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# Maternal representations, infant psychiatric status, and mother–child relationship in clinic-referred and non-referred infants

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**Abstract** To examine the relations between maternal representations, infant socio-emotional difficulties, and mother–child relational behavior, 49 clinic-referred infants and their mothers were compared to 30 non-referred controls. Clinic-referred infants' psychiatric status was determined with the DC 0-3-R classification of Zeanah and Benoit (Child Adolesc Psychiatry Clin N Am 4:539–554, 1995) and controls were screened for socio-emotional difficulties. Mothers were interviewed with the parent development interview (Aber et al. in The parent development interview. Unpublished manuscript, 1985) and dyads were observed in free play and problem-solving interactions. Group differences emerged for maternal representations and relational behaviors. Representations of clinic-referred mothers were characterized by lower joy, coherence, and richness, and higher anger experienced in the mother–infant relationship compared to controls. During free play, clinic-referred mothers showed lower sensitivity and higher intrusiveness and provided less adequate instrumental and emotional assistance and support during problem solving. Referred children showed lower social engagement during free play. Associations were found among maternal representations, maternal interactive

behavior, child social engagement, and the child's ability to self-regulate during a challenging task. These findings provide empirical support for theoretical and clinical perspectives suggesting a reciprocal link between maternal negative representations and mother and child's maladaptive behaviors in the context of early socio-emotional difficulties and mental health referrals.

**Keywords** Maternal representations · Mother–child interaction · Developmental psychopathology · Infant mental health

## Introduction

Beginning with the work of Fraiberg [27] in the USA and David in France [7, 8], infant mental health professionals have been seeking ways to assist families of infants who present symptoms related to early social-emotional maladjustment, such as difficulties in feeding, sleeping, intense fears, and other maladaptive behaviors. To improve preventive interventions and psychotherapy outcomes, researchers have been studying the origins, sequelae, and transformations of early socio-emotional difficulties [53]. The findings accord with the rich evidence on the centrality of the parent–infant relationship for early socio-emotional adaptation [43, 49]. In the current study, we followed an empirical tradition, which compared a group of mother–infant dyads referred to an infant mental health clinic with non-referred matched controls and assessed the correlates of early social-emotional maladaptation [6, 11, 52]. The study examined the parent–child relationship at the observed level, assessing specific maternal and infant behavior patterns, as well as at the representational level, by focusing on mothers' representations of their relationship with their children.

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## Maternal representations

Understanding the factors associated with the development of early parent–child relations and their contributions to socio-emotional development are among the most important goals of developmental research. Initially, research efforts were focused on measuring observed parent–child behavioral patterns and linking them to different developmental outcomes. Over the past decade, however, developmental research has expanded its focus to include parental representations: the parent’s thought processes, views, cognitions, attributions and verbal accounts of the emotional experiences with the child, into the study of early socio-emotional development [47]. The interest in representational processes in the study of the parent–child relationship is consistent with Bowlby’s [3] formulations on the construct of the internal working model (IWM) and its centrality for the parent–infant attachment. From an attachment perspective, parental representations are thought to be based on the parent’s past attachment experiences and determine access to specific thoughts and feelings in relation to the child, which, in turn, guide the parent’s caregiving behavior.

Several empirical definitions have been suggested to capture Bowlby’s IWM construct and its role in the transmission of attachment patterns across generations. One line of research focused on parents’ representations of early attachment relationships with their own parents, as measured by the adult attachment interview (AAI) [29], which indexes the parent’s capacity to flexibly access and coherently integrate a range of thoughts, feelings, and reflections regarding early attachment experiences [24]. In support of this approach, associations between parental AAIs and child attachment status have been documented, as well as between the parent’s attachment status and parenting behavior [23, 42]. Nevertheless, a meta-analysis examining the relations between AAI classifications, parental sensitivity, and infant attachment has shown only moderate associations, leaving an unexplained “transmission gap” [45, 55]. An alternative approach assumes reciprocal influences between the parent’s early attachment representations and mother–child’s behaviors. It is argued that parental representations are shaped by the parent’s past childhood experiences as well as by his or her daily encounters with the child [50]. Thus, parental representations are theorized to be child specific, and need to be assessed in the context of a specific ongoing relationship [1]. This approach led to the development of several child attachment interviews, such as the working model of the child interview (WMCI) [56] and the parent developmental interview (PDI) [2], among others. These instruments assess parental representations by examining the parent’s narrative regarding a specific child and the unfolding of the

parent–child relationship. Whereas the WMCI distinguishes between discrete representational categories based on the degree of balance (acknowledgment of positive as well as negative characteristics of the child), engagement (degree of emotional closeness vis a vis indifference toward the child), and distortion in the parent’s narrative, the PDI provides multidimensional qualifications of the parent’s capacity to reflect on the relationship with the child. Specifically, the PDI assesses the mother’s capacity to describe in a flexible, non-defensive, and coherent manner (i.e., free of significant contradictions, confusions, and lapses in organization and clarity), a wide range of her own and her child’s affective experiences during moments of interaction. In the present study, we used the PDI due to its theoretical assumption regarding reciprocal influences between mother and child, which is consistent with the current literature on the developmental trajectory of socio-emotional difficulties [43, 53]. Furthermore, the PDI provides multidimensional measures of affect regulation, which could be more sensitive to subtle differences between referred and non-referred families. Finally, the PDI deals directly with the parent’s access to and modulation of various affective dimensions, which could be relevant to the development of affect regulation and dysregulation in young children. The PDI has been used in different formats [37]. In the current study we used the original coding system [46], which provides several subscales regarding the organizational and affective features of the parental representation.

## Maternal representations and parenting behavior

Previous studies have shown links between maternal representations, widely defined and measured as indicated above, and the mother’s relational behavior [28, 54]. For example, mothers whose representations involved more joy and were rich and coherent tended to be engaged in more positive and less negative mothering as compared to mothers who scored lower on this factor of the PDI [47]. Mothers whose PDI interviews reflected higher levels of reflective functioning, i.e., a higher capacity to reflect nondefensively on their own internal experiences as a parent and on the internal experiences of their child, displayed fewer disruptions in the mother–infant affective communication [30]. Mothers whose representations were classified as insightful regarding their children’s inner world, that is, they were able to see things from the child’s point of view, were more sensitive in their interactions with the infants [34]. Similarly, mothers who described their children as individuals with an autonomous mental life [39] tended to demonstrate less hostility during interactions [36]. Mothers with joyful representations of their infants demonstrated lower levels of anger and hostility and more positive affect during the Still Face

procedure, when instructed to keep a still or blank face, thus violating the natural flow of interaction with their infants, compared to mothers whose representations were colored by anger [42]. Finally, a recent study showed that mothers who displayed disengaged representations were less sensitive, more passive, less encouraging, and displayed less guidance when interacting with their infants [51]. It is important to note, however, that all of the aforementioned studies were conducted with non-clinical samples.

As indicated above, mothers' parenting behavior has been the focus of many observation studies. Parenting behavior has been operationalized and measured in different ways; however, the most frequently studied index of parenting behavior is maternal sensitivity. Maternal sensitivity, defined as the mother's contingent and appropriate response to the child's signals, has been posited as a central manifestation of the mother's contribution to the mother–child relationship [32], fostering social, emotional, and cognitive growth [39] and facilitating attachment security [9]. Comparing the behaviors of mothers of non-referred versus clinic-referred children, non-referred mothers were found to be more sensitive toward their children while mothers of clinic-referred children were more controlling and intrusive [6, 33]. Thus, it is likely that sensitive maternal behavior may serve as a protective factor during the early years, promoting socio-emotional adaptation, whereas intrusive and controlling maternal behavior may be associated with socio-emotional difficulties.

Attachment theory argues that behavior is context specific. Specifically, it is argued that attachment behavior is likely to be present at times of perceived threats, whereas exploratory behavior is more apparent at times of perceived security [4]. The present findings support this argument and indicate that not only attachment behavior is context specific, but also that many other child and parental behaviors, among them affect regulation, vary as a function of different contextual demands [40, 41]. An example of the context-specific argument comes from a recent study which compared feeding disordered and non-disordered infants during free play and feeding interactions. In this study, significant differences in maternal intrusiveness between groups were observed during the high demand situation (feeding), but not during the low demand situation (play) [22]. To address this possibility, the current study includes a low-stress free play episode as well as a more stressful semi-structured child problem-solving episode, thus allowing the assessment of maternal and child interaction patterns and affect regulation under varying levels of stress.

#### Maternal representations and infant psychopathology

Fraiberg's [27] clinical work and Stern's [50] theoretical formulations suggest that a mother's negative state of mind

in relation to parenting can interfere with her ability to regulate her infant, which, in turn, may contribute to the development of infant psychopathology. It is argued that during early stages of development, infants rely on their caregivers to regulate their arousal level and affect. The regulation occurs through a joint, intersubjective co-regulation process, in which the caregiver reads the infant's affective state and responds to it by either matching or altering it, thus helping the infant to modulate her own affect and behavior [50]. Gradually, the early experiences of co-regulation undergo internalization and become incorporated into the child's growing affective and behavioral self-regulatory repertoire. These changes are thought to bring about a growing sense of mastery and self-efficacy [25, 49].

Parental representations are central to the process of affect co-regulation as they serve to assist the mother in reading her infant's arousal and affective state and to provide adequate care to keep distress within the infant's developmental capabilities. When the caregiver fails to contain her own or the child's intense negative affective states, the co-regulatory process is disrupted, leading to child dysregulation and potential psychopathology. Within this theoretical frame, the mother's incoherent and unbalanced representations, i.e., representations dominated by contradictions, distortions, and overemphasis on negative emotions and anger, may interfere with the mother's capacity to accurately read the infant's emotional state and regulatory needs. Consequently, a pervasive and chronic lack of reliable reading of the infant's internal state and a consistent failure to provide the required regulation may disrupt the development of age-appropriate self-regulation mechanisms [42]. In contrast, balanced representations, which are based on non-defensive acknowledgment of both the positive and negative aspects of the relationship in a coherent, reliable, and well organized internal narrative serve to assist the mother in reading a wide range of affective states within her infant, and respond in an empathic and flexible fashion to her child's regulatory needs, thus fostering the child's emerging self-regulatory capacities. In support for this argument, empirical findings show that children who received more optimal co-regulation tended to show better self-regulation, more self-reliance, and more flexibility in managing their impulses and feelings. Such children were also better able to use adult assistance throughout life [49].

#### The present study

The associations between maternal representations and mother–child relational behavior in infants and toddlers diagnosed with psychiatric disorders of infancy have not, to our knowledge, been studied empirically. As such, the goal

of the current study was to compare the relational representations of mothers of infants with early-onset socio-emotional psychopathology with mothers of typically developing infants. Guided by transactional models of early psychopathology [43], it was assumed that an early psychiatric disorder is both an outcome and an “initiating condition” [44] that may lead to and be exacerbated by disordered mother–infant interactive patterns and negative parental representations.

Our specific hypotheses were as follows:

- (1) Clinic-referred mothers would provide more unbalanced and incoherent relational representations (i.e., enhanced focus on negative interactions, frequent contradictions and lapses in organization and clarity), portraying the relationship with the child as lacking in joy and pervaded by anger, as compared to non-referred mothers.
- (2) During free play, interactions of clinic-referred infants and their mothers would be less harmonious, characterized by lower sensitivity and higher intrusiveness on the part of the mothers and lower social engagement and higher withdrawal on the part of the children, as compared to non-referred dyads. During a more stressful problem-solving episode, interaction difficulties would be more pronounced and clinic-referred infants would display less modulated behavior and affect, and mothers would provide less appropriate assistance and support.
- (3) Associations would emerge between maternal sensitive and supportive behaviors and balanced representations, as well as between maternal representations pervaded by anger and higher intrusiveness.
- (4) Following the literature reviewed above, which suggests a link between early presentations of psychopathology, impaired parent–child interactions, and difficulties in modulating affect and behavior, it was expected that a child’s psychiatric status, mother–child interaction patterns, and maternal relational representations would predict the child’s developing ability to regulate affect when facing a challenging task.

## Method

### Participants

A total of 79 mothers (age 23–42 years,  $M = 31.73$ ) and their young children (age 7–40 months,  $M = 22.35$ ; 45 boys) participated. As much as 49 dyads were recruited from a list of infant mental health clinic referrals and these composed the referred group. The non-referred control

**Table 1** Demographic characteristics of referred and non-referred mother–child dyads

	Referred dyads ( <i>n</i> = 49)	Non- referred dyads ( <i>n</i> = 30)	
Child characteristics			
Gender			NS
Boys	29	16	
Girls	19	13	
Missing	1	1	
Age (months)	$M = 23.68$ $SD = 8.62$	$M = 20.55$ $SD = 8.64$	NS
Birth order (firstborn)	68%	73%	NS
Number of children in the household	$M = 1.57$ $SD = 0.82$	$M = 1.68$ $SD = 0.86$	NS
Mother characteristics			
Age (years)	$M = 31.51$ $SD = 5.55$	$M = 31.75$ $SD = 4.54$	NS
Education			
Elementary school	0	3%	NS
High school graduate (%)	32	30	
Post HS diploma	17	15	
BA and above (%)	50	50	
Education (years)	$M = 17.19$ $SD = 2.51$	$M = 15.73$ $SD = 1.53$	NS

group was recruited from the general population within the same catchment area, by using the “snowball” method. The groups were not equal in size; however, to ensure a large enough sample, all participants were included. Table 1 presents descriptive statistics for the two groups. The two groups were compared using the *t* and  $\chi^2$  tests to ensure the groups’ equivalency. As shown, the two groups were similar in terms of mean child age, number of siblings, maternal age, and maternal education, as well as gender and birth order distributions.

### Procedure

Following the clinic’s screening assessment, families were approached to join the research project. The study’s objective to understand the characteristics and needs of referred families was explained to the families. Families who agreed signed an informed consent. The non-referred group consisted of volunteers recruited in the community and screened by phone [22] to assure no developmental difficulties. Two visits were conducted for each family. The first encounter was conducted at either a clinic room (for the referred group) or at a similarly set university laboratory (for the controls) and consisted of videotaping free play and problem-solving mother–child interactions,

counterbalanced for order. The second encounter was conducted at the family home and consisted of the PDI interview.

## Measures

### *Diagnostic classification of mental health disorders of infancy and early childhood, revised edition (DC: 0-3R)*

The DC: 0-3 is the most commonly used classification system for mental health and developmental disorders of infancy and early childhood for children aged 0–3 years old. Numerous studies have demonstrated the system's adequate psychometric properties and validity [12, 13, 31, 52]. The referred group was diagnosed by the clinic mental health staff. A DC: 0–3 R diagnosis was applied each time a case met the criteria; however, consistent with DC: 0–3 R guidelines, a DSM-IV-TR or an ICD-10 diagnosis was assigned in cases where it seemed more appropriate [57].

### *Free play interaction*

Mother and child were invited to play for 10 min with a box of toys, consistent with our previous research in this age group [15]. Toys included a doll, pretend food and dishes, pretend baby-care equipment, plastic animals, toy cars, toy hardware tools, wooden blocks, and two toy phones.

### *Problem-solving interaction*

In this procedure [5], the child is presented with two tasks, each for 10 min: one within his or her assessed developmental level, and the other above the child's developmental level. Mothers were instructed to observe the child's work at first and then offer whatever assistance they felt was necessary. The instructions were intentionally vague to allow variations in maternal behavior.

### *The parent developmental interview (PDI)*

The PDI is a 45-item interview [2] that assesses parents' representations of their relationships with the child. The interview requires 1.5–2 h to administer. The interviewer asks the mother to describe her child, herself as a parent, and her relationship with her child. Similar to the AAI, the mother is first asked to provide adjectives that describe her relationship with her child and then to give evidence that supports the choice of such adjectives. She is also asked to describe moments of dyadic harmony and dissension, as well as what causes either joy or difficulty to the child and to herself. Specific questions concern the mother's

emotional experiences as a parent, for example, whether, when, and how she handles emotions such as joy and anger.

## Coding

### *Mother–child interactive behavior*

Mother–infant interactions were coded using the Coding Interactive Behavior (CIB) Manual [14]. The CIB is a global rating system for adult–child interactions with versions for newborns, infants, children, and adolescents. It consists of 42 adult, child, and dyadic codes each rated on a scale of 1 (a little) to 5 (a lot) that are aggregated into several parent, child, and dyadic composites. The CIB has been used in multiple studies and has shown sensitivity to infant age, interacting partner, cultural variations, biological and social-emotional risk conditions, and the effects of interventions [18–21]. The system has shown adequate predictive and construct validity and test–retest reliability. Relational constructs assessed with the CIB have shown stability in repeated assessments [17, 22] and to predict cognitive and social-emotional outcomes through childhood and up to adolescence [16].

The following composites were used in the present study, consistent with previous research, and each was the average of the following codes: Mother Sensitivity ( $\alpha = 0.90$ ): consisted of the mother's acknowledgment of child communications, vocal clarity, positive affect, gaze, appropriate range of affect, affectionate touch, resourcefulness, adaptation to child signals, and supportive presence; Mother Intrusiveness ( $\alpha = 0.66$ ): mother's physical manipulation of infant's body, interruption of child's activities, disregarding child signals, and high frequency of mother-led interactions compared to child-leading; Mother Limit Setting ( $\alpha = 0.64$ ): mother's provision of appropriate structure, clear limits, and a consistent and predictable maternal style; Child Involvement ( $\alpha = 0.87$ ): child alertness and enthusiasm, negative emotionality (negative), social initiation, vocalizations, gaze to mother or to object of joint attention, expression of positive affect, competent use of the environment, and the level of symbolic, creative play; Child Withdrawal ( $\alpha = 0.75$ ): child's affect is withdrawn, child avoids engagement with toys, and avoidance toward the mother's presence or the maternal social bids. For the present study, inter-rater reliability was conducted on 20 mother–infant interactions and averaged 0.93 (range 0.87–0.96). Kappa averaged 0.81 (range 0.73–0.87).

### *Mother–child problem-solving interaction*

Mother and infant dyadic interactive behavior during the problem-solving tasks was assessed using an adaptation of



Chase-Lansdale et al.'s [5] coding system. The scale provides global assessment of the infant's behavior and affect during the problem-solving situation, yielding scores ranging from 1 (low) to 5 (high) on the Child's Persistence, Compliance, Enthusiasm, Positive Affect, Negative Affect, and Anger toward the parent subscales. Mother behavior codes include Maternal Assistance, which taps the quality of the mother's instrumental guidance; and Maternal Emotional Support, which assesses the quality to the mother's encouragement and sensitivity to her infant's frustration. The scale yields four theoretically and statistically derived factors for each task: Maternal Assistance, Maternal Emotional Support, Child Negative Affect, and Child Positive Affect/Enthusiasm [10]. Previous studies demonstrated construct validity of the coding scheme [5, 48]. In this study, scores were averaged across the two tasks, yielding four factors: Child Positive Affect/Enthusiasm ( $\alpha = 0.87$ ); Child Negative Affect ( $\alpha = 0.84$ ); Maternal Assistance ( $\alpha = 0.90$ ) and Maternal Emotional Support ( $\alpha = 0.92$ ). Given the high correlation between the Maternal Assistance and Maternal Support factors ( $r = 0.95$ ), the two were combined to create a Maternal Assistance and Support factor ( $\alpha = 0.90$ ). Inter-rater reliability was computed on 20 tapes and averaged 0.82 (range 0.73–0.91).

#### *Parent development interview coding*

Maternal representations were assessed using the PDI Coding System [46]. Interviews were transcribed verbatim and coded globally along two dimensions: maternal affective experiences and state of mind. Consistent with previous research [1, 47], several maternal affective subscales were used and included Joy, Anger level, Anger Acknowledgement and Anger Modulation. Scores were assigned by assessing the frequency, intensity, and self-awareness regarding each affective state. The affective subscales were scored along a nine-point continuum with low scores indicating an effort to avoid, deny, or downplay the referred emotional experiences, and high scores indicating a high, and sometimes intense, level of the referred emotion. The state-of-mind subscales included coherence and richness of experiences. Coherence level was determined by assessing the mother's ability to maintain a sense of clarity, consistency, and organization throughout the narrative and to avoid major contradictions and confusions. Richness of experiences was rated based on the diversity and richness of the descriptions provided by the mother. The state-of-mind subscales were rated on a five-point scale with higher scores indicating a higher level of coherence and richness. Following previous published work with this instrument [1, 47], the subscales were standardized and summed to create two composite factors: Joy–Pleasure/Coherence, consisting of the Joy, Coherence,

and Richness of experiences subscales and Anger, consisting of the Anger Level, Acknowledgement, and Modulation subscales. Previous studies using this coding system have demonstrated adequate psychometric properties [1, 47]. For each factor, higher scores indicated higher levels of the indexed theme in the mother's narrative. Internal reliability scores for the two factors were: Joy–Pleasure/Coherence (0.75) and Anger (0.68). Coding was carried out by two raters, trained to reliability by a former member of the coding developing team. A total of 15 randomly selected transcribed interviews from the referred and the non-referred groups were double coded and showed adequate inter-rater reliability (ICC ranged 0.74–0.86.) Disagreement was resolved by discussion. Raters were blind to the mothers' group status.

## **Results**

Results are presented in three sections. In the first, mean level group differences in maternal representations and relational behaviors are presented. In the second, associations between interactive behavior and representations are described. The third section presents a regression model predicting child behavior and affect during the problem-solving task.

Prior to presenting the results, we present the diagnostic composition of the referred group. Referrals were based on the following reasons: behavior problems ( $n = 15$ ), sleeping difficulties ( $n = 8$ ), eating and feeding problems ( $n = 4$ ), parental psychopathology and over-anxiety ( $n = 4$ ), request for parental guidance ( $n = 2$ ), communication delays ( $n = 3$ ), persistent crying ( $n = 2$ ), difficulties in toilet training ( $n = 1$ ), and hair pulling ( $n = 1$ ). In five cases the referral question was not specified. The referred children were assessed with the DC: 0–3 R system. Results indicated that 31 of the children (63%) met criteria for Axis I diagnosis including the following diagnoses (DC: 0–3 R or DSM-IV-TR, where applicable): feeding behavior disorder ( $n = 7$ , 22.6%), sleeping behavior disorder ( $n = 7$ , 22.6%), regulatory disorder ( $n = 3$ , 9.4%), anxiety disorder ( $n = 3$ , 9.7%), mixed disorder of emotional expressiveness ( $n = 3$ , 9.7%), oppositional defiant disorder ( $n = 2$ , 6.5%), reactive attachment disorder ( $n = 2$ , 6.5%), traumatic stress disorder ( $n = 1$ , 3.2%), multisystem developmental disorder ( $n = 1$ , 3.2%) Trichotillomania ( $n = 1$ , 3.2%) and attention deficit hyperactivity disorder ( $n = 1$ , 3.2%). Of the 49 dyads, 30 (61%) met the criteria for Axis II primary caregiver relationship disturbance, scoring within the significantly perturbed range (PIR GAS less than 60) and 17 (35%) scored within the disturbed range (PIR GAS 40 and below). Relational diagnoses included overinvolved ( $n = 10$ , 20% of entire sample), anxious–tense ( $n = 10$ , 20%), underinvolved ( $n = 6$ , 12%) and angry–hostile ( $n = 4$ , 8%).

## Group differences in interactive behavior and maternal representations

### Free play

Two separate MANOVAs with group (referred/non-referred) and child gender as the between-subject factors examined differences in the three maternal and three child factors during free play. Results for the maternal behaviors showed a significant difference for the group (*Wilks' F* (3, 52) = 2.73,  $P = 0.05$ ). Univariate tests (Table 2) showed differences for Maternal Sensitivity and a marginal difference for Maternal Intrusiveness. Referred mothers displayed less sensitive parenting and tended to be more intrusive compared to controls. Results for the child factors showed marginally significant group differences, (*Wilks' F* (2,54) = 2.48,  $P = 0.09$ ). Univariate tests, presented in Table 2 showed marginal effects for Child Involvement and Child Withdrawal.

### Problem solving

A similar MANOVA with group and child gender was conducted to examine differences in maternal and child behaviors during the problem-solving task. No significant differences were found between the groups; however, a univariate analysis showed a significant difference in Maternal Assistance and Support (Table 2).

### Maternal representations

MANOVA with group and child gender as the between-subject factors was used to examine the two PDI factors; Joy-Pleasure/Coherence and Anger. Results indicated a significant main effect for group (*Wilks' F* (2,53) = 8.51,

$P < 0.01$ ). The two univariate tests were significant (Table 2). Specifically, referred mothers tended to experience less joy in the mother–child relationship and described daily encounters in a more restricted and less coherent fashion, compared to non-referred mothers. Referred compared to non-referred mothers also experienced more anger and had more frequent unmodulated anger outbursts. No child gender effects were found in any of the MANOVAs.

### Correlations between maternal representations and interactive behaviors

To examine the relationship between maternal representations and interactive behaviors, correlations among the PDI factors and relational behaviors during play and problem solving were computed. Results (Table 3) showed correlations between the mother's Joy-Pleasure/Coherence factor and Maternal Sensitivity and Limit Setting and a negative correlation between the Joy-Pleasure/Coherence factor and Maternal Intrusiveness during free play. The Joy-Pleasure/Coherence factor correlated positively with Maternal Quality of Assistance and Support. A marginal negative correlation was also found between Joy-Pleasure/Coherence and Child Negative Affect during the problem-solving task. The PDI Anger factor correlated positively with Maternal Intrusiveness during free play. A marginally significant negative correlation was also found between the Anger factor and Maternal Limit Setting during free play.

### Predicting child problem-solving orientation

Two regression model were computed, one predicting Child Negative Affect, i.e., the child's ability to modulate negative emotions such as frustration and anger during a

**Table 2** Differences in interactive behavior and maternal representations among referred and non-referred dyads

Variable	Referred ( $n = 49$ )		Non-referred ( $n = 30$ )		$F$
	$M$	SD	$M$	SD	
Free play					
Maternal sensitivity	3.23	0.76	3.75	.70	6.91*
Maternal intrusiveness	1.44	0.66	1.16	0.40	3.39 <sup>†</sup>
Maternal limit setting	4.56	0.75	4.74	0.47	1.05
Child involvement	2.70	0.66	3.11	0.74	3.95*
Child withdrawal	1.49	0.76	1.14	0.42	3.26
Problem solving					
Maternal assistance and support	6.39	2.32	7.63	2.32	5.24*
Child positive affect	2.76	.15	3.09	.18	1.57
Child negative affect	1.83	.15	1.48	.18	2.21
Maternal representations					
Joy/pleasure coherence	−1.22	2.44	1.22	2.16	15.62**
Anger	0.61	1.77	−0.44	1.52	3.91*

<sup>†</sup>  $P = 0.07$ ; \*  $P \leq 0.05$ ;

\*\*  $P < 0.01$



**Table 3** Intercorrelations between maternal representations and mother and child interactive behavior

Factor	1	2	3	4	5	6	7	8	9	10
1. PDI-Joy/pleasure coherence	–	–0.25*	0.31*	–0.49**	0.29*	0.16	–0.16	0.32*	0.15	–0.22†
2. PDI anger		–	–0.16	0.36**	–0.23 †	0.10	0.02	–0.02	0.16	–0.07
3. CIB maternal sensitivity			–	–0.54**	0.64**	0.73**	–0.19	0.70**	0.40**	–0.24*
4. CIB maternal intrusiveness				–	–0.51**	–0.21*	0.04	–0.48**	–0.20	0.26*
5. CIB maternal limit setting					–	0.42**	–0.05	0.31*	0.12	–0.01
6. CIB child involvement						–	–0.45**	0.69**	0.75**	–0.45**
7. CIB child withdrawal							–	–0.23†	–0.41**	0.47**
8. Maternal assistance and support								–	0.79**	–0.73**
9. Child positive affect/enthusiasm									–	–0.71**
10. Child negative affect										–

†  $P = 0.07$ ; \*  $P \leq 0.05$ ; \*\*  $P < 0.01$ **Table 4** Predicting child negative affect on problem-solving tasks

Step	Predictor	Child negative affect			
		Beta	$R^2$ Change	$F$ Change	95% CI for B
1.	Maternal assistance and support	–0.73**	0.54	43.90**	–0.36 to –0.19
2.	CIB maternal sensitivity	0.56*	0.25	10.19**	0.31–1.00
	CIB maternal intrusiveness	0.06			–0.24 to 0.44
	CIB child involvement	0.02			–0.36 to 0.41
	CIB child withdrawal	0.35*			0.22–0.73
3.	PDI joy–pleasure/coherence	0.01	0.00	0.07	–0.06 to 0.07
	PDI anger	–0.03			–0.11 to 0.08
4.	Group	0.00	0.00	0.00	–0.37 to 0.39
		$R^2$ total = 0.79, $F(8,31) = 14.58$ , $P < 0.001$			

\*  $P < 0.05$ ; \*\*  $P < 0.001$ 

challenging task, and the other predicting Child Positive Affect, i.e., the child's ability to show enthusiasm, persistence, and joy throughout the task. Predictors were entered in a theoretically and statistically determined order. Maternal Assistance and Support was entered first to partial out maternal immediate, within-context influence. In the following block, the free play factors were entered: Maternal Sensitivity, Maternal Intrusiveness, Child Involvement and Child Withdrawal, representing each dyad's typical interaction patterns. The maternal representation factors, Joy–Pleasure/Coherence and Anger, were entered on the third step, representing maternal intersubjective influence. Group status (referred versus non-referred) was entered last, to examine whether referral status contributed to the prediction of child self-regulation above and beyond maternal and child relational behavior. Results are presented in Tables 4 and 5, respectively. The model predicting Child Negative Affect was overall significant with three clear predictors standing out and contributing uniquely to the prediction: Maternal Assistance and

Support, Maternal Sensitivity, and Child Withdrawal (see Table 4). Specifically, less efficient maternal assistance and support during problem solving, decreased maternal sensitivity, and higher child withdrawal during free play were related to more frequent displays of negative affect by the child during problem solving. However, looking at the unique contribution of Sensitivity to the prediction of Child Negative Affect indicates that when the other variables in the model were held constant, Sensitivity was a positive unique predictor of Child Negative Affect.

The model predicting Child Positive Affect was also significant, with Maternal Assistance and Support, Maternal Sensitivity, and Child Involvement, each significantly and uniquely predicting Child Positive Affect (see Table 5). Specifically, more maternal assistance and support during the problem-solving task and enhanced maternal sensitivity and child involvement during the free play were associated with more frequent displays of positive affect during the problem-solving task. As with Negative Affect, looking at the unique contribution of

**Table 5** Predicting child positive affect on problem-solving tasks

Step	Predictor	Child positive affect			
		$\beta$	$R^2$ Change	$F$ Change	95% CI for B
1.	Maternal assistance and support	0.79**	0.62	63.27**	0.22–0.38
2.	CIB maternal sensitivity	−0.62**	0.23	14.20**	−1.02 to −0.45
	CIB maternal intrusiveness	−0.04			−0.35 to 0.21
	CIB child involvement	0.66**			0.51–1.15
	CIB child withdrawal	−0.06			−0.30 to 0.12
3.	PDI joy–pleasure/coherence	−0.03	0.00	0.19	−0.07 to 0.05
	PDI anger	0.03			−0.06 to 0.10
4.	Group	0.06	0.00	0.53	−0.20 to 0.42
		$R^2$ total = 0.86, $F(8,31) = 24.51$ , $P < 0.001$			

\*  $P < 0.05$ ; \*\*  $P < 0.001$ 

Sensitivity to the prediction of Child Positive Affect indicated that when the other variables in the model were held constant, Sensitivity negatively predicted Child Negative Affect.

## Discussion

This study is among the first to examine the quality of maternal representations of their relationships with their children in the context of an infant's psychiatric disorder and social-emotional difficulties in a group of clinic-referred infants and to specify the mother–child interactive behaviors associated with specific representational profiles. It was hypothesized that mother–child dyads of infants referred for early diagnosis and treatment would differ from non-referred dyads in maternal representations, maternal interactive behavior, and child social behavior and affect regulation. Overall, these hypotheses were confirmed, supporting theoretical and clinical formulations on the correlates of early infant psychopathology [26, 43, 44]. The findings point to a link between infant psychiatric status, maternal representations, and early relational behavior.

The findings underscore the fact that the representations of the mother–child relationship among mothers of clinic-referred infants are colored by a pervasive, negative emotional tone. As a group, these representations portrayed the mother–child relations as less joyous and pervaded by anger and the narratives were less coherent and more restricted. Group differences were also observed in interactive behaviors, as referred mothers showed lower sensitivity, higher intrusiveness, and less appropriate instrumental assistance and emotional support when their infants were coping with a challenging, achievement-

oriented task. Referred infants tended to be more withdrawn and less involved during play as compared to controls, albeit these differences were only marginally significant. These findings highlight the developmental risk associated with early socio-emotional disorder and underscore the need for early mother–infant interventions. Associations were also found between maternal representations and mother and child behaviors. Mothers whose representations included higher levels of joy, coherence, and richness of experience were more sensitive, less intrusive, and set developmentally appropriate limits to their children. These mothers also provided appropriate instrumental guidance during the problem-solving tasks. In contrast, mothers who portrayed the mother–child relations as more angry and involving out-of-control outbursts were more intrusive during dyadic play and were less effective in setting developmentally appropriate limits. Furthermore, maternal interactive behaviors during free play and problem-solving task predicted the child's ability to regulate positive and negative affect when challenged. Taken together, these findings point to a complex, multi-determined relationship between maternal representations and infant socio-emotional adaptation that is probably mediated and moderated by other factors related to the child's biological disposition and the family's social and cultural context.

The current study included assessment of parent and child behaviors in two settings, which differed in the level of structure and demand: free play and problem-solving task. Our results indicated that while the two settings differed, associations were found across settings and across partners. For example, maternal sensitivity during free play was associated with child's displays of positive and negative affect during the problem-solving task. These findings suggest that relational patterns may generalize from one

setting to the other, particularly as the two settings share common features and were conducted sequentially.

Finally, the limitations of the study should be noted in the interpretation of the findings. First, because of the contemporaneous design of the study, causal relations among its constructs cannot be determined. It is equally possible that maternal present representations of the mother–child relationship as well as the mothers' and children's behaviors are the cause or the consequence of a child's psychiatric status and socio-emotional difficulties. Similarly, it is impossible to conclude from the current data whether maternal representations precipitate mother–child observed behavioral patterns or the two are reciprocally formed. Longitudinal studies that look at parental representations and parent–child relational behavior across time are therefore needed. Furthermore, contextual models are also needed to test environmental influences such as social support, daily hassles, stress and marital conflict, as well as inborn risk factors and how they affect the above-mentioned associations. Second, the relatively small size of the referred group did not enable us to differentiate representations and behavior in subgroups of specific disorders within the referred group. Future research with larger samples will allow the examination of differences in mother–child interactive patterns and maternal representations among infants diagnosed with Axis I versus Axis II diagnoses or with specific Axis I disorders. Replication studies can also include observations of interaction patterns during daily child-care routines, thus expanding our understanding of how parenting affects child emerging, self-regulatory capabilities and socio-emotional adaptation. Finally, in this study, we focused exclusively on mothers and information on fathers was not available. Although this was the result of our limited resources, it undoubtedly restricts our understanding of the father's contribution to the development of socio-emotional difficulties in infants and toddlers. Future research is thus needed to examine the association between paternal representations and behavior, as well as differences between representations and behaviors of fathers of referred and non-referred infants. Such research would help specify the role that fathers play in early socio-emotional difficulties and competence.

## Conclusions

The present study focused on mother–child dyads of clinic-referred families who sought the help of mental health providers in dealing with early-onset socio-emotional difficulties, such as feeding, sleeping, and behavior problems. This group has been relatively understudied, despite its growing size and the critical developmental tasks it faces. The objective of this study was to identify the unique

characteristics of this group and how it differs from a non-referred control group, with the hope that new insights can help design interventions that target this group's needs and goals. Our findings indicate that referred families are at risk for developing negative relational patterns and representations. Thus, integrative interventions that target both the representational and the behavioral components of early parenting are strongly recommended for this population. Furthermore, the findings highlight the protective role of the mother's balanced, joyful, and pleasurable representations of dyadic moments in modulating parenting experiences, as they may help overcoming more stressful and conflictual parent–child encounters. Thus, enhancing the quality and frequency of positive parent–child interactions [38] and exploring areas of competence and pleasure [35] may become a therapeutic goal, in and of itself, along with the more traditional effort of uncovering negative and problematic parenting experiences from the past and present.

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