Relationship between Emotional Intelligence, Maternal Accuracy in the Perception of Infant Emotions, and Parenting Difficulties

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Abstract

This study examined age-related differences in the relationship between parenting difficulties, a mother's emotional intelligence, and the accuracy of a mother's perception of her infant's emotions. Specifically, this study compares three aged-based conditions: (1) infants at the age of three months, when their emotions are undifferentiated, (2) infants at six months, when emotional differentiation is underway, the target is in mutual interaction and triadic interaction begins, and (3) infants at nine months, when their subjective world begins to develop an understanding of the intention of others. A semi-structured interview using controlled VTR stimulation and a questionnaire survey were administered to 74 first-time mothers of infants. In the interview, each mother was asked about the infant's feelings in the VTR and what might explain the infant's emotions. The results of a correlation analysis showed consistent negative moderate correlation between the mother's parenting difficulties and her emotional intelligence, regardless of the infants' age. On the other hand, the partial correlation between the accuracy of a mother's reading of infant emotions and parenting difficulties, controlled for emotional intelligence, showed differences by infant age. Although there was almost no correlation for mothers with a six-month-old infant, mothers with a three-month-old infant showed a positive correlation and mothers with a nine-month-old infant showed a negative correlation. The participants' accounts of the VTR also indicated the mechanism of those age differences. The findings of this research reveal a part of the developmental process of a mother and provide knowledge concerning childcare support.

Keywords: emotional intelligence, maternal accuracy, parenting difficulties

Parenting difficulties experienced by caregivers of infants bring negative outcomes to both parent and child. Parenting difficulties are defined as negative feelings concerning the caregiver's self-awareness of his/her inadequacy as a caregiver (Ida, 2013) and is thought to be the source of parenting stress (Obara, 2005a). High parenting difficulties have been shown to produce negative feelings towards the infant (Shin, Yamada, & Morioka, 2015), reduce the quality of parent-infant interactions, and interfere with the infant's healthy mental development (Nishihara, Hattori, Kobayashi, & Hayakawa, 2006). Okamoto and Yamada (2016) pointed out the relationship between high parenting difficulties and child abuse. In addition, Obara (2005b) showed a link between a mother's difficulty in parenting and depression in studies involving mothers with infants, while Murray, Cooper, and Fearon (2014) found an association with postpartum depression. The need for an intervention to decrease parenting difficulties has also been reported (e.g., Milgrom, Schembri, Ericksen, Ross, & Gemmill, 2011). It seems clear that the mechanism and factors associated with parenting difficulties that have a negative effect on both parents and children need to be clarified.

One of the important factors that determine parenting difficulties is the emotional intelligence of the caregiver. Emotional intelligence is a personality characteristic defined as the set of abilities involving the perception, expression, understanding, use and management of emotions in both the self and others (Salovey & Mayer, 1990). Emotional intelligence, which is essentially the ability to respond to problems in various situations (Mayer, Salovey, & Caruso, 2004), is related to parenting difficulties since it is related to the ability to cope with the general problems of parenting. Indeed, emotional intelligence has been shown to be related to the quality of parent-child communication, bonding, and attachment (Gunning, Waugh, Robertson, & Holmes, 2011). Studies of mothers with infants have also shown it to be associated with parenting stress (Ohashi, Katsura, Koshino, & Usui, 2015). Moreover, it has been reported that interventions that enhance a mother's emotional intelligence improve the mother's physical and mental health (Shortt, Stoolmiller, Smith-Shine, Mark Eddy, & Sheeber, 2010). The level of emotional intelligence involved in dealing with not only the quality of communication but also the overall care of the child is thought to have a negative correlation with parenting difficulties regardless of the infant's age or other characteristics.

Nevertheless, because the mother-child relationship is formed by the interaction between caregiver and child (Sameroff, 1993), parenting difficulties that occur in the parent-child relationship are not solely created by caregiver characteristics such as emotional intelligence. In the concept of maternal sensitivity (Ainsworth, 1969), the mother is said to be able to interpret and properly respond to emotional signals from the infant by approaching the infant's internal state. Gallese, Eagle, and Migone (2007) point out the importance of an attuned response that approaches the infant's internal state and the emotional feedback that it produces. It has also been shown that the ability to sensitively interact with the infant is related to low parenting stress (Feldman, Eidelman, & Rotenberg, 2004). Emde and Sorce (1983) indicate that the capacity to read and respond to the infant's emotions in mother-infant interactions is related to the mother's emotional stability. Having mother-infant interactions in which the caregiver reads and responds to the infant's emotions and in which the infant responds accordingly may well affect the level of parenting difficulties experienced by the caregiver.

Whether the caregiver can accurately read the infant's emotions in these mother-infant interactions is an important factor in determining the caregiver's parenting difficulty. In Emde (1983), the mother's appropriate interpretation of the infant's emotional clues is needed to interact with the infant with sensitivity and emotional availability. If the infant's signals cannot be properly interpreted, the quality of the mother-infant interaction suffers (Donovan, Leavitt,

& Walsh, 1998). Meins, Fernyhough, Fradley, and Tuckey (2001) showed a positive correlation between how often a mother properly reads and speaks to the infant's mental state and the positivity of the mother-infant relationship. In Broth, Goodman, Hall, and Raynor (2004), a precise reading of the infant's emotions has been shown to be associated with high quality mother-infant interactions. Thus, the caregiver's ability to read the infant's emotions accurately is an important factor that determines the quality of the interaction, which is thought to be associated with the magnitude of the mother's parenting difficulties.

Although both emotional intelligence and the ability to accurately perceive the infant's emotions are important factors that affect the caregiver's parenting difficulties, the timing of their effect appears to be different. Emotional intelligence consists of the ability to monitor the emotions of one's self and others and to adjust to them (Salovey & Mayer, 1990). The ability to monitor the emotions of others and the accuracy of one's reading of those emotions are similar, but the ability to monitor and adjust does not necessarily mean the ability to read emotions precisely. For example, optimism, which is considered one of the aspects of emotional intelligence, is characterized by a high expectation of positive results and is different from precise expectation (Otake, Shimai, Uchiyama, & Utsuki, 2001). Mothers with high emotional intelligence, including such traits as optimism and control, have been shown to have lower parenting stress (Ohashi et al., 2015). While having high emotional intelligence is almost certain to reduce parenting difficulties, the precise reading of emotions may not always serve as such a reducer.

The relationship between accuracy in reading infant emotions and parenting difficulties may indeed differ according to the infant's age. Communication between infant and mother is an asymmetric relationship (Adamson, Bakeman, Smith, & Walters, 1987) that is established by interpreting the infant's immature behavior as having meaning (e.g. Kaye, 1979; Marcos, Ryckebusch, & Rabain-Jamin, 2003). When the child is in early infancy, the infant's emotions are not clearly differentiated (e.g., Campos, 2004; Sroufe, 1996); they tend to be ambiguous and vague and not connected to identifiable events (Camras, Sullivan, & Michel, 1993). Because an infant's emotions are particularly undifferentiated before the age of three months (Lewis, 2000), attempting to accurately read the infant's emotions at this time may produce an over-sensitivity in the mother and thus increase her parenting difficulties. On the other hand, a subjective world involving emotions, motivation, and intent appears when an infant is roughly nine months old (Stern, 1985). At this age, infants begin to understand the other person as a purposeful party, and their response changes to one that understands the intention of the other person (Tomasello, 1995). A mother's precise reading of the intentional emotional expression of the infant leads to the infant's emotional response, which can lead to a smooth mother-infant interaction. Thus, when the infant's age is approximately nine months, a precise reading of emotions may reduce parenting difficulties.

The Purpose and Hypotheses of this Study

The purpose of this study is to consider age-related differences in the relationship between parenting difficulties, a mother's emotional intelligence, and the accuracy of a mother's perception of her infant's emotions, which is the origin of mother-infant interaction. Specifically, this study compares three aged-based conditions: (1) infants at the age of three months, when their emotions are undifferentiated (Lewis, 2000), (2) infants at six months, when emotional differentiation is underway, the target is in mutual interaction and triadic interaction begins (Newson & Newson, 1975), and (3) infants at nine months, when their

subjective world begins to develop an understanding of the intention of others (Stern, 1985; Tomasello, 1995).

Because emotional intelligence is the ability to cope with various problems, it is expected to correlate negatively with parenting difficulties, regardless of the infant's age (Hypothesis 1). On the other hand, because reading an infant's emotions accurately is related to the infant's age, the relationship between the accuracy of the mother's perception of the infant's emotions and parenting difficulties is expected to differ according to the infant's age. It is expected that there will be a positive correlation when the infant is three months old, a weak negative correlation when the infant is six months old, and a negative correlation when the infant is nine months old (Hypothesis 2). When testing Hypothesis 2, this study considers the mechanism of age by identifying the context and the kinds of emotions that are being read by the mother at the various infant ages.

There are two primary ways to assess a mother's reading of an infant's emotional state: (1) observing actual interactions between a mother and infant, and (2) measuring a mother's response to regulated stimuli such as a photo and a video image. Because a mother's response is highly likely to be affected by her infant's particular characteristics, the latter approach is thought to be more appropriate to capture common developmental differences. Thus, in this study, validated and controlled video stimulation (Shima, Obara, Kobayashi, & Ueshima, 2009) rooted in a daily context measuring an infant's emotions was used for examining the hypotheses and underlying mechanisms.

Methodology

Participants

After listening to an explanation of the purpose and contents of the study at an open pediatric clinic and community health center, 74 first-time mothers who were raising a child under one year of age were approved for participation in the study. The mothers' average age was 30.91. The group was composed of 50 full-time housewives, 18 mothers who worked outside the home, and six participants who did not indicate their status. The investigation was conducted within two weeks of the child's turning three, six, or nine months of age, at the time of a health examination, vaccination or similar event. In all, the study included 20 mothers with a three-month-old infant, 22 mothers with a six-month-old infant, and 32 mothers with a nine-month-old infant.

Procedure

A semi-structured interview and a questionnaire survey were conducted. The questionnaire was sent by direct mail one week before the interview; participants were asked to complete the questionnaire by the day of the interview. The interview survey was conducted using video stimulation (Shima et al., 2009) in a private room at home or at a nearby pediatric clinic, according to the preference of each participant.

Questionnaires

Parenting difficulties

To measure parenting difficulty, the parenting difficulties subscale of the JCFRI (Japan Child and Family Research Institute) Child Rearing Support Questionnaire (Kawai, Shoji, Chiga, Kato, Nakamura, Taniguchi, Tsunetsugu, & Ando, 2000) was used. Kawai, Tsunetsugu, and Shoji (2000) showed the validity and reliability of this scale. The subscale consists of eight items such as "I don't have confidence in raising children," "I don't know how to discipline them," and "I feel difficulty raising children." This subscale uses a four-point scale ranging from 1 to 4. In order to consider the reliability of the scale, Cronbach's α coefficient was calculated; the value was adequate (α = .84).

Emotional Intelligence

To measure emotional intelligence, the Emotional Intelligence Scale (Otake et al., 2001) was used. Otake et al. (2001) and Shimai, Otake, Utsuki, and Uchiyama (2002) showed the validity and reliability of this scale. The scale consists of 65 items, such as "I know how I feel when I become emotional," "I want to make other people happy," and "I can respond well to changes in circumstances." This scale uses a five-point scale ranging from 0 to 5. As an indicator of the reliability of the scale, Cronbach's α coefficient was calculated; the value was adequate (α = .97).

Semi-Structured Interview

VTR Stimulation

Part of the video stimulation established and validated by Shima et al. (2009) was used in the interview portion of the study. The stimulus consisted of twenty video clips showing three-, six-, nine-, and twelve-month-old infants. Each clip was 15 seconds long. There were five video clips for each of the infant ages: one video clip showing a positive emotional state, one showing a negative state, and three showing a neutral state. The positive video clips showed a baby babbling or playing with a toy, and so on. The negative video clips showed a baby crying on its back, crying on the floor, and so on. The neutral video clips showed a baby lying on its back with no facial movement, staring at the camera on the floor, and so on. Video clips showing infants whose ages were the same as the age of the participant's infant were used. For example, video clips showing a three-months-old baby were shown to a mother with a three-month-old infant. Following the procedure of Shima et al. (2009), the video clips were presented in the order of positive, neutral, negative, neutral and neutral.

Semi-Structured Interview

After a second explanation of the research content and an assurance of privacy, a consent to record the interview contents with an IC recorder was obtained from each participant. In the interview, following Obara and Ueshima (2013), one of each type of video clip was presented; the mother was then asked about the infant's feelings in the clip ("What kind of emotional state is the baby in?") and what might explain the infant's emotions ("Why do you think the baby is in such an emotional state?"). The total interview time for each participant was approximately 30 minutes.

Results

Coding of Interview Records

Questions about the Infant's Emotions

For each video clip, the mother's description of the infant's emotional state was classified as a reading of negative emotions, positive emotions, neutral emotions, physiologic needs, and other by using the framework of Obara and Ueshima (2013). The number of matches between the classified emotional categories and the emotion in the video stimuli was used as an indicator of the accuracy of the mother's perception of the infant's emotional state. That is, the accuracy score was calculated as the sum of the number of times a positive emotion was correctly read from a positive emotion video clip, the number of times a negative emotion was correctly read from a negative emotion video clip, and the number of times a neutral emotion was read from a neutral video clip. The range of this score was from 0 to 5. The average and standard deviation of the accuracy scores for each infant age group are shown in Table 1. The number of emotions of each type read from each video and its ratio in each age group are given in Table 2.

Table 1
Descriptive Statistics of Parenting Difficulties, Emotional Intelligence, and Accuracy of Reading Emotions

	3 months		6 months		9 months		All months	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Parenting difficulties	2.19	0.76	2.06	0.51	2.10	0.58	2.11	0.61
Emotional intelligence	1.79	0.43	2.00	0.61	2.06	0.60	1.98	0.57
Accuracy of reading emotions	1.65	0.88	2.23	0.92	1.59	0.87	1.80	0.92

Table 2
The Number of Each Emotion Read from Each Video Clip and Its Ratio at Each Age

	Negative video clips			Neutral video clips			Positive video clips		
	3 months	6 months	9 months	3 months	6 months	9 months	3 months	6 months	9 months
Negative emotion	5	12	17	3	2	10	0	1	0
	25.00	54.55	53.13	5.00	3.03	10.42	0.00	4.55	0.00
Neutral emotion	10	9	12	13	16	15	1	0	5
	50.00	40.91	37.50	21.67	24.24	15.63	5.00	0.00	15.63
Positive emotion	0	1	1	38	38	62	19	21	27
	0.00	4.55	3.13	63.33	57.58	64.58	95.00	95.45	84.38
Physiological need	5	0	2	4	6	8	0	0	0
	25.00	0.00	6.25	6.67	9.09	8.33	0.00	0.00	0.00
Others	0	0	0	2	4	1	0	0	0
	0.00	0.00	0.00	3.33	6.06	1.04	0.00	0.00	0.00

Note. Upper row indicates frequency, lower row indicates ratio (%).

Questions about How to Read the Infant's Emotions

Responses to the second question were classified according to the context category that the caregiver used to read the infant's emotions (Obara & Ueshima, 2013). That is, the responses were classified as indicating an objective context, which consisted of "the infant's behavior, utterance, and expression," "the caregiver's behavior," "the mother-infant interaction," or "the environment," or, alternatively, as indicating a subjective context, which consisted of "the infant's internal state," "the experience of parenting," or "a parenting belief." The average number of occurrences of each context category used in reading the infant's emotional state is shown in Table 3.

Descriptive Statistics for Parenting Difficulties and Emotional Intelligence

Table 1 shows descriptive statistics for the parenting difficulty, emotional intelligence and accuracy in reading emotions results for the various infant age groups. Correlation coefficients indicating the association between these various measures were also calculated (Table 4).

Table 3
Average Occurrence of the Contexts Used for Reading Emotions at Each Age

	3 moths		6 months		9 months	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
Objective context						
Infant's behavior, utterance, and expression	4.50	0.76	4.45	0.67	4.75	0.44
Caregiver's behavior	0.15	0.49	0.00	0.00	0.00	0.00
Mother-infant interaction	0.30	0.57	0.00	0.00	0.03	0.18
Environment	0.45	0.76	2.00	1.27	1.88	1.29
Caregiver's subjective context						
Infant's internal state	2.75	1.02	3.41	1.14	3.13	1.39
Experience of parenting	0.35	0.59	0.18	0.39	0.22	0.42
Parenting belief	0.35	0.67	0.18	0.39	0.28	0.52

Table 4
Correlations for Parenting Difficulties, Emotional Intelligence, and Accuracy of Reading Emotions

	Parenting difficulties			Emotional intelligence		
(month)	3	6	9	3	6	9
Emotional intelligence	-.53 *	-.57 **	-.53 **			
Accuracy of reading emotions	.45 *	-.06	-.17	-.29	.21	-.35

Relationship Between Parenting Difficulties, Emotional Intelligence, and the Accuracy of Reading Emotions

The correlation coefficient for the relationship between emotional intelligence and parenting difficulties was -.53 in the three-month group, -.57 in the six-month group, and -.53 in the nine-month group. To examine differences in these correlation coefficients, a χ^2 equivalence test was conducted. The results showed no significant differences (χ^2 (2) = 0.04, *n.s.*).

Because emotional intelligence may be related to both accuracy in reading emotions and parenting difficulties, it is necessary to exclude the impact of emotional intelligence when testing the relationship between the other two variables. Therefore, partial correlation coefficients were calculated for the possible relationship between accuracy in reading emotions and parenting difficulty for each infant age group, with emotional intelligence included as a covariate. According to results, in the three-month group, there was a weakly positive correlation ($_pr$ = .36), while the six-month group showed almost no correlation ($_pr$ = .08), and the nine-month group showed a moderately negative correlation ($_pr$ = -.45). To assess the possible age-related differences in these coefficients, a χ^2 equivalence test was again conducted; test results indicated a significant difference (χ^2 (2) = 8.77, $p < .05$). Therefore, a correlation test in which the significance level was adjusted using the Bonferroni method was performed. Results showed a significant difference between the three-month group and the nine-month group (z = 2.82, $p < .05$). On the other hand, there was no significant difference between the six-month and three-month groups (z = -0.89, *n.s.*) or between the six-month and nine-month groups (z = 1.91, *n.s.*).

Age Differences Related to the Emotions Read and the Contexts Used for Reading Infant Emotions in Each Video Clip

Age Differences Related to the Emotions Read in Each Video Clip

To test the age difference of emotions read in each video clip, Fisher's exact test was conducted for each type of emotional video clip shown in the cross-tabulations in Table 2. Results showed that only the cross-tabulations of the negative emotion video clips were significant (p = .06). Therefore, a residual analysis was done on cells with a magnitude of more than five thought to follow the model distribution. Results indicated that the number of negative emotions read by mothers with a three-month-old infant was significantly less than the expectation ($p < .05$) and that the number physiologic needs indicated by mothers with a three-month-old infant was significantly more than the expectation ($p < .01$).

Age Differences Related to the Contexts Used for Reading Emotions

To test age differences for the contexts used in reading the infant emotions in each video clip, an ANOVA was performed in which the dependent variable was context category and the independent variable was infant age. The results of the ANOVA showed significant differences in "mother-infant interaction" (F (2, 71) = 5.79, $_p\eta^2$ = .14, $p < .01$) and "the environment" (F (2, 71) = 11.78, $_p\eta^2$ = .25, $p < .01$). A multiple comparison using the Tukey method showed a significant difference in "mother-infant interaction" between mothers with a three-month-old infant and mothers with a six-month-old infant ($p < .01$) and mothers with a nine-month-old infant ($p < .05$). The score for mothers with a three-month-old infant was higher than that of mothers with six- and nine-month-old infants. Additionally, results showed that for "the environment" there were significant differences between mothers with a three-month-old infant

and mothers with a six-month-old infant ($p < .01$) and mothers with a nine-month-old infant ($p < .01$). The score for mothers with three-month-old infants was lower than that of the mothers of six- or nine-month-old infants.

Conclusion

The purpose of this study was to investigate age-related differences in the relationship between parenting difficulties, emotional intelligence, and the accuracy of a caregiver's perception of an infant's emotions. A semi-structured interview using controlled VTR stimulation and a questionnaire survey were administered to 74 first-time mothers of infants. The study tested two hypotheses and investigated differences based on infant age.

The Relationship Between Parenting Difficulties, Emotional Intelligence, and Accuracy in the Perception of an Infant's Emotions

The results of a correlation analysis showed consistent negative moderate correlation between parenting difficulties and emotional intelligence among mothers with three-, six-, and nine-month-old infants, and indicated no age difference in the relationship. This result supports Hypothesis 1 that emotional intelligence is negatively related to parenting difficulties regardless of the infant's age. This is not surprising since emotional intelligence is the ability to cope with extensive problems (Mayer et al., 2004). This is also consistent with the relationship between emotional intelligence and parenting stress shown in a previous study of mothers with infants 0 to 4 years of age (Ohashi et al., 2015). The current study showed a negative relationship between parenting difficulties, the core of parenting stress, and emotional intelligence that was independent of infant age for mothers with infants under the age of one year. From a parenting difficulties viewpoint, the study suggests the importance of emotional intelligence, not only in success at school and the workplace (Goleman, 1995), but also in child rearing.

On the other hand, the partial correlation between the accuracy of a mother's reading of infant emotions and parenting difficulties, controlled for emotional intelligence, showed differences by infant age. Although for mothers with a six-month-old infant there was almost no correlation, mothers with a three-month-old infant showed a positive correlation and mothers with a nine-month-old infant showed a negative correlation, which supports a large part of Hypothesis 2. It is likely that the positive correlation among mothers with a three-month-old infant is based on the fact that at three months, an infant's emotions are especially undifferentiated (Lewis, 2000) and maternal hypersensitivity is needed to read their emotions precisely. However, by nine months, the infant has become more responsive (Tomasello, 1995). For example, joint attention is developed at about nine months. Thus, because nine-month-old infants and their mothers are able to interact responsively based on the mother's precise reading of the infant's emotion, a negative relationship between the accuracy of a mother's reading of the infant's emotion and parenting difficulties for mothers of nine-month-old infants seems highly reasonable.

For mothers with six-month-old infants, the partial correlation coefficient indicated virtually no relationship between the accuracy of the mother's reading of the infant's emotions and parenting difficulties, although a weak negative correlation could be expected since triadic interaction begins at the age of six months (Newson & Newson, 1975). Results also indicted that six-month-old infants can interact in dyad communication such as that between mother

and infant, although it is not easy for the infant to respond to surrounding people when they are paying attention to a particular object (e.g., Tronick & Cohn, 1989). Adamson (1995) pointed out the importance of a parental approach that uses the direction of the infant's attention. Although maternal oversensitivity is not necessary for precisely reading an infant's emotions in dyad communication, no relation was found between the accuracy of the mother's reading of the infant's emotions and parenting difficulties since it is necessary for smooth mother-infant interaction to adjust to the direction of infant's attention. Results also indicate that an accurate reading of infant emotions becomes important after nine months from the infant's birth, when the infant can, at least to a certain extent, be responsive (Tomasello, 1995).

The Mechanism of Age Difference in the Relationship Between Parenting Difficulties and the Accurate Reading of Infant Emotions

The results of Fisher's exact test showed that mothers with a three-month-old infant read few negative emotions and read many physiologic needs when the infant expressed negative emotions. This may, at least in part, relate to the fact that human circadian rhythm is completed at roughly four months (e.g., Armstrong, Quinn, & Dadds, 1994), which means that the sleep rhythm of three-month-old infants has not yet been fully established. Given the finding of Hiramatsu et al. (2006), which showed a relationship between sleep rhythm and maternal parenting stress, failing to read an infant's negative emotions but rather reading the physical needs that are causing the infant's negative emotions and coping with them may lower the parenting difficulties of a mother whose infant is three months of age. Meins et al. (2001) also showed that referencing the infant's internal state rather than maternal sensitivity predicts the future quality of the mother-child relationship. This may be especially important when the infant's sleep rhythm is not yet completely established. Consequently, this may well be the mechanism behind the negative correlation between the accurate reading of emotions and parenting difficulties for mothers with three-month-old infants.

On the other hand, ANOVA results showed that mothers with three-month-old infants frequently used "mother-infant interaction" as the context for reading the infant's emotions, while few indicated "the environment." As stated above, satisfying physiological needs is important for three-month-old infants since their sleep rhythm is still immature (e.g., Armstrong et al., 1994). It is thought that reading emotions in an environmental context offers a better alternative for identifying and responding to an infant's physiological needs since physiological needs are not evoked from mother-infant interactions. However, the finding in this study is just the opposite. Many mothers may feel that mother-infant interaction is important in the early process of becoming a mother. Indeed, Mercer (2004) showed that mothers proceed to the process of taking on their maternal role through experiences in which they can respond to their infant properly via mother-infant interactions from puerperium. However, this study showed the possibility of higher parenting difficulties associated with reading an infant's emotions using the context of mother-infant interaction when the infant is three months old. This result suggests a trade-off between proceeding to taking on a maternal role and parenting difficulties for mothers of three-month-old infants.

Implications and Limitations

This study examined the relationship between the accurate reading of infant emotions and parenting difficulties, controlling for emotional intelligence. Focus was on the effect of infant age on the relationship. Findings suggest that it may be possible to lower parenting difficulties at various infant ages through an educational intervention that teaches caregivers how to read

their infant's emotions. For example, parenting difficulties among mothers with a three-month-old infant may be lowered by focusing not on the negative emotion of the infant but rather on its physiological needs and using the environmental context. Study findings may also be suggestive of the proper timing of support programs for the mother-infant relationship such as Circle of Security (e.g., Marvin, Cooper, Hoffman, & Powell, 2002), which has substantial empirical research support. Huber, McMahon, and Sweller (2016) pointed out that Circle of Security is effective for reducing parenting stress and psychological symptoms during the time the child is from one to seven years old. The current study essentially extends this finding and shows a relationship between the accurate reading of an infant's emotions and parenting difficulties among mothers with a nine-month-old infant, suggesting that an intervention such as Circle of Security may reduce maternal parenting difficulties at this earlier age. The findings of this research regarding age differences reveal a part of the developmental process of a mother and provide knowledge concerning childcare support.

The current study has some limitations that suggest several future tasks. For example, the development of an infant's dyadic and triadic interaction that is used as the basis for the hypothesis and the interpretation of results involves gender differences (e.g., Tronick & Cohn, 1989) that should be explored. In addition, mothers with six-month-old infants had an accuracy score for reading an infant's emotion that was higher than the score of mothers with three- and nine-month-old infants. This study was unable to provide an explanation for this difference (e.g., the infant's age, sampling error, and so on). Also, all the findings of this study are based on cross-sectional data. Future research needs to identify causal relationships with gender and age differences for each index by using a longitudinal approach and including more participants. It should be noted, as well, that attachment theory focuses not only on maternal sensitivity to the child's signal but also seeing things from the child's point of view (Fonagy & Target, 1997; Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002). Although the focus of this research is on accurately reading the child's simple signal, research focused on such accuracy from the child's point of view is needed.

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