

Influence of Maternal Vocal Responsiveness on Infants' Reaction to the Replay Task

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ABSTRACT

This study examined whether mothers' contingent vocal responsiveness during interactive phases of the Replay Task influenced infants' emerging ability to detect the non-contingency of the mothers' vocal behavior in the replay phase of the task. In the Replay Task, mother and infant engage in live interaction over closed circuit TV, then the mother's previous interaction is played back to the infant, followed by resumed live interaction. During the replay, the mother's behavior is non-contingent to what the infant is currently doing, yet the mother displays infant-directed facial and vocal affect. Infants' ability to detect changes in the contingency of their mothers' behavior during the task emerges around 4 months of age and may be influenced by infants' experience with maternal contingency. The focus is on vocal behavior because mothers and infants use non-distress vocalizations as their primary social signals during interactions. Mothers and their 4-month-old infants engaged in the Replay Task. Mothers were divided into those with high and low vocal contingency in the interactive phases of the task. Infants with high vocally contingent mothers showed the replay effect with their non-distress vocalizations (reduced non-distress vocalizations in the replay phase compared to the interactive phases), whereas infants with low vocally contingent mothers did not. Infants' emerging ability to detect their mothers' engagement with them is enhanced by experiencing contingent responsiveness from their mothers.



INTRODUCTION

Infants' early perceptually-based self-knowledge emerges with their awareness of the contingency between their own actions and resultant responses in their partner's behavior. The Replay Task is a challenging test of infants' detection of their partner's contingent responsiveness. This task has mothers and infants interacting over closed circuit TV. After an initial phase of live interaction, the mother's previous interaction is played back to the infant (replay phase); then live interaction is resumed (reunion phase). Detecting changes in the contingency of the mother's behavior across the phases is challenging for the infant because in the replay phase the mother's actions are unrelated to what the infant is currently doing, yet the mother is displaying infant-directed facial and vocal affect, as she did previously. Most studies using the Replay Task find infants' ability to detect changes in the contingency of their mothers' behavior emerges around 4 months of age.

The present study examined whether individual differences in mothers' contingent responsiveness during the interactive phases influenced infants' ability to detect the non-contingency in the mothers' behavior during the replay phase. The focus is on vocal behavior because mothers and infants use non-distress vocalizations as their primary social signals during interactions.

METHOD

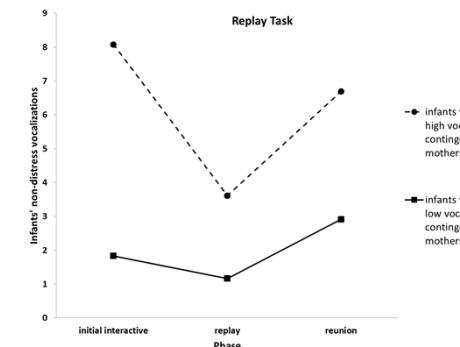
Mother-infant (4 months) dyads ($N=25$) engaged in the Replay Task. Three sequential phases, presented over closed circuit TV, followed each other without pause: initial interactive phase (2 minutes), in which the mother and infant interacted live; replay phase (1 minute), in which the mother's behavior in the previous phase was played back to the infant; reunion phase (2 minutes), in which the dyad interacted live again. Mothers' and infants' frequency of non-distress vocalizations was coded in each phase. Maternal vocal contingency was calculated. Contingent maternal vocalizations followed infants' non-distress vocalizations within one second; contingency scores (limit of phi scores) controlled for the base rate of each partner's vocalizations. Maternal vocal contingency scores were divided into high and low scores based on a median split.

RESULTS

Mothers' frequency of vocalizations and vocal contingency scores did not correlate ($p=.84$), indicating maternal vocal responsiveness was unrelated to how talkative the mothers were.

Infants were grouped into those with high vocally contingent mothers and those with low vocally contingent mothers. Figure 1 shows the infants' frequency of non-distress vocalizations across the phases for each group.

Figure 1.



Although infants with high vocally contingent mothers made more non-distress vocalizations than infants with low vocally contingent mothers, which would give mothers more opportunities to be responsive, the pattern of the infants' non-distress vocalizations across the phases differed between the groups. Infants with high vocally contingent mothers showed the replay effect (reduced non-distress vocalizations in the replay phase compared to the interactive phases), whereas infants with low vocally contingent mothers showed only non-significant changes across the phases. A chi-square revealed that a significantly higher portion of infants with high vocally contingent mothers showed the replay effect with their non-distress vocalizations compared to infants with low vocally contingent mothers.

CONCLUSION

Infants' emerging ability to detect their mothers' engagement with them is enhanced by experiencing responsiveness from their mothers.

