

Effect of Maternal Mirroring Behavior on Infants' Social Bidding during the Still Face Task

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ABSTRACT

The study investigated whether maternal mirroring of infants' behavior during the interactive phases of the Still Face Task predicts infants' social bidding behaviors in the still face phase of the task, at an age when social bidding is emerging. Maternal mirroring is a form of maternal responsive behavior in which mothers reflect infant behaviors in a marked manner by slightly exaggerating infant behaviors in intensity and affect. Social bids are infants' attempts to reengage the unresponsive mothers during the still face phase by smiling or making non-distress vocalizations while looking at their mothers. Mothers and their 5-month-old infants engaged in the Still Face Task. Mothers' behavior during the interactive phases was scored for frequency of mirroring behaviors and duration of visual attention, smiling, and vocalizing. Infants' behavior was scored for frequency of social bids during the still face phase and duration of visual attention, smiling, grimacing, non-distress vocalizations, and negative vocalizations during each phase. Infants were divided into those who experienced high and low maternal mirroring. Infants with high maternal mirroring showed an increase in non-distress vocalizations during the still face phase, indicative of social bidding; whereas infants with low maternal mirroring showed little change in non-distress vocalizations across the phases. Infants with high maternal mirroring made more social bids than infants with low maternal mirroring. A regression analysis indicated maternal mirroring was the sole predictor of infants' social bids. Maternal mirroring behaviors enhanced infants' awareness of themselves as effective agents in instigating social interactions, as demonstrated by infants' attempts to elicit responses from their mothers through social bidding.

INTRODUCTION

Does mother's mirroring of infant's behavior during the interactive phases of the Still Face Task influence infant's response to the task? Maternal mirroring behavior is a form of maternal responsive behavior in which mothers reflect infant behaviors in a marked manner by slightly exaggerating infant behaviors in intensity and affect, either in the same modality as the infant behavior (e.g., mother's smile mirrors infant's smile) or different modality (e.g., mother's happy vocalization mirrors infant's smile). Social bids, which involve infants smiling or making non-distress vocalizations while visually attending to the mother during the still face phase, are seen as infants' attempts to reengage the unresponsive mother. Such behaviors imply infants have expectations about how social interactions should unfold and how their own actions can influence the social behavior of others. Social bids become prevalent as infants' response to the still face phase in the latter half of the first year, but are infrequent at younger ages. We investigated whether maternal mirroring of infant behavior in the interactive phases of the Still Face Task predicted infants' social bidding in the still face phase at 5 months of age, when social bidding is beginning to emerge.

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). Mothers' behavior during the interactive phases was scored for frequency of mirroring behaviors (exaggerated reflections of the infant's behavior, either in the same or different modality, within one second of the behavior they reflected) and duration of visual attention, smiling, and vocalizing. Infants' behavior was scored for frequency of social bids (smiles or non-distress vocalizations while attending to the mother during the still face phase) and for duration of visual attention, smiling, grimacing, non-distress vocalizations, and negative vocalizations during each phase.



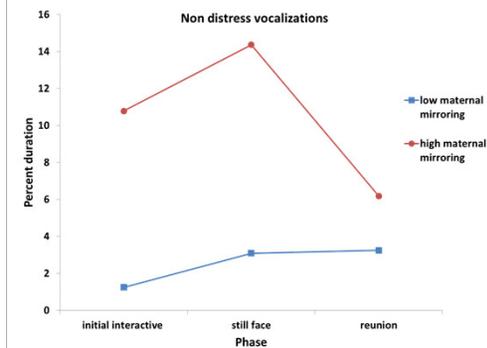
RESULTS

The frequency of mothers' mirroring behaviors ranged from 0 to 12 ($M = 3.0$, $SD = 2.6$). Mothers' mirroring behaviors were unrelated to mothers' visual attention, smiling, or vocalizing, indicating maternal mirroring was distinct from how talkative, attentive, or facially expressive the mothers were.

Infants were divided into those with high (> 3) and low (≤ 3) instances of maternal mirroring. Infants with both high and low maternal mirroring showed the still face effect with their visual attention and smiling (reduced visual attention and smiling in the still face phase compared to the interactive phases), as expected of infants at 5 months. Infants' grimacing and negative vocalizations showed non-significant changes across the phases.

Infants' non-distress vocalizations showed a phase x group interaction (see Figure 1). Infants with high maternal mirroring showed an increase in non-distress vocalizations during the still face phase, indicative of social bidding (80% of infants' social bids involved non-distress vocalizations). Infants with low maternal mirroring showed little change in non-distress vocalizations across the phases.

Figure 1.



Infants with high maternal mirroring made more social bids than infants with low maternal mirroring (see Figure 2).

Figure 2.

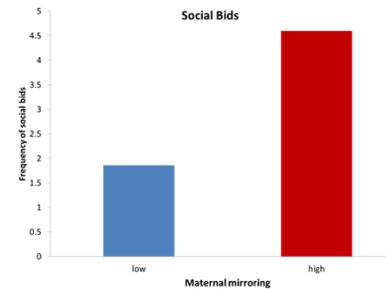


Table 1 shows the correlations among maternal mirroring behaviors, infant social bids, mothers' and infants' behaviors during the interactive phases of the task, and the demographics. Maternal mirroring behaviors correlated with infants' social bids and non-distress vocalizations. A stepwise regression analysis with maternal mirroring, mothers' and infants' behaviors during the interactive phases, and demographics as predictor variables and infants' social bids as the outcome variable indicated maternal mirroring was the sole predictor of infants' social bids, accounting for 12.8% of the variance.

Table 1. Correlations among maternal and infant behaviors.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Maternal behaviors															
1. mirroring															
2. visual attention	.08														
3. smiling	.09	.11													
4. vocalizations	.02	.33	-.06												
Infant behaviors															
5. social bids	.40*	.16	-.18	-.01											
6. visual attention	.08	.49**	.11	-.18	.38*										
7. smiling	-.01	.23	.51**	.25	.14	.27									
8. grimacing	-.22	.25	-.47**	.25	-.09	-.06	-.16								
9. non-distress vocalizations	.62**	.33	.07	.28	.16	.38*	.06	.03							
10. negative vocalizations	-.15	.26	-.45*	.22	-.11	-.01	-.12	.94**	.05						
Demographics															
11. maternal age	.09	-.08	.23	.01	-.15	-.04	.35	-.23	.01	-.17					
12. maternal education	-.02	.35	.02	.39*	-.05	.12	.17	.06	.11	-.01	.34				
13. number of children	.16	-.02	.09	-.34	-.26	.01	.17	-.10	.21	.01	.48**	-.12			
14. SES	-.17	-.19	.11	-.27	-.12	-.40*	-.11	-.30	-.33	-.32	.15	.46**	-.09		
15. infant sex	-.19	.16	-.06	.01	-.20	-.01	-.12	.05	-.31	-.01	-.01	-.05	-.12	-.24	

CONCLUSION

Maternal mirroring behavior enhances infants' awareness that they are effective agents in instigating social interactions, as demonstrated by infants' attempts to elicit responses from their mothers through social bidding.