Smile as a ‘hook’ for early communication between mothers and their two-month-old infants during peek-a-boo play

Joanna Szuńnarowska & Katharina J. Rohlffing
Bielefeld University, Emergent Semantics Group, Cor-Lab, RobotDoC

Background
The mechanism of turn-taking understood as a mutual exchange between two partners consisting of action and reaction is regarded as the basic rule in dialogue and can be observed in the early communication interaction between mothers and their infants. However, at the age of about 2 months, the way in which infants interact with others and express their wishes and ideas is not yet sufficiently mature to be able to maintain visual attention for a longer time (1) and start to smile socially (2). Thus, at that age infants reach a developmental milestone which dramatically increases the scope of turn-taking.

It seems that peek-a-boo game can be a good opportunity to promote the early parent-infant dialogues. A ‘play activity’ situation which is present in peek-a-boo game provides infants with enjoyable context motivating to take a turn. Moreover, it involves repetition which gives a predictable framework during the interaction. This game was presented in research as a model of protococonversation even with 2–month-olds (3). However, while exploring the nature of early communication, the researchers usually used a strict form of peek-a-boo game where the adult was asked to play with the infant in a particular way during a limited time (4, 5). Additionally, even though the basic and individual components of a dialogue are known, previous research has barely considered the question how a dialogue enfolds during the interaction.

Objectives
We aimed to conduct a microanalysis of the peek-a-boo play with 2-month-olds in natural, unrestricted conditions and to contribute to our understanding of the nature of early dialogues. Using the peek-a-boo game as a fixed structure of early mother-infant communication, we asked first a general question: are two-month-olds willing to engage in a peek-a-boo play by gazing and smiling at the mother? In the next step, we wanted to find out under which condition infant’s smile can be observed, how the mother reacts on his/her turn and how infant’s reaction affects the further development of the interaction.

Method

A. Participants
20 mother-infant dyads from Poland (12 boys). The infants were 2 months old.

B. Procedure
The mothers and their infants were visited at their homes.

The mothers were asked to play peek-a-boo with their babies in the way they want and as long as they want.

C. Coding
We coded following behaviors:
- for the infants: attention and smile;
- for the mothers: vocalisation, smile, facial expression (e.g. raised eyebrows and/or mouth wide open), head movement (nodding the head up-down or left-right), posture (leaning towards the infant) and body stimulation (e.g. stroking or patting the infant).

Results

A. How did the play look like?
A brief microanalysis of a clip from the play.

The interaction described below consisted of 11 units of play.

The mother started the play leaning toward the infant, smiling and saying ‘Will we play peek-a-boo?’. While covering her child with a cloth she took an exaggerated breath and then started to call: ‘There is no Julian, there isn’t there?’. After uncovering the baby she called ‘peek-a-boo’, smiled and leaning toward the infant who, however, looked away. She leaned again toward him and once he started to look at her, she reacted contingently saying ‘boo’ and increasing her smile. The interaction continued, so the mother moved on to the next unit of play. In the second unit the infant looked at the mother just after uncovering. But this time mother’s smile and vocalisation were followed by infant’s reaction (e.g. raise eyebrows and/or smile and head nodding) and saying ‘Julian, there is Julian’. This continued until the infant did not smile in at least one unit. However, they continued the play and watching the third additional modality. Before infant’s smile it is usually leaning toward the infant and after - nodding the head. Pay attention under what conditions infant’s smile occurs on the timeline.

B. Overall play patterns
On average, the interaction between mother and infant lasted 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7). Infants looked at the mother in average 202.7 s (SE=127.7).

15% of all infants reacted with a smile in the first unit of play. None of them reacted with smile in the last unit. Infants who reacted with smiling looked at the mother significantly more (M = 77.3%, SE = 16.9%) than those who did not smile (M = 33.9%, SE = 20.4%). Every infant, who looked at the mother for more than 65% of interaction time, reacted with a smile. Crucially, infants smiled only if they looked at the mother within 1.1 s (M = 0.26 s, SD = 0.31 s).

100 % of infants’ smiles were preceded in 1 s by at least 1 mother’s modality. With respect to the different modalities, on average, in 97.3 % of cases infant’s reaction was preceded by mother’s smile, in 94.7 % by her vocalisation, in 44.0 % by head movements, in 20.0 % by facial expression and in 18.7 % by body stimulation (see Figure 2a). However, infant’s reaction was preceded by 1 modality only in 1.3 %. Mostly, it occurred after 3 (42.7%), followed by 4 (25.3%), 2 (24%), 5 (5.3%), 6 (1.3%) modalities (see Figure 2b). The three most common modalities occurring together were smile, vocalisation and head movement (following together 38.7% of infants’ smiles). None of the mothers finished the play if the infant reacted with a smile. The game was over only if the infant did not smile in at least one unit.

The results described above are summarized graphically in the form of a simplified interaction model in Fig. 3.

D. Mother’s response to infant’s smile
Mothers responded contingently with at least one modality to 100% of all infants’ smiles. 100% of mother’s contingent responses to infant’s smile was also a smile (in 11.3% of cases it was an increase in already present smile). 97.3% vocalisation, 66.7% - head movement, 52.0% - reducing body distance, 26.7% body stimulation and 24% - facial expression (see Figure 2a). Infant’s reaction was never followed by only one modality. Mostly, the mother reacted contingently to infant’s smile with 3 (44%), then 4 (42.7%), 5 (10.7%), 2 (1.3%) and 6 (1.3%) modalities (see Figure 2b). The three most common modalities occurring together were smile, vocalisation and head movement (following together 38.7% of infants’ smiles). None of the mothers finished the play if the infant reacted with a smile. The game was over only if the infant did not smile in at least one unit.

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Interaction unit of play

Infant’s reaction

first
the intermediate
last

mother's emotional state

Typical interaction pattern in which a smile occurs

Infants who smiled had a higher average number of smiles, vocalisations and head movements (p < 0.05). 15% of all infants reacted with a smile in the first unit of play. None of them reacted with smile in the last unit. Infants who reacted with smiling looked at the mother significantly more (M = 77.3%, SE = 16.9%) than those who did not smile (M = 33.9%, SE = 20.4%). Every infant, who looked at the mother for more than 65% of interaction time, reacted with a smile. Crucially, infants smiled only if they looked at the mother within 1.1 s (M = 0.26 s, SD = 0.31 s).

100% of infants’ smiles were preceded in 1 s by at least 1 mother’s modality. With respect to the different modalities, on average, in 97.3% of cases infant’s reaction was preceded by mother’s smile, in 94.7% by her vocalisation, in 44.0% by head movements, in 20.0% by facial expression, and in 18.7% by body stimulation (see Figure 2a). However, infant’s reaction was preceded by 1 modality only in 1.3%. Mostly, it occurred after 3 (42.7%), followed by 4 (25.3%), 2 (24%), 5 (5.3%), 6 (1.3%) modalities (see Figure 2b). The three most common modalities occurring together were smile, vocalisation and head movement (following together 38.7% of infants’ smiles). None of the mothers finished the play if the infant reacted with a smile. The game was over only if the infant did not smile in at least one unit.

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Conclusions
In our microanalysis, we found that most of infants were able to engage in the interaction through looking at the mother for over half of total interaction time and smiling. Furthermore, every infant who looked at the mother for over 65% of total interaction time responded with smiles. Infants were most likely to smile after the first unit of play when the interaction pattern became more familiar to them. However, they responded with a smile in a given unit only when the mothers were able to attract their attention within one second after uncovering. As long as the infants smiled, the mothers continued the play. The mothers motivated their infants to take a turn in form of social smile and responded contingently to it with at least three different modalities. Our results support the social stance of the infant the product of establishing the mutual gaze, that it is a basis for further turn-taking and serves as a ‘hook’ for the mother for continuing the interaction.

References


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