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Basic aspects of imitation in mother-infant, 7 year old brother-infant and 9 year old sister-infant interactions in a naturalistic context: a case study

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Summary

The present longitudinal naturalistic study examines basic aspects of imitation (direction, kinds and structure) in mother-infant, 7 year old brother-infant and 9 year old sister-infant interactions. The study took place in a home setting from the 1st to the 10th month of infant's life. The findings suggest that older siblings adopt the maternal style in their communication with their infant sister. Moreover, adult-infant and child-infant interactions indicate similarities in the basic aspects of imitation and individual differences in each sibling's interaction with his/her sister.

Introduction

Over the last 30 years experimental and naturalistic studies gave some precious knowledge on neonatal imitation in the real, daily context in which it emerges. Recent longitudinal and naturalistic studies on adult-non twin infant's and adult-twin infant's free interactions has shown that adults imitate infants more than vice versa, the kind of imitation that occurs more often is vocal imitation, imitation occurs more often in turn taking and the developmental course of imitation is non linear, rising and age affected. (Kokkinaki, 1998; Kugiumutzakis, 1993; Markodimitraki, 2003). Studies on imitation in sibling-infant's free interactions (Barr, 1999; Barr & Hayne, 2003), indicate the role of imitation as a mechanism by which infants learn new behaviors in their daily interactions with

their siblings. We now recognize the role of imitation not only as mechanism of learning but as an innate ability to share motives, intentions and emotions.

The aim of this naturalistic and longitudinal study is: a) to explore and describe several basic aspects of early imitative exchanges such as frequency, direction (who imitates whom) and structure (turn taking, co-action or both) in mother-infant and sibling-infant dyadic interactions and b) to compare the above basic aspects of imitation in adult-infant and child- infant interactions.

Methods

Sample

The sample consisted of an infant of feminine gender from the 1st to the 10th months of her life, her mother, her 7 year old brother and her 9 year old sister. The infant girl was full term and delivered by natural childbirth. The brother was at the second grade of elementary school and the sister was at the fourth grade of elementary school.

Procedure

Video recordings were made at 30-day intervals (10 temporal points) in a home setting. The researcher was videotaping every 30 days the 7-minutes natural dyadic interactions of the infant with her mother, brother and sister (total duration 21 minutes). A total of 30 video recordings were made (3X10) or 210 minutes of dyadic interactions in the entire sample. All recordings were made with a Sony HDR-XR160E digital video camera.

Coding in observations

An *imitative sequence* was defined as a period from the moment that the model's act started until the completion of the imitator's last imitative activity. *Imitation* was defined as an exchange in which one partner did something that hadn't be done by either partner in the immediately preceding 10 seconds, and in which the other partner reproduced this activity within a 10-second interval and with no other intervening activities.

Results

To test whether the mother, or each of the two older siblings imitated more often the infant than vice versa, the binomial test was used. In all three cases, the expected proportion was set equal

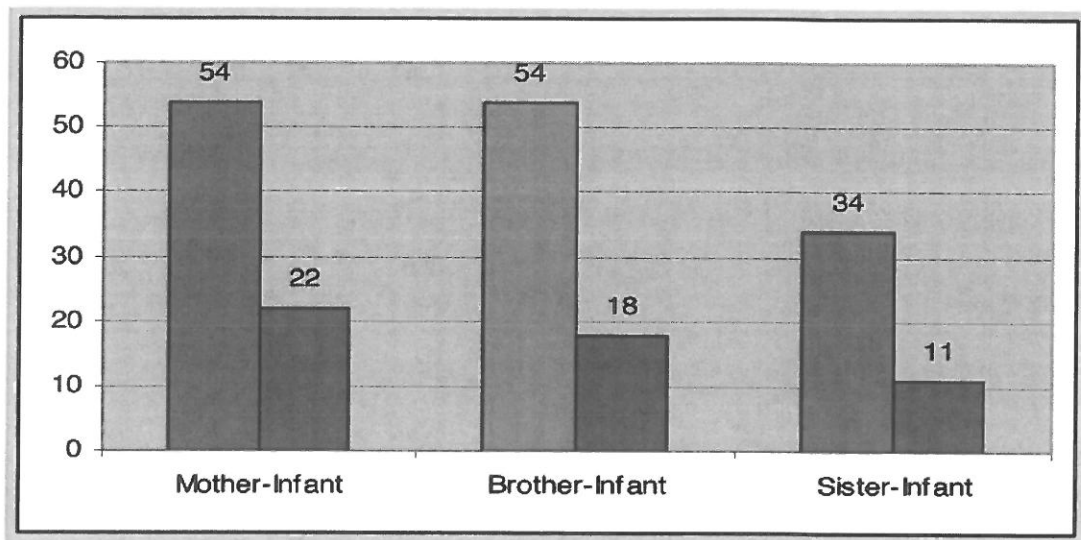


Figure 1. Frequencies of imitation in mother/brother/sister - infant interactions

	Vocal	Facial Expressions	Non Speech Sounds	Movements	Combinations
Mother-Infant	29 (38,1%)	13 (17,1%)	15 (19,7%)	17 (22,3%)	1 (1,3%)
Sister-Infant	17 (37,7%)	1 (2,2%)	16 (35,5%)	9 (20%)	2 (4,4%)
Brother-Infant	25 (34,7%)	5 (6,9%)	19 (26,4%)	8 (11,1%)	15 (20,8%)

to 0.5 (under the null hypothesis that the two events – the infant imitated or the partner imitated – occur evenly). All the three p-values of the binomial tests were less than 0.01, indicating that the mother's or each of the older siblings' imitations occurred significantly more often (Figure 1).

The contingency of the two-way table was tested using the Cramer's V measure. The value was calculated equal to 0.278 (p-value < 0.01), indicating that the distribution of the kinds of imitation differs significantly among the partners. Although vocal imitations occur more frequently in all dyadic interactions, combinations occurred significantly often in brother-infant interactions and non-speech sounds in sister-infant interactions (Table 1).

To test whether the distribution of the structure of imitative sequences differs among the three partners, the Cramer's V measure

Table 2. Structure of imitative sequences

	Turn taking	Co-action	Turn taking with co-action
Mother-Infant	34 (44,7%)	30 (39,4%)	12 (15,7%)
Sister-Infant	19 (42,2%)	17 (37,7%)	9 (20%)
Brother-Infant	27 (37,5%)	32 (44,4%)	13 (18%)

was used. The calculated value was equal to 0.054 (p-value=0.891), showing that the distributions of the structures do not differ significantly among the three partners (Table 2).

Conclusions

The results of the present study show that mother and siblings, as more mature partners than infant, are the scaffolding for more imitative exchanges. The imitations took place more frequently in turn taking (my turn and then your turn), which empowers the theory of innate intersubjectivity (Trevarthen & Aitken, 2001). These results are in line with the results of similar recent naturalistic studies on imitation in mother-non twin infant interactions and mother-twin infant interactions. Moreover, it is indicated that, although several basic aspects of imitation do not differ significantly with interactions of twin infant-adult and non-twin infant-adult partners, there are differences in older siblings' interactions with the infant and individual differences.

The findings suggest that siblings look like imitating the maternal style of interaction with their younger sister and they, like parents (Dunn & Kendrick, 1982), often alter their behavior to meet her needs, providing the necessary scaffold for her communicating. Future research should focus on the imitation and the accompanied emotions of the participants (of mother, infants but mainly siblings) under the perspective of the theory of innate intersubjectivity. Research on imitation in triadic and quaternary interactions among mother, infant and siblings is also of great interest.

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