

Emergence of Collaborative Interaction among Toddlers in a Day-Care Center.

Miwako HOSHI

Abstract

The process of the emergence of sharing behavior, as well as the factors that facilitate the early development of interaction was examined. Longitudinal observation was carried out once a week on 8-12 children over a period of 10 months at a day-care center. We videotaped their interaction in completely natural situations. Among the episodes obtained, we collected the following social behavior which children of 8 to 22 months old showed: socially directed behavior toward peers, imitation and sharing interaction. Then modalities of such behavior that appeared for the first time at each month were noted and analysed. It was found that the emotion expressed through laughing or vocalizing played an important role in the emergence of collaborative social behavior. Imitation of an action was often a means of communicating a joyful feeling to a partner. The beginning of cooperative interaction was already seen in various forms of play by very young children who had much experience of sharing their feelings with each other.

Key words: development of interaction, sharing, toddler

Interaction among infants and toddlers has received increasing attention in recent years by researchers on social competence of children. Many studies on peer interaction have been carried out in experimental settings, in laboratory playrooms and with unfamiliar partners for subjects. In these situations, they show limited interaction, which may lead to conclusions that do not reflect their competence.

Studies on children at day-care centers demonstrated, however, that interaction appeared very early and vividly in infants who spent all day together (Musatti and Panni, 1981, Stambak et al., 1983). Interaction with peers may contribute to their cognitive development differently than would interaction with adults (Verba, 1994). With adults, children acquire knowledge through their teaching or guiding; with peers, they acquire knowledge by sharing activities or meaning with them. Here we mean 'sharing' as engaging in activities around common behavior, objects or topics with

others. Sharing behavior can lead or facilitate partners to collaborate or to do things together. Therefore, it also contributes to a child's development through making collaborative relations with others.

There are few studies which examined the process of the emergence of sharing behavior. How does an individual's interest in others evolve to interaction? What are the factors that facilitate the emergence and early development of interaction?

To clarify these questions, we focused on three types of social behavior. Two of them concern individual behaviors that can lead to or facilitate collaborative interaction; socially directed behavior (SDB) toward peers and imitation. The third type is sharing interaction that can lead to collaboration. We aim to follow the development of these behavior patterns and analyse the facilitating factors.

METHOD

Subjects: Toddlers in a one-year-old class of a day-care center were longitudinally observed. At the start of the observation, there were eight children (five boys and three girls) from eight to twelve months old in the class, and twelve children (eight boys and four girls) from nine to twenty-two months old at the end of the observation of this report. Three boys and one girl were closely observed as target subjects throughout the entire observation period.

Method of Observation: Observation was carried out once a week, one or two hours in the morning, during a ten month period, in completely natural settings in subjects' classroom or in the garden. We followed the children with a videocamera and began to film when at least two children came near each other and there was a possibility of interaction. We stopped filming when they separated. Scenes where teachers took care of children or took the initiatives were not recorded.

Data for Analysis: 135 episodes were filmed. Fifty four of them contained direct contact among children. In other episodes, children acted individually or in a parallel way. These fifty-four episodes were transcribed.

Method of Analysis: Socially directed behavior and imitative behavior of each subjects well as sharing interaction among subjects which occurred at every month were extracted from the transcription. They were grouped by the months of age of subjects. Then modalities of behavior that appeared for the first time at each month were noted and analysed.

RESULTS AND ANALYSIS

The developmental sequences of the modalities of individual socially directed behavior, imitative behavior and interaction were separately analysed.

(1) Socially Directed Behavior toward a Partner

Socially directed behavior (SDB) is defined by Vandell and Wilson (1982) as the discrete act of a person directed toward another person, usually accompanied by visual regard of a partner. It may or may not receive a reaction from the peer.

Table 1 shows modalities of these behaviors which appeared for the first time by a child at

Table 1. Modalities of Socially Directed Behavior toward a Peer

Before 9 months old	A child is interested in a peer's action or in an object he has, but he is indifferent to the peer himself.
10 months old	A child is interested in a peer, goes close to him, follows him or gazes at his face.
11 months old	A child smiles at a peer or vocalizes in gazing on him.
14 months old	A child watches a peer, smiles and calls him by "ah-ah". A child laughs playfully to a peer, expresses his desire to share his joy with him.
15 months old	A child goes close to a peer, touches him and/or vocalizes to attract his attention. A child waits for a peer by gazing at him, expecting that he is coming.
16 months old	A child repeats an action in gazing at a peer to invite the peer to his play. A child expresses his joy when a peer responds to his action.
18 months old	A child changes his action and tries to see the peer's reaction.

different stages of development.

Vandell and Wilson described two types of socially directed behavior: simple SDB as a single social act accompanied by visual regard and coordinated SDB as two or more acts. We found coordinated SDB at 14 months old with smile and vocalization in gazing at a peer.

We found in Table 1 that children tried to have contact with their peers in three steps: interest in the peer himself at 10 months, attracting his peer's attention at 14 months and attention to his reaction at 16 months.

Interest in a peer began with gazing at his face, followed by acting toward him with emotional behavior such as smiling or laughing. At 14 months, children behaved more strongly toward a peer by attracting his attention to share in play with him. For example, a girl named Waka drank milk from a cup, offered the empty cup to a boy named Taka. But at the moment of giving it she drew it back and laughed at him. Thus Waka expressed her playful feeling toward him. After 16 months, children became attentive to peers' reactions. A boy smiled and tapped his feet when his partner responded to his call. Children also tried to examine if their peers was sensitive to their own actions. A boy banged his hand on a table and watched a peer closely.

It was found that at the first half of one year old, SDBs were accompanied very often by emotional behavior such as smiling and laughing playfully. Considering that in later months of age they use verbal signs more often and emotional signs less frequently to share in play, emotional actions such as smiling or laughing may be the earliest signs that enable children to share activities.

(2) Imitation

Imitation is the spontaneous reproduction of another's action by an individual. It may be immediate or deferred. Imitation by an individual is thought to be one of the earliest and most typical facilitators of coordinated interaction (Eckerman, 1993). Modalities of imitation appeared for the first time at each month of age are listed in Table 2.

Table 2. Modalities of imitation

11 months old	Imitation of peer's motor action or motor expression without object
13 months old	Imitation of peer's manipulation of objects
14 months old	Vocal imitation Imitation of peer's pretend action Imitation of motor action which lead to common action together
15 months old	Exploration by deferred imitation
16 months old	Mutual imitation

Development of modalities of imitation observed were as follows; earliest imitations were of peer's motor activities such as lying down or clapping hands at 11 month old, imitation of manipulation appeared two months later, followed by vocal copy and reproduction of pretend action. Deferred imitation was seen for the first time in a 15 month-old child.

At first, imitation was done in one way. But at 14 months, imitation of one child led to common actions between two children. A boy began to tap a table with his hands looking at a girl. Then she imitated his action, and both repeated the action of tapping while laughing. It was the imitation of the girl that led them to share tapping activities as well as playful emotions. At 18 months, imitation was reciprocal. For instance, a boy named Tomo put a towel in his mouth. A boy named Rei imitated it. Rei began to make a noise with the towel in his mouth and tapped a table with his hands. Tomo imitated him. They smiled at each other.

As we already described, earliest imitations were of peers' motor activities without object. When children imitated these actions they often looked at the faces of their peers and not his actions or hands. It means that they imitated these actions because they were interested in the peer and not in what he did. This type of imitation functions as a means of getting social contact with peers and in this sense we call it "social imitation".

Through imitation of object manipulation, on the other hand, a child often seemed to be interested in objects that a peer used and not in the peer himself. We suppose that such imitation of object manipulation was often elicited by cognitive interest. It seemed that a child wanted to explore the object as his partner did. It would lead him to acquire new ways of using or exploring the object. This imitation will be referred to as "cognitive imitation". The first example of this type of imitation was seen by a child of 13 months who pushed the switch of a sweeper to see if it would stop after a peer had pushed it. This action was followed by a deferred imitation at 15 months old. A boy played in a puddle. After he left, a girl put her feet in the mud, repeated the same actions and watched the mud carefully.

The "social" imitation was more frequent than the "cognitive" one at the age of our observation. As some research indicated, imitation to share knowledge was frequent in 2 year- old children (Stambak et al, 1983). Imitation to share emotion may be a more primitive form than imitation to share knowledge.

(3) Interaction

Interaction can be defined as a chain of exchanges of each socially directed behavior. The months in which the different forms of interaction first appeared are shown in Table 3.

(Age indicates the months at which the youngest child interacts).

Table 3. Modalities of Interaction that Appeared for the First Time at Each Months.

Before 13 months old	No collaborative interaction was observed.
14 months old	A child goes close to a peer, who reacts to him by touching him. Two children vocalize, smile at each other. Playful exchange of a cup (same episode as Table 1)
15 months old	Two children share a play thing.
16 months old	play of repeating an action together. turn-taking “run and chase” game Two children play a pretend play.
17 months old	Game of give-receive and throw away.
20 months old	Use of language in interaction, conversation. Joint attention. A child points out something and his peer looks at it.

Direct interaction between two children began at 14 months with laughing, vocalizing or gazing at each other. With their partners they directed the same behaviors at one another. There was no differentiation of roles. At 16 months turn-taking was observed with the same action in turn.

We observed playful games developing. The playful exchange with a cup between a boy and a girl of 14 months (the episode that we already explained) is a primitive form of game. We see here complementary roles of giver and receiver. It was followed by a run and chase game and a peek-a-boo game at 16 months old. A boy ran away and a girl chased him, laughing. With a cry of joy he stopped, and turned back to her. Both children laughed. Then they changed the exchange to a peek-a-boo game. He hid himself in a large block and waited for her. When she came near, he got out of the block. She laughed at his behavior. At 17 months, another game of give-receive was observed. A boy offered a handful of sand to a girl. She received it, threw it away, looked him and smiled. They repeated this sequence of actions several times. These games agree with the research that toddlers share meanings on common topics (Brenner and Mueller, 1982). They understand reciprocal roles, differentiation of their own role and others' roles.

Sharing of an object began at 15 months old. When children played in the sand, a boy put a shovel in a bucket. A girl looked at it and put her shovel in the same bucket in spite of other buckets around her. They used the same bucket to play with each other. At 16-20 months there were episodes of sharing actions in which children together performed the same action, for instance, tapping on a table with their hands.

Social pretend play appeared at 16 months old. A girl lay down on a mat and pretended to sleep. Then she called a boy who was passing by. The boy smiled, lay down and pretended to sleep,

which showed that he understood the girl's pretence and joined in it. There were social pretend plays almost every month from 16 to 20 month-old children.

These results demonstrate that the beginning of cooperative interaction is already seen by very young children with various forms of play; repeat of an action together, pretend play and role plays such as run-chase and give-receive games.

DISCUSSION

Some Developmental Trends

Before the appearance of interaction by 14 month-old children, socially directed behavior was observed at 10 months and imitation began at 11 months. We cannot conclude from our results that SDB precedes imitation, but it should be possible to hypothesize that actions directed at a peer appear earlier than spontaneous reproduction of others' action.

We found some developmental shifts; from interest in peer himself to interest in peer's responses, from one way imitation to mutual imitation and from doing the same thing together to complementary roles in interaction. What is common in these trends is the recognition of partner as agent. The partner is seen not as a recipient of his action but as an agent with whom to collaborate, coordinate and negotiate to share a common topic.

Role of Emotional Behavior

Our results on three types of social behavior showed that sympathy is the major facilitating factor of early interaction. It was found that emotional SDBs such as laughing, smiling or calling play important roles. At the time when a child recognizes a peer as a partner and no more as an instrument for achieving his aim, he has an intention of sharing his feelings with peers. He tries to express to him his joy or playfulness by laughing, smiling or calling to him. It is this desire of sharing joyfulness with others that motivates a child to interact with peers. It is why there is interaction earlier among children who live together in daily life than with unfamiliar peers.

Imitation is also based on intention of sharing emotion. Our results showed that imitation of an action was often a means of communicating a joyful feeling to a partner.

Play interaction begins with the exchange of these feelings. When playfulness expressed by a child is understood by a peer, it can lead to complex interactions. For example, in an episode with a cup at 14 months, laughing playfully makes two children share a double world, the real world and the world of play. When Waka pulled back her cup in laughing at the moment of giving it to Taka, she knew that in the real world refusing to give a cup by drawing back might cause trouble for a partner. So by laughing playfully, she shifted the action of pulling back into a kind of game which the boy understood. They shared the meaning of play.

By pretending to sleep in an episode at 16 months, there is another example of interaction based on the understanding of others' playful emotion. Playfulness makes them share fictitious or symbolic meanings. Thus the emotional act connects children and makes them share meanings.

At 21 months old, however, children introduced a new instrument to connect them each other; verbal messages. With their development of speech competence, they will rely increasingly on

verbal means and less on emotional signs to share meanings.

Role of Objects

Early episodes where emotion played dominant roles were constituted mostly with actions without objects. When objects were used, they were simply used as means to activate and communicate emotions. Does it mean that objects are not important in eliciting shared behavior? When children manipulated small toys they often played individually. Interaction in using objects occurred frequently when they played with relatively big play materials such as large blocks. It is supposed that big materials are better than small manipulative materials to facilitate early interactive activities.

As we mentioned about imitation, objects contribute to cognitive imitation. In one or two years, mutual cognitive imitation will bring coordinated interaction of exploration, observation and transmission of knowledge among children (Stambak,1988). But in our observation we did not find such examples.

Role of Adults

Our results showed rich interaction without the intervention of teachers. This does not mean, of course, that adults are not necessary for interaction among children. Sympathetic relationships among children are assured by good relationships between teachers and children. Nevertheless, we may say that toddlers learn not only by being taught, guided or intervened by adults, but by sharing activities with peers and cooperating among them. Adults can support children through the disposition of materials in the classroom, curriculum programming, grouping of children, etc. Then they can watch children in interaction among them without intervening in their activities, by letting them interact freely.

Bibliography

- Brenner,J., & Mueller,E., Shared meaning in boy toddlers's peer relations, 1982, *Child Development*, 53, 380-391.
- Eckerman,C. Imitation and toddlers' achievement of co-ordinated action with others. 1993, in Nadel, J & Camaioni,C (eds.),*New perspectives in early communicative development*, New York,Routledge.116-138.
- Howes,C. Peer interaction of young children,1988, *Monographs of the Society for Research in Child Development*, 217, 53,1.
- Musatti,T. & Panni,S. Social behavior and interaction among day-care center toddlers,1981, *Early Child Development and Care*, 7, 5-27.
- Stambak,M.,Bariere,M.,Bonica,L.,Maisonnet,R.,Musatti,T.,Rayna,S.,&Verba,M..*Les bébés entre eux*, 1983, Paris, P.U.F.
- Stambak,M. & Sinclair,H.(eds.) *Les jeux de fiction entre enfants de 3 ans*,1990, Paris, P.U.F.
- Vandell,D. & Wilson,K. Social interaction in the first year; infants' social skills with peers versus mother,1982, in Rubin,K.et al (eds.) *Peer relationships and social skills in childhood*, Springer-

Verlag.

Verba, M., The beginning of collaboration in peer interaction, 1994, Human Development,37,125-139.