norwegian mothers with SUD. Further, we aimed to investigate the concurrent validity of the RFQ-8 and the PDI in the same group of mothers with SUD. This was done by examining the association between the results on the RFQ-8 scales and the maternal RF scores assessed with the PDI. Based on previous research and theory on the bimodal division of the RFQ (Fonagy et al., 2016), we hypothesized that both RFQu and RFQc would be high in mothers with SUD, and that both higher RFQu and RFQc would be associated with lower overall RF scores on the PDI, demonstrating two different ways of failing to properly mentalize.

2. Methods

2.1. Participants

In this study, 43 mothers (M age = 31 years, SD = 6.4, range 19 to 44) with SUD were recruited, either while being pregnant or during their postpartum period (Håkansson, Söderström, et al., 2018). Twelve families (27.9%) were recruited from outpatient clinics and six (14.0%) from municipality health nurses. Twenty-five families (58.1%) were recruited from one of eight different residential treatment institutions in Norway. The inclusion criteria required mothers to have an SUD diagnosis and a child under the age of 18 months (M age = 8.6 months, SD = 3.8). The exclusion criteria were premature birth (< 32 weeks and < 1500 g), multi-parity, multi-handicapped or a severely ill child, or an estimated full-scale IQ below 70 in the mothers. To the best of our knowledge, all the mothers were abstinent during the assessment period. In addition to SUD the mothers had anxiety disorders (most frequently reported were PTSD (67.4%) and panic disorder (60.5%)), previous depression (95.3%), self-harm (65.1%) and previous suicide attempts (67.4%). Relative to its prevalence, anorexia (37.2%) and previous substance induced psychosis (41.9%) were also reported. For detailed description of demographic data, see Håkansson, Söderström, et al. (2018) and Håkansson, Watten, et al. (2018). Twenty-two mothers (51.2%) did not have a partner and thirteen (30.2%) had a cohabitant. One participant (2.3%) was married and seven (16.3%) had a partner who was not a cohabitant. Twenty-four mothers (55.8%) reported that the father of the child had an ongoing substance abuse problem, and fifteen (34.9%) reported a previous, but currently abstinent substance abuse problem in the father. Four mothers (9.3%) reported that the father never had a substance abuse problem. For the majority of the mothers (N = 27), the target child was their first child. Although

sixteen of the mothers (37.2%) had older children, only one (2.3%) had custody of the older sibling of the target child. Siblings were either living in foster care or with their father. During the inclusion period, twelve of the mothers (27.9%) lost daily custody of the target child.

2.2. Measures

Maternal RF was assessed by the PDI-R2 (Slade et al., 2003). A clinical psychologist (UH), collected the majority of the data material, including administering the PDI-R2 interview. However, for six participants the PDI-R2 were conducted by the principal clinician in contact with the mother. PDI-R2 is a semi-structured interview consisting of 20 questions designed to examine parents' understanding and a narrative of their child and themselves. During the interview, different themes concerning thoughts, feelings and intentions are addressed, both within the mother herself and within the child. In clinical populations poor maternal RF is indicated by scores of 3 or lower on the PDI.

The validity of the PDI is found to be satisfactory in both populations consisting of parents with SUD and non-clinical populations (Levy & Truman, 2002; Slade, 2005). The PDI-R2 interview was recorded and transcribed from audio files. The transcribed interviews were coded according to the guidelines for RF evaluation by an independent reliable coder who was not familiar with the participants. Another coder scored 25% of the interviews to assess inter-rater reliability, which was 93% and considered as satisfactory. In the cases in which the two coders disagreed, the rating of the first coder was used.

The RFQc (certain) and the RFQu (uncertain) were assessed by the Norwegian version of the RFQ-8. The RFQ-8 is a self-report questionnaire (Fonagy et al., 2016). It is relatively new, and has no well-established or validated cut-off for clinically high scores on its scales (Luyten & Moulton-Perkins, personal communication, 2 June 2017). The cut-offs in our sample are therefore to be considered as preliminary, and may only be used to guide future studies investigating a proper clinical cut-off.

All of the items that make up RFQ-8 are median-scored items. To calculate the "certainty/uncertainty" score, they are turned into polar-scored items: For instance, "I don't always know why I do what I do" is a median-scored item used in the calculation of both the certainty and uncertainty scale. To calculate the certainty score on this item, the scores were recoded to: "3-2-1-0-0-0-0-0." The highest score would be obtained by choosing alternative 1 – "strongly disagree," yielding a score of 3 on the certainty scale for this item. To calculate the uncertainty score, the polarization would be the other way: 0-0-0-0-1-2-3. The highest score on the uncertainty scale would be obtained by choosing alternative 7 – "strongly agree," yielding a score of 3. The total score for each of the scales in this study were calculated by adding together the scores and dividing by the number of items included.

The cut-off was set at 1 for both scales. Scores above were categorized as high (impaired), and scores below were categorized as low/normal. This cut-off was set based on the assumption that a mean score of at least one on either of these scales represents a marked RF deficit.

Screening for comorbid psychiatric disorders was done by administering the Mini International Neuropsychological Interview (M.I.N.I.; Sheehan et al., 2006). The use of psychoactive substances was registered using the European Addiction Severity Index (Europ-ASI) 5th edition (McLellan et al., 1992).

2.3. Procedure

The data was collected from a large battery of assessments, and only selected and relevant results are presented in this article. The overall purpose of the larger study was to investigate the associations between multiple variables, including maternal relationship experiences, personality disposition, parental stress, comorbid mental illness, trauma experiences, addiction severity, and cognitive functions, and the effects of these variables on the dyadic interaction and child functioning (see

Table 1
Reflective functioning descriptives.

Reflective functioning	Range	Mean (SD)	Clinical cut-off
Maternal RF ^a	6–0	2.91 (1.17)	3.00
RFQc ^b	2–0	0.47 (0.49)	1.00
RFQu ^b	3–0	1.28 (0.85)	1.00

Note. N = 43 SD = standard deviation. Maternal RF cut-off > 3.00 = adequate RF. RFQc and RFQu cut-off < 1.00 = marked mentalizing style.

^a Parent Development Interview-R2.

^b Reflective Functioning Questionnaire-8.

Håkansson, Söderström, et al., 2018; Håkansson, Watten, et al., 2018).

The part of the test battery used in this study took approximately 2 h to collect per respondent. We examined all the participants in their own home or in the treatment facility where they were currently living. Participation was voluntary and no payments or reimbursements were offered. The study was approved by The Norwegian Regional Committee for Medical Research Ethics in Eastern Norway (REC-Øst, Nr. 2012/1370).

2.4. Analyses

First, an investigation of the descriptive properties of the RF measures was done. In order to examine the association between the maternal RF (PDI) and the RFQ scales, Pearson coefficient correlation analyses were performed. All statistical analyses were carried out using IBM Statistical Package for Social Sciences (SPSS) version 24.

3. Results

The descriptions of the RF measures (Table 1) showed that the mothers had considerably higher scores on the RFQu compared to the RFQc. Due to small sample size we decided not to do within-group statistical analysis between the scores of the two dimensions RFQu and RFQc.

The uncertain reflective style therefore seemed to be more prominent than the certain reflective style in our group of mothers with SUD. As indicated by the standard deviations, variability was also greater for the RFQu scores than for the RFQc scores. The RFQc showed a low mean and restricted variability. Scores indicated a poor average maternal RF (PDI) for the group, as 74.4% of the mothers scored 3 or lower, although the scores also revealed a moderate variability in the ability of maternal RF.

The concurrent validity of the two scales in the RFQ was examined by calculating their Pearson correlation coefficient with the PDI (measuring maternal RF). As shown in Table 2, RFQu was significantly correlated with the PDI, in which higher RFQu scores were associated with lower PDI scores, indicating that an uncertain RF was associated with an impaired maternal RF. The RFQc scale was not significantly associated with PDI.

Table 2
Pearson correlation coefficients between maternal RF and the RFQ scales.

Functions		1	2
1	Maternal RF	–	–
2	Certain RF	0.12	–
3	Uncertain RF	–0.52**	–0.60**

Note. 1) Parent Development Interview-R2, Reflective Functioning Scale. 2–3) Reflective Functioning Questionnaire-8.

*p < .05.

** p < .01.

4. Discussion

As predicted, we found high scores on uncertain reflective functioning (RFQu) in our group of mothers with SUD. Further, we found that higher uncertain RF scores were associated with lower maternal RF measured with the PDI. The mothers in this study exhibited an average PRF score of lower than 3 indicating a lower capacity for PRF compared to what is expected in a normal population (Fonagy & Target, 1997; Håkansson, Söderström, et al., 2018; Slade, 2005). The significant association between the RFQu and the PDI is in line with existing research conducted on the RFQu and its properties as a measure of RF (Fonagy et al., 2016). Contrary to our hypothesis, the mothers did not have high scores on certain reflective functioning (RFQc), and RFQc did not covariate with lower overall RF scores on the PDI. This is in contrast to the theoretical understanding of the development of pathological levels of RF that suggests high certain RF to be a type of RF deficit (Fonagy, Gergely, Jurist, & Target, 2004). One plausible explanation may be that the mothers with SUD, who have high levels of certain RF, may get a PDI score that does not reflect their real RF capacity, because their “pseudo-mentalizing statements” (false) may come through as statements that are given high PDI scores. It may be difficult for the rater to evaluate the authenticity of the participant being interviewed, or to what extent they are in emotional contact with the statements made.

Another explanation is based on the low mean and restricted variability of scores on the RFQc. The RFQu and the RFQc showed a strong negative correlation in our study. Such a substantial negative correlation between the scales makes it hard to obtain high scores on both RFQ scales. The RFQ illuminates the dominant reflective style, forcing the individual to choose between the two styles (Luyten & Fonagy, 2017). A disproportionately large share of the mothers had high scores on the RFQu, thus causing some to have high scores on the RFQc. This leads to both a low mean score and restricted range of the RFQc scores, limiting both the possible significance and correlation with other measures for this scale. It raises the question of whether the occurrence and level of the RFQc found in our sample is high enough to measure RF deficits. Low to moderate levels of certain RF seem to be somewhat protective against psychopathology (relating positively to anger control and negatively to trait anger), at least when found in non-clinical samples (Fonagy et al., 2016). However, too high levels of certain RF can lead to rigidity and a collapse of mentalizing (Fonagy et al., 2016). It is therefore plausible that the RFQc scores in our sample were not high enough to measure pathological RFQc scores, theorized to be associated with impairments of RF. Our results showing non-significant association between the RFQc and maternal RF may therefore reflect limitations in our data, rather than a real lack of association.

Considering our results as a whole, we consider the RFQu scale as having satisfactory concurrent validity with the PDI. Because of the statistical limitations in our study, it is not possible to draw any secure conclusions concerning the concurrent validity of the RFQc and the PDI. Also, the strong negative correlation between the scales makes it hard to separate the findings concerning the scales. To a certain degree, findings concerning low scores on one scale may be explained by high scores on the other, and vice versa. It is also important to investigate if other factors, which we found to be associated with the PDI scores, such as mental health, substance use related factors and trauma history (Håkansson, Söderström, et al., 2018; Håkansson, Watten, et al., 2018), are similarly associated with the RFQu scores. Pilot data indicates this and will be published in another article.

The RFQ-8 is a long-awaited supplement in the research field of RF (Fonagy et al., 2016). Our study has explored the RFQ-8's association with other instruments measuring RF and has in this sense contributed to the exploration of the concurrent validity of the questionnaire. This is much needed considering this is a new measure with only preliminary evidence for its reliability and validity (Fonagy et al., 2016).

Resiliency studies strongly suggest the importance of individually adjusted interventions to address maternal functioning in clinical

populations (Rutherford, Booth, Luyten, Bridgett, & Mayes, 2015), such as mothers with SUD. As a group, mothers with SUD often show difficulties interpreting and understanding the needs of their children. The interaction between mother and child is an important factor for the mothers, as the quality of this interaction is often an important part of the assessment regarding whether the mother is maintaining or losing custody of her child. Research shows that the mother's RF lays an important foundation for the child's social, cognitive and psychological development, particularly during the infant years, in which the mother-child dyadic interaction is shown to be of great importance for the development of attachment style in the child (Swain et al., 2014; Taplin, Saddichha, Li, & Krausz, 2014). It may thus be of clinical importance to identify in what way individuals experience RF deficits, in order to tailor interventions according to their needs. Our study results show that RFQ-8 has adequate concurrent validity to assess uncertain RF in the current sample of Norwegian mothers with SUD. However, our results are based on limited sample sizes and correlational data, and are thus to be considered as preliminary and in need of replication.

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Declaration of Competing Interest

None.

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