

How is Maternal Mentalization Communicated to Infants? The Relation between Maternal Mind-mindedness and Mirroring Behavior

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ABSTRACT

Maternal mentalization, which is the mother's ability to assess and respond appropriately to the infant's mental states, is a fundamental component of maternal sensitivity that affects infants' attachment security and social-cognitive development. Mind-mindedness is a measure of maternal mentalization that assesses mothers' comments concerning infants' mental states. Mental state comments are comments about the infant's thoughts, desires, or emotions. Yet mothers' speech is unlikely the means by which maternal mentalization is communicated to young infants who do not understand language. The present study explored whether maternal mirroring behavior, which is very salient to infants, is a predictor of maternal mind-mindedness. Maternal mirroring involves mothers' contingent behavior that reflects infants' emotion in a marked and exaggerated manner. Five-month-old infants and their mothers engaged in a Still Face Task. Immediately after the task, the mother was shown a video of her baby in the task and asked to comment on what was happening for her infant. Mothers' comments while reflecting on the video were scored for mind-mindedness. Mothers' behavior during the Still Face Task was scored for mirroring. Mothers' mirroring behaviors while engaged with their infants in the task predicted maternal mind-mindedness when mothers were asked to reflect upon what was happening for their infants during the task. Results suggest that maternal mirroring behavior is a manifestation of mothers' capacity for mentalization.

Maternal mirroring within mother-infant interactions involves mothers' contingent behavior that reflects infants' emotion in a marked and exaggerated manner, either in the same modality (e.g., mother mirrors the infant's smile with her own exaggerated smile) or a different modality (e.g., mother mirrors the infant's smile with an exaggerated vocalization "Yeah!"). Maternal mirroring is thought to enhance infants' emotional understanding and regulation (Gergely & Watson, 1999) and has been shown to facilitate infants' engagement in interactions (Bigelow & Walden, 2009).



METHOD

Five-month-old infants ($N = 31$) and their mothers engaged in a Still Face Task (2 minute initial interactive phase, 1 minute still face phase, 2 minute reunion phase). As expected of infants this age, the infants demonstrated the still face effect with their attention and smiling. Immediately after the task, the mother was shown a two minute video of her baby in the task. The video consisted of the final 30 seconds of the initial interactive phase, the one minute still face phase, and the first 30 seconds of the reunion phase. The typical infant behavioral sequence in the video was active engagement in the initial interactive phase, declining attention and reduced positive affect in the still face phase, and reengagement at reunion. When watching the video, the mother was asked "What was going on for your baby?" The mother's comments while reflecting on the video were scored for mind-mindedness (number of appropriate mental state comments/total number of comments). The mother's behavior during the Still Face Task was scored for mirroring. Mirroring behaviors were exaggerated reflections of the infant's behavior, either in the same or different modality, within one second of the behavior they reflected.

RESULTS

Table 1 shows the number of maternal mirroring behaviors, the type of infant behavior mirrored, and the type of maternal behavior used to mirror. The majority of the mirroring behaviors were in the same modality as the infants' behavior.

Table 1. Maternal Mirroring Behaviors

Maternal Mirroring Behaviors	Infant Behavior Mirrored	Number of Mirroring Behaviors
Facial affect	Facial affect	47
Facial affect	Vocalization	2
Vocalization	Vocalization	24
Vocalization	Gesture	4
Gesture	Gesture	4
Vocalization + Facial affect	Vocalization + Facial affect	2
Vocalization + Gesture	Gesture	4
Vocalization + Gesture	Vocalization + Gesture	2
Gesture + Facial affect	Gesture + Facial affect	3

Table 2 shows the correlations among mothers' mind-mindedness scores when reflecting on the video; frequency of mirroring behavior when engaged in the Still Face Task; mothers' duration of attention, smiling, grimacing, and vocalizations during the interactive phases of the Still Face Task; infants' duration of attention, smiling, grimacing, and non-distress vocalizations during the task, and the demographics (maternal age, education, number of previous births, SES, infant sex).

Table 2. Correlations Among Maternal and Infant Behaviors

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Maternal Behaviors															
1. mind-mindedness															
2. mirroring	.47**														
3. visual attention	-.14	.08													
4. smiling	-.16	.10	.12												
5. grimacing	.02	-.19	.15	.01											
6. non-distress vocalization	-.17	.02	.33	-.06	.20										
Infant Behaviors															
7. visual attention	-.13	.01	.47**	.14	.14	.11									
8. smiling	-.06	-.03	.24	.51**	-.03	.26	.30								
9. grimacing	-.13	-.01	.31	-.34	-.10	.54**	.07	-.05							
10. non-distress vocalizations	.20	.58**	.24	.01	-.21	.25	.11	-.04	.34						
Demographics															
11. maternal age	.02	.10	-.08	.23	.26	.01	-.06	.38	-.19	-.11					
12. maternal education	-.14	-.01	.22	.08	.17	.38*	.16	.21	.02	.06	.11				
13. number of previous children	-.04	.16	-.03	.10	-.15	-.34	-.04	.14	-.05	.04	.48**	-.24			
14. SES	.03	-.17	-.19	.11	.14	-.27	-.30	-.06	-.52**	-.23	.15	.34	-.09		
15. infant sex	-.23	-.19	.16	-.06	.20	.01	.03	-.14	-.05	-.24	<.01	-.02	-.12	-.24	

* $p < .05$. ** $p < .01$.

CONCLUSIONS

Mothers' mirroring behaviors while engaged with their infants in the Still Face Task predicted maternal mind-mindedness when mothers were asked to reflect upon what was happening for their infants during the task. The correlations in Table 1 suggest that maternal mirroring and mind-mindedness are related behaviors, not influenced by demographic variables, and independent of how talkative, attentive, or facially affective in terms of smiling or grimacing the mothers are. The only significant correlate with maternal mirroring behavior other than maternal mind-mindedness was infants' non-distress vocalizations, which mothers tend to use as social signals for determining infants' readiness to interact and for adjusting their own responses (Hsu & Fogel, 2001). Maternal mirroring may be a manifestation of the mothers' capacity for mentalization that infants can readily perceive.

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