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Mothers' Mental State Talk and Preschool Children's Social-Behavioral Functioning: A Multidimensional Account

Ozlem Bekar, Ph.D., Miriam Steele, Ph.D., Rebecca Shahmoon-Shanok, LCSW, Ph.D., and Howard Steele, Ph.D.

ABSTRACT

This study aimed to investigate the multidimensional nature of maternal mental state talk with respect to children's social-behavioral functioning in a low-income urban preschool sample. Maternal speech data were collected as mothers narrated a wordless picture book depicting a diverse set of mental states to their children (n = 130, 2–4 year olds). Dimensions of maternal mental state talk (i.e., type, direction, causality) were examined with the Coding System for Mental State Talk in Narratives. Approximately half of the sample consisted of higher-risk children who were identified as in need of clinical services by on-site clinicians. Results indicated that mothers' diversity and causality of mental state talk, their acknowledgement of characters' negative emotions, and talk about children's cognitions and their own mental states were associated with children's socially adaptive behaviors. On the other hand, mothers' tendency to focus on children's perceptions during the story-telling task (e.g., "see that?," "look!") was linked with lower social competence and internalizing problems. Mothers in the clinical sample used a significantly lower proportion of emotion words compared to mothers in the nonclinical sample. Results suggest that a picture book reading task might provide a cost-effective method for assessing and possibly modifying maternal mental state talk.

Mentalization is a developmental achievement that is sensitive to the impact of early interactions with the primary caregiver (Fonagy & Target, 1997; Fonagy, Target, Gergely, Allen, & Bateman, 2003; Steele & Steele, 2008a). The construct is defined as the ability to perceive one's own and others' minds as psychological agents, label the contents accurately, and make connections between mental states and behaviors in an attempt to self-regulate and achieve interpersonal connectedness and communication (Fonagy, Steele, Moran, Steele, & Higgitt, 1991). Mothers' proclivity to think about, reflect on, and talk about mental states is linked with their children's social-emotional adaptation (Garner, Dunsmore, & Southam-Gerow, 2008; Laible, 2004; Meins, Muñoz-Centifanti, Fernyhough, & Fishburn, 2013). The significance of maternal mentalization in children's developmental outcomes can be attributed to its key role in the transmission of attachment security from the mother to the child (Slade, Grienenberger, Bernbach, Levy, & Locker, 2005; Steele & Steele, 2008a). In a secure attachment relationship, where the mother demonstrates a flexible understanding and acceptance of a variety of mental states and a capacity to incorporate them into coherently organized, nonidealized,

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truthful narratives, the child finds abundant opportunities to play with, understand, and process mental states (Fonagy et al., 1991; Fonagy & Target, 1996). This process starts with the mother's attuned, nondefensive reflections of mental states, including labeling them in the presence of the child and trying to put them in causal relationships.

Importantly, the multidimensional nature of mentalization construct has been recently underscored in the literature (Luyten, Fonagy, Lowyck, & Vermote, 2012). Accordingly, mothers' mental state talk can differ in terms of who they are inclined to mentalize or which mental states they are more comfortable mentalizing. To the best of the authors' knowledge, such conversational differences in maternal mental state talk have not been systematically studied with respect to preschool children's social-behavioral functioning. This study aims to fill this gap by advancing a model for studying individual differences in mothers' multifaceted mentalization skills in the context of a wordless picture-book reading task. By establishing the links between the various types of maternal mental state talk and children's behavioral health, clinicians can implement well-informed interventions to improve the communication and relationship in mother-child dyads. For example, this approach might be useful in understanding the unique behavioral challenges of a child whose mother tends to rely on a certain type of mental state talk, for example, cognitions rather than emotions, when communicating with her child. Second, we suggest that a practical narrative method can identify discrete types of maternal mental state talk, which could be of significant value to inform the assessment processes in clinical settings where mentalization and attachment-based dyadic interventions and psycho-educational procedures are used. A low-income, urban preschool setting provided the broad social context for this investigation.

Narrative assessment

Narrative assessment can reflect mentalization skills through two distinct mechanisms. First, the narrator (in this case, the mother) attributes mental states to story characters and engages in perspective taking. Second, the mother keeps the child's mental state in mind, infers what s/he already knows and what s/he is not aware of, and keeps the child engaged, impelling yet another level of perspective taking (Bruner, 1990; Tager-Flusberg & Sullivan, 1995). Furthermore, narratives are organizational; they are constructed from preexisting attentional and confirmation biases, such as a proclivity to detect anger or sensitivity to separation, in an attempt to decrease dissonance and increase coherence in schemas while making sense of the present moment (Bruner, 1986; White, 1988–1989). Therefore, narratives provide rich information about narrators' emotional states as well as interpersonal schemas, meaning-making style, and emotion regulation strategies (Koren Karie, Oppenheim, & Getzler-Yosef, 2004; Macfie et al., 1999). This study uses a narrative assessment method to investigate the relationship between mothers' mental state talk and their preschool children's social-behavioral functioning.

The mentalization construct

In its broadest use, the mentalization construct has been defined as the attempt and ability to attribute accurate mental states to one's self and others, who are seen as separate mental agents, and the capacity for establishing the necessary causal connections among mental states, environmental conditions, and behaviors. Mentalization practice provides a more integrated understanding of the self and the environment in an effort to regulate intra- and inter-personal processes (Sharp & Fonagy, 2008). The term "mental states" applies to a wide range of cognitive, emotional, and volitional processes, including thoughts, feelings, desires, intentions, preferences, beliefs, needs, and dreams (Allen, 2006; Fonagy et al., 1991). Maternal mentalization (or in broader sense, mentalization of a parent or caregiver) starts at the level of an implicit propensity or explicit willingness to identify these mental states in one's self and one's offspring (Sharp, Fonagy, & Goodyer, 2008). In a mentalizing mode, the mother stands at an optimum distance from the child

where the dyad can represent their mental states to each other (Fonagy, 2006; Fonagy & Target, 1997). Mother adopts a curious stance, and at the same time acknowledges the limitations to her knowledge about the contents of the child's mind. In other words, the mother appreciates the opaqueness of the child's mind (Sharp et al., 2009). Within a mentalizing stance, the mother is neither intrusive nor neglectful of the child's mental content. This attitude provides the child with the soothing feeling of being "seen" by the mother without being judged or turned away, even when the represented mental state is uncomfortable for one or both parties. Through the practice of these representational moments, the child him/herself learns to adopt a mentalizing stance. S/he develops literacy of his/her inner world, can understand, label, and express his/her own mental states adaptively, and develops a capacity for understanding others' mental states as flexibly linked with their observable actions. These skills help children interpret interpersonal relationships with meaning and predictability, allow for the development of a coherent and agentive "self" across time, and are essential for reducing children's anxiety and the development of prosocial behavior (Fonagy, 2006; Fonagy, Gergely, & Target, 2007).

An optimally attuned mother attends, labels, and adaptively communicates positive and negative affective, cognitive, perceptual, and physiological mental states to the child, without avoidance or undue overidentification with those states (Beebe, Lachman, Markese, & Bahrick, 2012). Meins and colleagues have shown that mothers' "mind-mindedness" with their infants, that is, their proclivity to mentalize their children, is longitudinally predictive of infants' attachment security and better cognitive mentalization skills a few years later (Arnott & Meins, 2007; Meins, Fernyhough, Fradley, & Tuckey, 2001; Meins et al., 2002). Similarly, Halfon, Bekar, Ababay, and Coklu-Dorlach (2017) reported that maternal mental state talk was associated with sophisticated role taking in dyadic play and fewer internalizing problems in a clinical sample.

Importantly, mentalizing interactions with the mother are generalized, utilized, and solidified in social relationships, creating a functional template for later emotion understanding, self-regulation, and interpersonal connectedness. Oppenheim, Goldsmith, and Koren-Karie (2004) found that when following a seven-month-long attachment-based intervention, children whose mothers showed gains in mentalization, operationalized as "maternal insightfulness," showed improvements in their externalizing and internalizing problems. The reverse was also true: children whose mothers remained noninsightful displayed more internalizing and externalizing problems at the end of the intervention. In another line of research, Gottman, Katz, and Hooven (1996) investigated the longitudinal link between parents' awareness, acceptance, and coaching of their children's emotions, that is, parental meta-emotion philosophy and children's behavioral problems. Authors reported that after controlling for a child's IQ, an adaptive parental meta-emotion philosophy exerted significant longitudinal effects on academic achievement and physiological emotion regulation. In addition, meta-emotion philosophy was indirectly related to peer relationships at school. Similarly, Katz and Windecker-Nelson (2004) showed that parents of preschool children with conduct problems were less skilled in coaching their children during negative emotional states and in understanding their own negative emotional states compared to parents of children with no conduct problems. These findings highlight the importance of talking to children about their various mental states in regulating their emotions and behaviors.

The mentalization construct is not synonymous with mental state talk; however, the presence of the latter is a necessary condition for mentalization to take place. In other words, mothers need to be able to label and understand mental states, positive and negative, to help their children regulate these mental states inter- and intra-personally. In addition to emotion understanding and labeling, providing children with causal explanations for emotions is also an important factor in preschool children's socialization process. Laible (2004) reported that children of mothers who elaborated on causal connections more frequently while reading a book or recollecting a shared memory were better at emotion understanding and more compliant. Similarly, Garner et al. (2008) found that preschool children whose mothers engaged in more emotion explanation during a story-telling task were better at identifying emotions in different contexts (i.e., affective perspective taking) and

engaged in more prosocial behaviors with peers. This study also reported that mothers' comments about emotions without any causal connections, descriptions, or explanations were positively associated with the likelihood of children engaging in physical aggression with peers.

Various treatment approaches target mentalization skills in children and their parents to achieve symptom reduction, enhance parent-child communication, and improve children's psychosocial functioning (Fearon et al., 2006; Fonagy et al., 1991; Fonagy & Target, 2000; Lieberman & Van Horn, 2008). In fact, a close look at various types of validated psychotherapies reveals that promoting mentalization may be a common backbone to therapeutic action in the majority of intervention modalities (Allen, 2012; Goodman, Midgley, & Schneider, 2016). There is also some evidence that mentalization-based psycho-education groups are helpful in increasing the reflective functioning skills of foster parents and decreasing parenting stress (Bammens, Adkins, & Badger, 2015).

Within this framework of linking maternal mental state talk with children's social behavioral adaptation, this study introduced a cost-effective and time-efficient observational method to screen for various distinct elements of maternal mental state talk in clinical and school settings. Maternal mental state talk was measured by applying the Coding System for Mental State Talk in Narratives (CS-MST; Bekar, Steele, & Steele, 2014) to mothers' narratives of a wordless picture book, *Frog Where Are You?* (Mayer, 1969). CS-MST presents a quantifiable method to examine the type (e.g., emotions, cognitions), direction (third party, self-, or other-oriented), diversity, and causality of mental state talk in narratives. Second, this study investigated maternal mentalization in an underserved population of preschool children that includes those with heightened social and behavioral problems. The analyses linked teachers' and mothers' evaluations of the children to the mothers' narrative data. The preschool centers were host to an onsite, integrated mental health intervention program, which selected and served those children presenting with externalizing and internalizing problems in the classrooms (i.e., the clinical sample). Thus, the study had the advantage of comparing a naturally occurring clinical sample to a nonclinical sample in a low-income preschool setting.

To the best of our knowledge, this is the first study systematically investigating the multiple facets of maternal mental state talk (i.e., direction, causality, diversity and type of mental state talk) in a high-risk preschool sample and linking it to teachers' and mothers' reports of children's social-behavioral functioning. We hypothesized that mothers' mental state talk in their narratives as well as the causal connections they establish with these mental state words would be significantly and positively associated with children's social-behavioral functioning. Specifically, mothers' mental state talk would be correlated with a higher level of prosocial behaviors and a lower level of behavioral problems and psychopathological symptoms as reported by mothers, and a higher level of adaptive play behaviors and engagement at school as reported by teachers. In addition, we hypothesized that the stories of mothers in the clinical sample would differ from the stories of mothers in the nonclinical sample in terms of their use of mental states.

Method

Participants

Data were drawn from a larger longitudinal study conducted by the Center for Attachment Research at The New School for Social Research on the *Relationships for Growth & Learning* (*RfGL*) program then within the Jewish Board of Family and Children's Services (and now within Collaborations for Growth [*CfG*]). One hundred and thirty mother-child dyads (65 girls, 50 percent) completed the story-telling task and the questionnaires in four preschool centers. Children's ages ranged between 24 and 58 months (M = 42.5, SD = 7.1). Approximately 70 percent of children were Hispanic/Latino and 20 percent were African American. Mothers' education ranged from less than high school (8 percent) to some type of college degree (39 percent; *M* = 13.4, *SD* = 2.4). Consistent with the enrollment criteria

to these daycare and preschool centers, 88 percent of the sample had an annual household income less than $40,000.

Procedures

Participant mother-child dyads were recruited at four preschool sites in New York City where the *RfGL* provided mental health consultation, screening, and intervention services. These included twice-weekly psychodynamically oriented peer play psychotherapy with children in small rooms outside the classrooms during the school day, consultation with staff members, and family sessions with or without the children. The theoretical background and mechanisms of the program were explained elsewhere (Bekar et al., 2012, 2017; Shahmoon-Shanok, Bekar, Fried, & Steele, 2012). Children or families who received these services constituted the "clinical sample" (54 percent of this sample). There were no differences between clinical and nonclinical samples with respect to maternal education, children's gender, age, racial/ethnic background, or household income. The program targets those children with emotion regulation problems, reflected in both internalizing and externalizing symptoms. Diagnoses included, but were not limited to, disruptive behavior disorders, adjustment disorders with mood or behavioral disturbances, and anxiety disorders. Many children that the *RfGL* program has served lived in challenging circumstances, including unstable housing, and some were exposed to traumatic events or neglect.

To collect the narrative data, mothers were invited to a room at school where they could sit with their children. The mothers were given the following instructions in the presence of their children: "This book is a story about a kid, a dog, and a frog (point all three characters out on the front cover). I would like you to look at this book and tell your child a story about the kid, the dog, and the frog." After confirming the mother's understanding of the story-telling task, the researcher left the room. All sessions were video recorded and transcribed verbatim. Approximately 12 percent of mothers told the story in Spanish, which was translated into English by bilingual research assistants. Mothers were compensated with a gift card ($15) for their time.

Measures

The narrative task

Frog Where Are You?, a 29-page wordless picture book by Mercer Mayer (1969), was used as the stimulus book. The book illustrates a child and a dog who look for a pet frog that escapes from its jar. This book provides ample opportunities for talking about both negative and positive emotions and other mental states of the characters in addition to an attachment/separation theme at its conclusion. Therefore, this book was chosen as the stimulus book to assess various dimensions of maternal mental state talk, as a marker of mentalization processes, previously highlighted by Meins and colleagues as vital to the child's attachment security (Meins et al., 2001). The frog story has been widely used in cross-cultural, developmental linguistics research (Berman & Slobin, 1994; Strömqvist & Verhoeven, 2004). A few studies also used this story to investigate the development of evaluative devices in children's language such as "frames of mind," character speech, and causal connectors in different languages (Bamberg & Damrad-Frye, 1991; Küntay & Nakamura, 2004; Tager-Flusberg, 1995).

The coding system for mental state talk (CS-MST, Bekar, Steele, & Steele, 2014). Transcripts were coded using the CS-MST, which comprises five major categories of mental state language: emotions (e.g., *happy, sad*), cognitions (e.g., *think, believe*), perceptions (e.g., *smell, see*), physiological mental states (e.g., *hungry, sleepy*), and action-based mental state words, depicting explicit actions that imply mental states (e.g., *hiding, looking for something, laughing)*. These basic categories can be coded in three directions: about the characters, the self, and the other (i.e., the listener, in this case the child). CS-MST yields a composite score for the causal connections constructed with each of the

aforementioned mental state categories in any direction (i.e., "Causals") and captures the overall diversity in the narrator's mental state talk by calculating the total number of unique types of mental state words, again used in any direction (i.e., "Mental state diversity").

The approach taken in this coding system expands upon the pioneering work of Bretherton and Beeghly (1982), who first demonstrated the measurement of mental state talk in early childhood by differentiating between the various types of mental state language. In addition, the perspective of CS-MST draws upon the more recent mentalization literature covering developmental, clinical, and object relational perspectives (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Fonagy, Bateman, & Luyten, 2012; Ruffman, Slade, & Crowe, 2002). It highlights the importance of labeling and processing emotions and ambiguous situations as well as mothers' ability to provide a representational space between themselves and their children by using self-reflective mental state words (e.g., "I think"). This provides an opportunity for children to understand the separateness of their minds from those of their mothers. CS-MST is applicable to other types of narratives that involve story telling or discourse, such as psychotherapy sessions (Halfon et al., 2017; Halfon, Bekar, & Gurleyen, 2017). Use of CS-MST requires training (typically over one day) and establishment of interrater reliability.

A research team of 10, including the first and last authors and eight research assistants, used 30 pilot transcripts to develop and study the coding variables, the list of mental state words under each category, and interrater reliability among the coders. ICCs (2,8) of .90–.98 were reached on all 10 categories of codes. Another set of 35 transcripts was coded by the first author and a second independent coder. ICCs (2,1) of .94 were reached on all categories using absolute agreement.

Narrative length and vocabulary diversity

The number of words in narratives was calculated to assess the story length. The number of words in the mothers' stories ranged between 188 and 1,967 ($M = 569$, $SD = 277$). As an approximation for the mothers' expressive language skills, we calculated the vocabulary diversity within the first 50-word utterances using a software program developed for this study. Templin's Type-Token Ratio analysis guidelines were used to determine the number of unique types of words (Retherford, 2000, p. 91; Templin, 1957, p. 160). Mothers' vocabulary diversity ranged between 20 and 40 ($M = 31$, $SD = 4$). As expected, higher household income and maternal education were positively correlated with the mothers' vocabulary diversity ($r(115) = .25$, $p < .01$, $r(129) = .18$, $p < .05$).

Parent measures

Social competence

As part of the regular on-site mental health service practice within the preschool centers, mothers filled out the Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999). In addition, mothers who consented to research completed the Adaptive Social Behavior Inventory (ASBI; Hogan, Scott, & Bauer, 1992). Children's social competence scores were calculated by combining the standardized (Z) scores of the prosocial behaviors subscale of the ASBI (Hogan et al., 1992) and the total protective factors subscale of the DECA (LeBuffe & Naglieri, 1999). The combined subscales were highly correlated with each other, $r(127) = .71$, $p < .001$.

The prosocial subscale of the ASBI consists of 23 items on a three-point Likert scale (1 = never/rarely, 2 = sometimes, and 3 = almost always) and is a sum of the comply and express subscales, measuring overall competence in social relationships with peers and adults. The DECA total protective factors subscale consists of 27 items on a five-point Likert scale (1 = never to 5 = very frequently) and assesses child's functioning in areas of initiative (i.e., agency), attachment (i.e., positive relational capacity), and self-control (LeBuffe & Naglieri, 1999). In our sample, Cronbach's alpha for this combined scale was .94.

Behavioral problems

The standardized (Z) scores of the 10-item DECA behavioral concerns subscale and the seven-item ASBI disrupt subscale were combined to assess children's behavioral problems as reported by the mothers. The DECA behavioral concerns subscale assesses problems in the domains of aggression, attention, and affective expression, and the ASBI disrupt subscale measures a child's disruptive behavioral tendencies, such as teasing other children or preventing routines. These two subscales were highly correlated with each other ($r(127) = .51$, $p < .001$) and this combined scale yielded a Cronbach's alpha of .75.

Child behavior checklist for ages 1.5–5 (CBCL/1.5–5; Achenbach & Rescorla, 2000)

Children's symptomatic presentation was assessed with the CBCL/1.5–5. Mothers rated how characteristic each behavior was of their child over the last two months using a three-point Likert scale for 99 items (0 = not true, 1 = sometimes true, and 2 = very true). We used the two main subscales of the externalizing and internalizing problems. The internalizing scale consists of items defining withdrawn, emotionally reactive, anxious/depressed behaviors, and somatic complaints. The externalizing subscale addresses aggressive behaviors and attentional problems. The Cronbach's alphas for internalizing problems and externalizing problems were .86 and .90, respectively.

Teacher measure

Penn interactive peer play scale (PIPPS; Fantuzzo, Coolahan, Mendez, McDermott, & Sutton-Smith, 1998)

The PIPPS was filled out by each child's teacher using a four-point Likert scale (1 = never to 4 = always). The PIPPS consists of 32 items and three subscales of play disconnection, play disruption, and play interaction. The play disconnection and play disruption subscales account for preschool children's withdrawn/isolated and aggressive behaviors during classroom play, respectively, and the play interaction subscale taps cooperative behaviors that facilitate play (Castro, Mendez, & Fantuzzo, 2002). The Cronbach's alphas for the play disruption, play disconnection, and play interaction subscales were .87, .84, and .85, respectively.

Data analysis

Subgroup mean substitutions and case mean substitutions (where the missing data rate was lower than or equal to one-fifth per person per subscale) were used to replace missing values and calculate subscale scores (Downey & King, 1998; Tsikriktsis, 2005). Truncation was applied to those data points with noncontinuous and outlying Z-scores (± 3.29) by assigning outlying cases a raw score that is one unit larger than the next highest score on that variable (Tabachnick & Fidell, 2007, p. 77). Since our mental state talk data are naturally positively skewed, this technique reduced the impact of outliers on the analyses while accounting for the variance provided by participants who tended to employ a particular mental state category more often than others. As shown in Table 1, truncation was implemented to four mental state talk variables after their frequency was proportioned to the number of words, which presented with noncontinuous Z-scores between 3.58 and 5.49. One score on the CBCL internalizing scale was also truncated. Partial correlations were run between the variables of mental state talk and social-behavioral functioning; child age, gender, and maternal vocabulary diversity were controlled in the analyses. T-tests were used to investigate group differences. To control for verbosity, all mental state words were proportioned to the mothers' total number of words, and proportions were used as the unit of analysis.

Table 1. Descriptive statistics for mothers' mental state talk in their stories: Raw frequencies and frequencies proportional to the narrative length.

	Raw M	Raw SD	Raw Skewness/ Kurtosis	Raw Min./ Max.	Raw Corr. w/ narrative length	M_proportion	SD_proportion	Proportional Skewness/ Kurtosis	Proportional Min./Max.
SMS	30.05	15.25	1.20/2.03	6/92	.79*	0.05	0.02	0.32/0.60	0.01/0.11
Mental State Diversity	16.13	6.14	0.95/1.16	4/38	.71*	0.03	0.01	0.16/0.01	0.01/0.06
Mental State Causal	2.95	2.98	1.94/5.48	0/16	.60*	0.00	0.00	0.79/0.16	0.00/0.02
Self_Cognitive[t]	1.38	2.31	3.46/17.18	0/17	.49*	0.00	0.00	2.32/7.98	0.00/0.02
Self_Composite[t]	1.67	2.85	4.18/25.4	0/23	.48*	0.00	0.00	2.8/11.69	0.00/0.02
Other_Cognitive	2.38	3.29	2.23/5.94	0/18	.37*	0.00	0.01	1.49/1.67	0.00/0.02
Other_Perceptual	11.42	10.87	1.73/3.14	0/54	.63*	0.02	0.02	1.12/0.99	0.00/0.07
Other_Composite	14.51	12.34	1.54/2.36	1/60	.67*	0.02	0.02	0.88/0.60	0.00/0.08
Emotion[t]	3.51	3.37	1.5/2.55	0/17	.65*	0.01	0.00	1.38/2.36	0.00/0.03
Cognition	2.03	2.35	2.07/5.67	0/13	.49*	0.00	0.00	1.17/1.09	0.00/0.02
Perceptual	6.38	4.33	0.75/0.30	0/20	.55*	0.01	0.01	0.81/0.16	0.00/0.03
Physiological[t]	2.96	2.51	2.63/12.3	0/19	.55*	0.01	0.00	1.16/1.54	0.00/0.02
Action based MS[t]	15.17	8.49	1.15/2.58	1/53	.58*	0.03	0.01	0.45/0.21	0.00/0.07

Note. N = 130. SMS = Story-oriented Mental State Talk (E+C+PE+Phy+A), Self_Cognitive = Self oriented cognition words; Other_Cognitive = Child (Other) oriented cognition words; Other_Perceptual = Child (Other) oriented perception words; Action-based MS = Action-based mental state words. [t]Indicates that variable was truncated for analyses.
*$p < .001$.

Results

Descriptive statistics for the mothers' use of mental state words are shown in Table 1. The total mental state words attributed to story characters ranged between 6 and 92, and the total mental state-related causal connections ranged between 0 and 16 per story. The narrative length was positively correlated with the frequency of mental state words but not with children's age or gender. Mothers who labeled at least one negative emotion also established more causal connections with mental states in proportion to the story length ($t(128) = 3.81$, $p < .001$, $d = 0.85$) and, in fact, told longer stories to their children, $t(128) = 4.68$, $p < .001$, $d = 0.98$. Similarly, mothers who labeled at least one positive emotion in the story characters told longer stories ($t(125.6) = 4.46$, $p < .001$, $d = 0.77$).

Clinical status and maternal mental state talk

Mothers of children in the clinical sample used fewer emotion words ($t(128) = -2.02$, $p < .05$, $d = 0.34$), and fewer *types* of negative emotion words per narrative ($t(127) = -2.63$, $p < .05$, $d = 0.48$). On the other hand, mothers of children in the clinical sample tended to attribute a higher number of cognition words to the story characters, $t(115.58) = 1.81$, $p = .073$, $d = 0.33$. The proportional difference between the emotion words and cognition words discriminated between the children in the clinical and nonclinical samples, $t(128) = -2.80$, $p < .01$, $d = 0.49$. Thus, mothers of children in the nonclinical sample labeled more emotional states than cognitive states during story telling, while the opposite was true for the mothers of children in the nonclinical sample.

Associations between mothers' mental state talk and children's behavioral functioning

Causality of mental state talk
Causal connections with mental states were associated with higher levels of social competence ($pr(122) = .25$, $p < .01$) and lower levels of behavioral problems ($pr(122) = -.24$, $p < .01$), as

reported by mothers. Similarly, teachers reported more interactive play for children whose mothers made more causal connections with mental states ($pr(115) = .19, p < .05$).

Mothers' references to children's mental states

Approximately 65 percent of mothers referred to their children's cognitive mental states (e.g., "*You think so?*"). Mothers' references to their children's cognitive states were positively correlated with maternal reports of children's social competence ($pr(122) = .19, p < .05$). In addition, teachers' ratings indicated mothers' references to children's cognitions were positively correlated with children's interactive play behaviors at school, $pr(115) = .24, p < .01$.

On the other hand, mothers' references to their children's perceptual mental states (e.g., "*Do you see that?*," "*look!*"; approximately 94 percent of the mothers used this at least once) were negatively correlated with children's social competence ($pr(122) = -.21, p < .05$) and positively correlated with the CBCL internalizing problems scale, as reported by the mothers, $pr(122) = .19, p < .05$.

Mothers' references to their own mental states

Approximately 58 percent of the mothers referred to their own mental states at least once during the story telling (e.g., "*I see*," "*I think*"). Mothers' references to their *own* mental states were linked with higher teacher ratings on the PIPPS play interaction subscale, $pr(115) = .18, p < .05$. In addition, children whose mothers referred to their own mental states at least once were rated by their teachers as less disconnected on the PIPPS, $t(116) = -1.98, p = .05, d = 0.37$.

Discussion

This study investigated the links between mothers' mental state talk and children's social-behavioral functioning in an urban, high-risk preschool sample using a coding system designed for operationalizing mental state talk in narratives. The mothers' narratives were coded based on the type, direction, and causality of mental state words the mothers used while narrating a picture book to their children. Maternal mental state talk displayed a high variability on each of these dimensions, which in turn had differential associations with children's social-behavioral functioning as reported by teachers and parents. The basic set of mental state talk variables (codes) included the emotions, cognitions, perceptions, physiological, and action-based mental state words. These coding categories were applied to three possible domains of maternal mental state talk: story-oriented, self-oriented, and child (other/listener)-oriented. In addition, mental state-based causal connections were calculated using the five basic codes in any of the three directions.

In line with previous studies (Gottman et al., 1996; Oppenheim et al., 2004; Oppenheim, Nir, Warren, & Emde, 1997), findings of this study indicate that mothers' ability to talk about mental states is associated with children's higher social-behavioral functioning, independent of the length of their narratives, that is, their motivation to engage with the task. This study further highlights that mentalization is a multidimensional construct and examining its various dimensions is a worthwhile effort. Coding the type and direction of maternal mental state talk during a story-telling task provided valuable information with respect to its unique relationships with children's social-behavioral functioning. For example, a clinician's ability to delineate the mentalizing components in a mother's discourse, that is, deciphering whether she is (in/)sufficient in self-mentalization, other-mentalization, emotion-talk, or mentalizing the negative affect, and linking it with existing findings in literature may help the clinician understand the unique challenges associated with each case. We found, for instance, maternal self-cognition talk is linked with children's ability to self-regulate, whereas mothers' child-oriented perception talk is associated with less behavioral compliance.

For example, mothers' references to children's cognitive states ("*do you know what this animal is?*," "*(you) Remember the frog tried to escape from the jar*") was strongly associated with children's prosocial behaviors, as reported by both teachers and mothers. In contrast, referring to children's perceptual states (e.g., "*do you see the owl?*," "*(you)Look how the deer is running!*") was correlated

with more anxiety and lower social competency. Thus, verbal interactions that imply a certain level of separateness between the cognitions of the child and the mother and a curious stance toward the child's thoughts are linked with a well-developing capacity for interpersonal regulation and agency (Fonagy 2006; Meins et al., 2001; Steele & Steele, 2008b). Yet as shown in the link between the mother's "calls" for the child's perceptual states ("*look!*," "*see?*") and social problems, labeling children's perceptual states possibly works in ways that are unintentional. It constitutes an effort on mothers' part to capture children's attention but at a more surface level compared to cognitive labeling and inquiries. These can be construed as automatic, pseudo-mentalizing states (Fearon et al., 2006; Luyten et al., 2012) as captured by this story-telling task, possibly under heightened stress due to a preconsciously perceived inability to connect with the child. A similar set of findings has been recently reported with respect to various dimensions of parental mental state talk during dyadic play (Halfon et al., 2017). Halfon and colleagues reported that parental mental state talk referencing pretend play characters were associated with fewer internalizing symptoms and more sophisticated play; however, mental state talk attributed to children's mental states out of the pretend play were associated with more behavioral problems as reported by parents and teachers. Albeit similar, Halfon et al.'s findings should be evaluated within context, that is, conditions of dyadic play in contrast to that of a story-telling task, because different contexts require different types of mentalization efforts.

In addition, when mothers labeled their own mental states, mostly cognitions, during story telling (e.g., "*I think he is trying to say something,*" "*I guess that's his frog*"), the teachers reported their children were less disconnected and more interactive in the classroom. Although directionality cannot be inferred from this design, attachment theory (Bowlby, 1982) provides important insights into these associations. One of the important pillars of attachment security is the ability to understand mental states in self and others and to incorporate them into coherently organized narratives (Steele & Steele, 2008b). In a secure attachment relationship, the mother is more likely to label mental states in herself and her child and create an open, nondefensive, and reflective interpersonal space to discuss these mental states regardless of their valence (Oppenheim, Koren-Karie, & Sagi, 2001; Steele & Steele, 2008a). Accordingly, in our study, children of mothers who used at least one negative emotion word with respect to the the story characters' mental states were also more fluent and less inhibited in story telling, as evidenced by their increased number of causal connections and longer stories. The mothers' perceived freedom to label and discuss negative emotions with their children possibly reduces the need to spend extra energy on defending against the negative emotions while story telling (e.g., altering, ignoring or reshaping them) and creates a more effortless story flow with more words and connections.

Parallel to this account, we found that mothers of children in the high-risk clinical sample were more likely to refrain from using emotion words in their stories. This suggests a reticence to enter the representational or imaginative space that story telling demands. In addition to a relative lack of emotion words, higher focus on the cognition words in mothers' narratives differentiated the children in the clinical sample from the ones in the nonclinical sample. The storybook used in this story pictures the child character on one page with a vivid facial expression of anger, and then a mixed emotion of frustration/pain/discomfort, on two other pages. The deer character is also depicted with a somewhat ambiguous hostility. Positive emotions such as happiness, contentment, and excitement are also depicted on several pages. Thus, mothers had plenty of opportunities and, in fact, requirements to talk about characters' emotions. Lack of emotion talk during this task can be construed as a clinical red flag.

For the child's social and emotional development to be supported and advanced, emotions need not only to be mirrored but also labeled and discussed within a representational frame. This parental stance appears impaired in cases of unresolved trauma, as was commonly reported to and treated at the onsite *RfGL* clinic. In case of unresolved trauma, the parent is frequently absorbed in personal overwhelming memories or the effort to avoid intrusive memories, with parental reflective functioning inhibited or challenged. Consequently, the space for processing current negative emotions of the child may shrink, and the separation between the minds of the

child and the parent becomes blurry (Fonagy & Target, 2000; Koren Karie et al., 2004; Steele, Steele, & Murphy, 2010). These parents may be unable to provide an open calm space between themselves and their children to safely discuss feelings, especially negative ones such as anger and sadness.

As expected, the mothers' use of mental state-related cause-and-effect relationships (e.g., *"the little boy is out the window because he's thinking maybe the frog jumped out the window," "he's sad because the frog is not in the jar anymore"*) was strongly linked with children's higher level of social competence and lower level of behavioral problems. This is in line with earlier research (Garner et al., 2008; Laible, 2004) indicating that not only labeling the emotions but also explaining their causes, thus placing them in a context, is associated with better social-behavioral functioning among preschool children.

Clinical implications

The emphasis on the emotional dimension (in addition to a more cognitive perspective-taking ability) renders mentalization an attractive therapeutic endeavor. Mentalization-based techniques are intrinsic to the psychodynamic treatment of children (Fonagy & Target, 1998), in line with the techniques in cognitive-behavioral therapy (Bjorgvinsson & Hart, 2006) and also useful for psycho-educating foster parents (Bammens et al., 2015). Recent research also shows that therapists' mentalization in psychodynamic play therapy with 6-year-old children is predictive of children's emotion regulation in therapy sessions (Halfon et al., 2017).

Our study provides implications for these intervention modalities, especially when collateral or family involvement is present. First, our results confirm that mothers' mentalization skills go hand in hand with prosocial behaviors of preschool children. Although the directionality cannot be inferred from the current study, based on previous reports focusing on interventions targeting maternal reflective functioning (Bammens et al., 2015; Oppenheim et al., 2004; Steele et al., 2014), one could argue that increasing the level of adaptive, task-appropriate maternal mental state talk is associated with fewer social-emotional problems and more prosocial behaviors, with possible reciprocal influences. Specifically, our findings confirm that labeling both the negative and positive emotions and other mental states, and making causal connections between these mental states and observable actions in a story-telling task, are linked with adaptive social-emotional development. This link, albeit widely known to clinicians in practice, is important to be outlined and solidified in research literature because it potentially affects public and education policies at a larger scale. For example, teachers can be trained on the role of mentalization and mental state talk in classroom management. Parents can be proactively educated on the basics of mentalization in parent-teacher conferences, which may help decrease the need for mental health consultations at schools. Overall, public education on the importance of talking with children and uncovering positive and negative mental states in conversations might be of significant value in public mental health policies.

This study also suggests that wordless picture book reading tasks can be used as a productive method for identifying at-risk mother-child dyads in primary prevention and clinical settings. Wordless picture-book reading task is a cost-effective, easy-to-administer/score, and time-efficient method. In addition, this task can also serve as an intervention technique in therapeutic modalities that list emotion understanding or labeling as an identified goal for mother-child dyads. This type of a narrative task would be especially suitable when the practitioner seeks to construct a dyadic activity that would tap maternal mentalization. Associated research findings can be used as evaluative reference points, such that identifying causal connections, talking about self-oriented mental states, referring to children's cognitive mental states, and labeling a range of positive and negative emotions can serve as points of intervention.

Limitations

This study has certain limitations. First, the cross-sectional nature of the design is a caveat, which makes it difficult to infer directionality. For example, it is possible that the positive relationships between maternal mental state talk and children's better social-behavioral functioning are driven by children's good behaviors while reading the story by allowing the mothers to mentalize more in length. We tried to address this limitation by controlling for the story length in analyses and by using teacher reports, which were similar to mother reports in terms of the direction of associations between children's social-behavioral functioning and maternal mental state talk. In addition, we found the length of the mothers' stories was not linked with their perception of children's social-behavioral functioning. This suggested mothers who rated their children as more socially adaptive did not tell longer stories per se. A second limitation is that we lacked an independent measure to assess mothers' verbal skills, which would further illuminate the relationship between language skills and mental state talk. Third, alternative observational tasks or interviews that would address mothers' mentalization skills would be informative to further support the construct validity of this observational measure. The correlation between this measure and the tasks already established to assess maternal mentalization can be the next step in this area of research. Finally, these findings about mental state talk are limited to the scope of story-telling tasks; that is, they might be context dependent and should not be generalized to other sources of speech without further research.

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