Research paper

Young Children Expressing their Communicative Intents: A preliminary study of the interactions between Japanese children and their caregivers

by **Hiromi Tsuji** (hiromi@clara.co.uk)

Contexualisation

This study addresses early language development and focuses on young children's use of language. At the very early stages of development, children use gaze and gesture to communicate; it is believed that such early communicative intent is one of the motives to use language proper. Therefore this study examined how children express what they mean through communication with their caregivers. In this paper, preliminary data relating to the development of early communicative intent is presented. Much of the existing literature about this topic is related to studying children whose linguistic environment is English. This study describes the behaviours of a group of 10 children and their carers whose linguistic environment is Japanese. Of particular interest is how communication between the carers and their children develops with age, for children between 11 and 28 months old.

***Abstract**: This paper reports the pilot part of a study investigating the development of the expression of communicative intents of Japanese children interacting with their caregivers. The main purpose of this pilot was to identify and describe developmentally different features of children's communicative acts in relation to mothers' communicative acts. Ten children, of ages ranging from 11 months to 28 months and their mothers, participated in this pilot. Each mother / child dyad was observed in the two semi-structured contexts of joint book reading and toy play. The joint book reading refers to the activities where the dyads interacted with picture books and toy play refers to the activities where they interacted with given toys. Analyses were made of both mothers' and children's communicative acts including both gestural and speech activity, using an existing coding system called the Inventory of Communicative Acts-Abridged (INCA-A) with an additional supplemental coding system. The results indicate that the adopted coding system seemed to capture developmentally different features of communicative acts in terms of quantity and quality. Examinations of the mothers' communicative acts also suggested possibilities of identifying different interaction styles across dyads as well as changes within a dyad in which mothers deploy a variety of communicative acts in relation to their child's developmental course.*

Introduction

There has been extensive research into early language development with reference to children in Western cultures, specifically the study of English speaking children and their caregivers. In the literature on language development, historically there appeared to be intensive debates regarding the role of input, represented as Child Directed Speech (CDS), for children's language development (Furrow, Nelson and Benedict, 1979; Newport, Gleitman and Gleitman, 1977). Two underlying problems relating to the study of the role of input can be identified.

The first is that early research focused on the surface structure of language, such as the development of children's syntax in relation to that of their caregivers', and little consideration was given to the pragmatic aspect of language. These correlational studies were influenced heavily by linguistic research and remained inconclusive with regards to whether or not

caregiver's input had a significant role in early language development. This line of research overlooked the context in which children engage in social activities with significant others. Bates (1976) and Greenfield and Smith (1976) recognised this weakness and conducted studies that drew more on the contextual information to interpret children's developing language. Furthermore, from a socio-linguistic perspective, Halliday (1975) emphasised that children learning language are learning how to make meaning in socially expected ways. Such learning takes place at a very early age, long before the stage when a child puts words together. This approach to the study of language and children's development has evolved drawing on the central view that children's main motivations for acquiring a linguistic system are to achieve their social goals (Bates, 1976; Bruner, 1975). Young children first learn how to express their intentions, without using a linguistic system, in order to communicate with their caregiver in a context-specific way. Bruner (1975) argues that the representation that develops through expressing their communicative intents helps the child "crack the linguistic code" (Bruner, 1975, p 61).

The second problem is that much of the research on language development in relation to language input is based on the Western assumption that the interaction between child and caregiver takes place with a particular reference to their culture. Face to face interactions and dialogues between a child and a primary caregiver are common characteristics of a middle class western child-rearing practice and not necessarily common to other cultures or to other groups of people within the same culture. For example, Ochs and Schiefflin (1984), found in remote villages in Papua New Guinea that there was little speech directed to the very young child; even when the child's first word appears, Child Directed Speech (CDS) is not normally adapted to the child's level and it is the child's responsibility to adapt to the adults' level in order to communicate with others. The children in these cultures tend to have many more opportunities to socialise with different people of varying ages at the very beginning of their lives, and they learn how to communicate with more mature interlocutors through such socialisations. Despite methodological differences, particularly in the contexts where the researchers focused when collecting data, these studies have important implications. The way in which adults interact with young children exhibits fundamental differences, and this is a part of child-rearing practices that reflect their own cultural values and beliefs. The way in which the early studies of language development looked at the role of input appears to have been built on a very narrow view of language development. Children's language development then needs to be studied from socio-cultural perspectives taking into account children's social and cognitive development. Any picture, derived from studies based solely on Western cultural beliefs, is incomplete when attempting an explanation of language development in relation to children's language experience in their socio-cultural environment.

In order to provide rich descriptions of children's language development in a non-Western culture, this study explores the development of the way young children express their communicative intent through the interaction with their caregivers in Japanese culture. It is recognised that Japanese child-rearing practice has similarities to that of a typical Western culture, such as an existence of a primary caregiver for a child, in many cases that is the mother of the child. However, there appears to be a fundamental difference in what caregivers expect from children, which reflects their underlying cultural beliefs and views about childhood. For example, the comparative studies of Child Directed Speech (CDS) between Caucasian American and Japanese mothers' speech to young children (Fernald and Morikawa, 1993; Toda and Kawai, 1990) found that American mothers showed a strong tendency to respond vocally and to stimulate vocalisation of young children. In contrast, Japanese mothers were much more affect-oriented, which is represented by a frequent use of baby talk, including nonsense sounds, onomatopoeic and mimetic words. In Japan, frequent use of baby talk is believed to reflect maternal expression of affection (Fisher, 1970). In fact, there are many words that are used specifically in speech to young children (ie, baby talk) and these words are well recognised in Japanese culture (Tomosada, 1997).

[In Japanese, different words are used between adults, depending on the status of the speaker and listener]. Such a common use of baby talk could be derived from a differentiation in the code of speech that is respected in Japanese culture. Japanese mothers' CDS, which distinguishes children from adults, could be an implicit indication of mothers' instruction of culturally valued speech conventions (Clancy, 1986). On the other hand, American mothers' communicative styles appeared to emphasise a direct and individual expression to their child with an attempt to encourage the child to become an independent communicative partner.

In summary, the two issues raised above indicate that early language development could be approached from a perspective of communication development because young children who are not at the stage of speaking any language proper are capable of communicating with their caregivers. In addition, such communicative exchanges are embedded in their socio-cultural contexts. Therefore, it is important to examine how young children develop ways of communicating with their caregivers in a culture other than typical Western cultures. This study examines non-linguistic as well as linguistic aspects of communication observing the interaction between children and their caregivers whose linguistic environment is Japanese.

In this study, children and their caregivers' "communicative act" refers to a communicator's attempt to make information or intentions mutually manifest to the recipient (Sperber and Wilson, 1995). This communicative intention is interpreted based on linguistic and non-linguistic information in communicative exchange. As for non-linguistic communication, the main focus of this study is gestures that are used to express young children's communicative intention with or without linguistic code. However, other information such as eye gaze, pause, intonation and other paralinguistic aspects are also taken into account when interpreting a speaker's intention from their gestures and speech. Although there has been a growing interest amongst developmental psychologists on children's pointing and early gestures (Butterworth and Franco, 1990; Butterworth and Grover, 1988; 1989; Butterworth and Jarret, 1991; Lock, Young, Service and Chandler, 1990; Murphy and Messer, 1977), only a few recent developmental studies have examined gesture and speech as an integrated system (Butcher and Goldin-Meadow, 2000; Caselli, 1990; Goldin-Meadow, 1998). Again very little has been studied in non-western cultures.

This study reports the pilot part of the project that explores the following:

1. How do the ways that children express their communicative intents (ie, gestural and verbal communicative acts) develop?

2. Are there any differences in the development of communicative acts as a function of mother and child interactions?

It is intended that the main study will be a cross-lagged longitudinal design, enabling a rich developmental analysis to be carried out. This pilot study was cross-sectional and aimed to identify and describe developmentally different features of child-caregiver interaction in different age groups based on the data gathered from mother-child dyads' communicative acts. Implications of this pilot are discussed in terms of the suitability of the recording and coding system, which could be utilised in the main study, and issues derived from this pilot study.

Methods

Participants

The participants were 10 children and their mothers who were attending mother and toddler group sessions that were held at a state run family centre in a town in Japan. All families lived in the town and they were all native Japanese speakers. The mothers in these groups were contacted initially by teaching staff at this family centre to ask if they would participate. Actual recruitment of mother and child dyads took place during the researcher's visit to the centre. The age of the children varied from 11 months to 28 months (one girl of 11 months; one boy of 12 months; one girl of 14 months; a boy and a girl of 16 months; one girl of 18 months; two girls of 21 months; one boy of 24 months; and one boy of 28 months). Four of them were first-borns, another four were second-borns and two were third-borns.

Procedure

Two observations were conducted for each dyad approximately one week apart. The objective of the first observation was to familiarise the participants with the observational procedures. The observation comprised two semi-structured contexts: a joint book-reading context followed by a toy play context. In the book-reading context, each dyad interacted using a few picture books. In the toy play context, each dyad interacted using toys selected for this observation. The toys used in this context were a ball, a tea set including teacup and saucer, spoon, a kitchen set including kitchen utensil and a pan, miniature fruits and vegetables, telephone, bathtub and washing cloth. For each session, each mother-child dyad was contacted individually during the free-play time at the mother and toddler groups; mothers were asked to consider their child's state of mind on the day and the observation was carried out only when the mother and children were happy to participate. Each mother and child dyad were invited into a separate smaller playroom where the semi-structured contexts were introduced to them in turn. The order of the two contexts was fixed because there was a concern that children may not concentrate on book-reading once they started to play with toys. If the child was playing with a toy then they were allowed to bring it to the room. However, in the actual observation, no child continued to play with the toy that the child initially brought in. They were instructed to play in the room freely using the books and toys, respectively. If the child was distracted from playing or not willing to play in the room, they were allowed to terminate the session and leave the room. For recording, a video camera (Sony digital handicam, DCR-TRV20, for NTSC) was set up on a tripod on the table (recording from approx 1.8 m high) at the corner of the room (5m x 6m). Recording started when each dyad had settled in a room, which was approximately one minute after they came into the room. The researcher started recording, using a remote control so that the dyad was not distracted and left the room. All recording sessions lasted no less than 12 minutes in duration: approximately 6 minutes for book reading and 6 minutes for toy play. After the observational session, each mother was interviewed regarding two aspects:

1. whether the observational procedure might have hindered her from interacting naturally with her child and her reaction to semi-structured contexts;

2. more general insights about her child's communication development in terms of the way in which the mother interacts with her child and common activities at home.

The mothers' responses were taken into account when designing the observation procedure for the main study.

Transcription

Recorded videotapes were transcribed on to computer files using transcription conventions (ie, CHAT format) of the Child Language Data Exchange System: CHILDES (MacWhinney and Snow, 1985; 1990). Transcripts included each speaker's utterance, any overt action during observation, gestures that have communicative nature; and salient contextual information. For utterances, any words that had a clear meaning or were close to the adult word were transcribed as the utterance, otherwise they were coded separately using phonemic format. Any phonologically consistent format identified during observation was also transcribed in a main utterance line.

Coding system and coding

Coding of communicative acts was made following the transcription of utterances including vocalisation and communicative gestures, respectively. The Inventory of Communicative Acts - Abridged: INCA-A (Ninio, Snow and Rollins, 1994) was used for coding of verbal communicative acts. This system identifies and codes verbal communicative intent at two levels: the level of interchange where a unitary interactive function was agreed upon implicitly by the interlocutors; and the level of utterance by which the speaker express his or her specific intention (ie, speech act) within a social interchange. Some examples for the coding level of interchange are: discussing joint focus of attention-which refers to holding of a conversation about something in the environment that both participants are attending to; negotiating the immediate activity-which refers to negotiating the initiation, continuing, ending and stopping of activities including directing and evaluating hearer's and speaker's act. To enable explicit coding of young children's communicative intent, a coding system for gestural communicative acts was developed. This coding system focuses on the form of symbolic gesture, comprising of deictic gestures such as pointing, showing and giving and depicting gesture (McNeill, 1987). Based on these two coding systems, each utterance and gesture was coded respectively. Each session was coded twice. The agreement between the two sets of coding ranged from 78 to 88%. The number of verbal and gestural communicative acts coded for the analysis was 213 and 476 respectively for the children, and 1377 and 207 respectively for the mothers.

Data reduction and analysis

Each speaker's communicative acts were coded and represented by the following labels; interchange (eg, negotiating immediate activity), speech act (eg, asking a yes/no question), and gesture (eg, pointing). Furthermore, combinations of interchange and utterance, that is, variations of speech act or gesture within a particular interchange were examined and referred to by the labels "interchange-speech act" and "interchange-gesture". Types and the corresponding frequencies of these communicative acts were generated using the computer program (CLAN) developed in CHILDES. This data provided the basis for the quantitative analyses.

Results and Discussion

Following preliminary observation of the tapes, 8 minutes (4 minutes of joint book reading and 4 minutes of toy play contexts) of interaction were analysed for each of the 10 dyads. All data presented below are a combination of the two contexts.

The results are presented in the following two parts:

1. proportion for gestural and verbal communicative acts for each child, and a close examination of types of gesture used for communicating their intents;

2. children's repertoires of gestural and verbal communicative acts across and within interchanges in relation to their mothers' communicative acts.

Children's verbal and gestural communicative acts

In order to provide a broad picture of communicative acts used by the children of different ages, the proportion of gestural, verbal and gestures accompanied by speech acts was presented in terms of the pattern exhibited by each individual child. As shown in Figure 1, younger children appeared to use a substantial proportion of gestures for expressing their intents whereas older children used more speech for expressing their intents. Gesture accompanied by speech was found in most of the children, even in the very young children. A close examination of the types of communicative gestures is presented in Table 1.

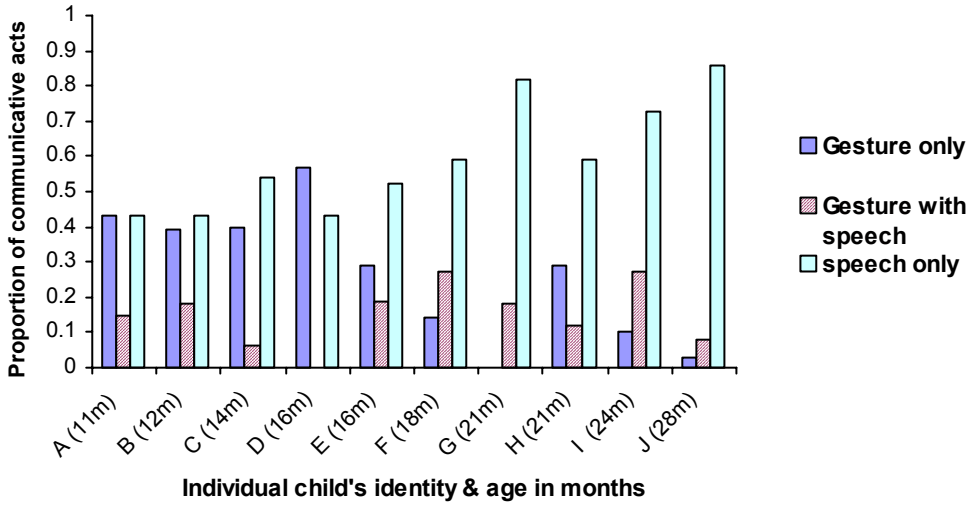

Figure 1. Proportion of children's gestural and verbal communicative acts

ID	GZ		RO		EO		PO		SR		SO		SW		OO	
(Months)	GO	GS	GO	GS	GO	GS	GO	GS	GO	GS	GO	GS	GO	GS	GO	GS
A (11 m)	1	1	1	4	1				10						4	1
B (12m)	3	1				1		1		1	7	2			3	
C (14m)	2		3	2			2				14					1
D (16m)	3								2						5	
E (16m)			1	1	1	1	4	8			12	1	1			
F (18m)	1			3	1	3		10	1	1	12	12			1	1
G (21m)								11				2		2		
H (21m)							2	2	1	2	13	3		2		
I (24m)						9		1	3		3	4				
J (28m)						2		4			2	1	1			

GZ: directing line of gaze; RO: reaching an object; EO: showing or extending an object to adult; PO: pointing; SR: social routine (incl. routine game); SO: object-associated symbolic gesture; SW: symbolic gesture without object; OO: other communicative gesture such as nodding for yes.

Table 1. Number of gestural communicative acts and frequencies: without (GO) and with speech (GS)

Children's communicative gestures fell into eight categories as indicated in Table 1. For this analysis, each category of children's communicative gesture was further separated into two types: communicative gesture only (GO) and communicative gesture accompanied by speech or vocalisation (GS). The type of gestural communicative acts appeared to vary according to the age of the child. Directing line of gaze (GZ), reaching for an object (RO) and extending object to an adult (EO) are typical communicative gestures for younger children; this is in line with the literature on pre-verbal communication (eg, Volterra, 1990). However, older children used gestures such as extending an object that were accompanied by speech. This trend is also found in the pointing gesture. The number of pointing gestures accompanied by speech increased in older children. Object associated symbolic gestures (SO), such as pretending to pour tea into a cup, and holding a plastic telephone receiver to the ear, seemed to be present even in the younger children, though in the younger children such gestures were not accompanied by verbal utterances. This object-associated gesture is called a "gestural name" or "manual name" by Bates and her colleagues (Bates, Benigni, Bretherton, Camaioni and Volterra, 1979; Bates, Bretherton, Shore and McNew, 1983). They argue that this type of gesture emerges as a substitute for vocal naming. However, older children used such object-associated gestures in association with verbal utterances. In the instances of gesture-naming of the older children, such verbal utterances were not directly connected to the name of referent but to the object-appropriate use, such as uttering "hello" when holding a telephone receiver to the ear or uttering onomatopoeic sound effects for the object's use (eg, Japanese children utter /booN booN/ phonemically to represent a moving toy car. This is equivalent to English speaking children saying *"chug-chug"* to represent a moving locomotive). Therefore, these object-associated gestures could also be precursors of the mastery of language use. Finally, symbolic gestures without object (SW) did not appear as often as object-associated gestures. Examples of such gestures observed in the interactions were: exhibiting a gesture of brushing teeth as a reply to mother's question referring to a picture of toothbrush, in which the child intended to denote an object reference; and exhibiting a gesture of hopping rabbit by putting her hands on her head as rabbit's ears and uttering onomatopoeia for a description of hopping (phonemically represented /paQ paQ/). This happened when the mother uttered "rabbit", so this gesture denoted the attribute of a rabbit. Such gestures were all considered to be communicative because they happened in the context of communicative exchanges.

Variation of verbal communicative acts

Children's data

Figure 2 presents the type of verbal communicative acts produced by children of different ages during the observations. Each child's data consists of three measures: number of types at interchange level, utterance level represented as speech act and a combination of these two. For example, a child's utterance "dog" in the context of shared attention with his/her mother is coded as "Discussing joint focus of attention" in terms of Interchange level and "Statement" in terms of speech acts. Therefore those combinations mean that child is making a statement in the interchange of discussion on their joint focus of attention.

As one might expect from general development in children, older children appeared to be capable of using many different means (represented by the types of speech act) to express their intents during the interaction with their mothers. For example, child #F (18 month) seemed to perform exceptionally well compared with the older children. Compared with the study of English-speaking children (Snow, Pan, Imbens-Bailey and Herman, 1996), which used the same coding system in similar contexts, this child appeared to perform well above the average. The type of interchange that the children engaged in (represented in the category of interchange) was more consistent than speech acts across the children.

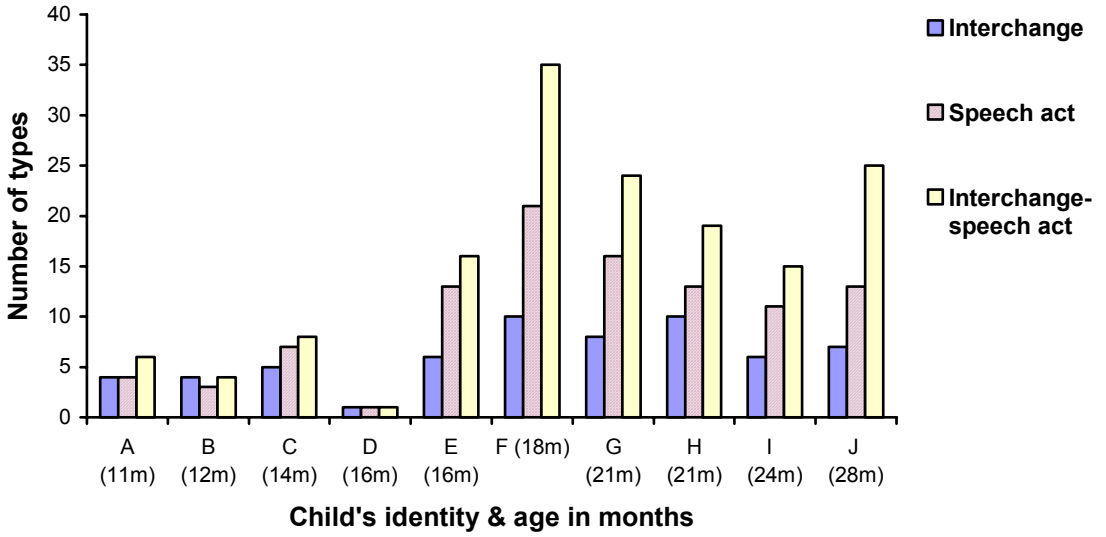

Figure 2. Variety of types of verbal communicative acts: children's data

However, Figure 3 indicates that within the major categories of interchange, older children seemed to exhibit many more different types of speech act to express their intentions. In addition to these verbal communicative attempts, younger children used more sole gestural communicative acts in the same range of interchange such as in the "Negotiation of immediate activities".

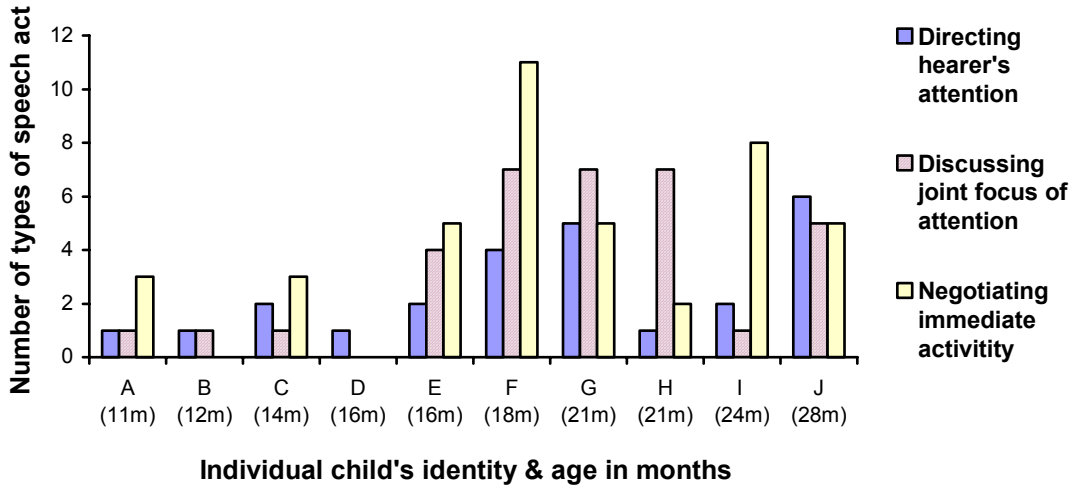

Figure 3. Variety of types of speech acts within main interchange types

Thus, these descriptive data confirm that the older children have more verbal repertoires for each interchange type. As for the category of interchange in which children engaged, there appeared to be some common types of social interchange across most children. They are the categories of: "Directing hearer's attention", "Negotiation of immediate activity", "Discussing joint focus of attention". Although this was not graphed in figure 3, "Performing verbal moves in routine game" was also a common type of interchange amongst dyads. As well as these categories, older children engaged in the category of "Discussing the non-present", "Discussing something related to present" and "Discussing fantasy world". This is in line with the finding by Snow *et al.* (1996), that early communicative attempts appeared to occur in a limited set of communicative interchanges, whereas for older children the scope

for engaging in communicative interchanges broadens. Furthermore, the interchange "Performing verbal moves in routine game" occurs in most of the dyads' interaction. As Bruner (1983) explains, this type of interchange appears to be a significant format that has the potential for plausible communicative exchange to take place between mother and child. This qualitative development may be an index of children's growing ability to represent past events and relate them to the present. This could relate to a transition from the sensorimotor stage to the beginning of the preoperational stage of cognitive development (Piaget, 1952).

Mothers' data

The variation in mothers' verbal communicative acts is presented in Figure 4.

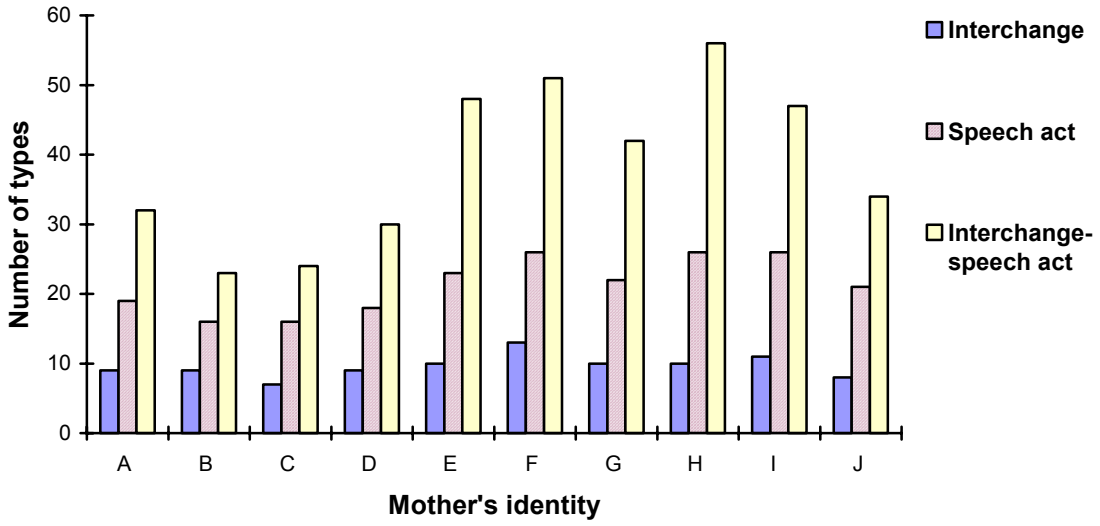

Figure 4. Variations in types of verbal communicative acts: mothers' data

Unlike the children's communicative acts, these did not differ considerably according to the child's age. However, as the Interchange-speech acts shows, the mothers of older children seemed to use a wider variety of combinations in order to communicate with their child than the mothers of younger children. Nevertheless, given the limited number of participants, there maybe no correlation. However, it is possible that as children develop, their interactive contexts generally become more sophisticated, which in turn, necessitates the use of more elaborate expressions by mothers in order to facilitate interaction with their child. Given a possible difference in the variety of communication with children of different ages, mothers' use of gesture is of interest. Figure 5 presents the kinds of gestural communicative acts produced by the mothers; their communicative gestures were all accompanied by speech.

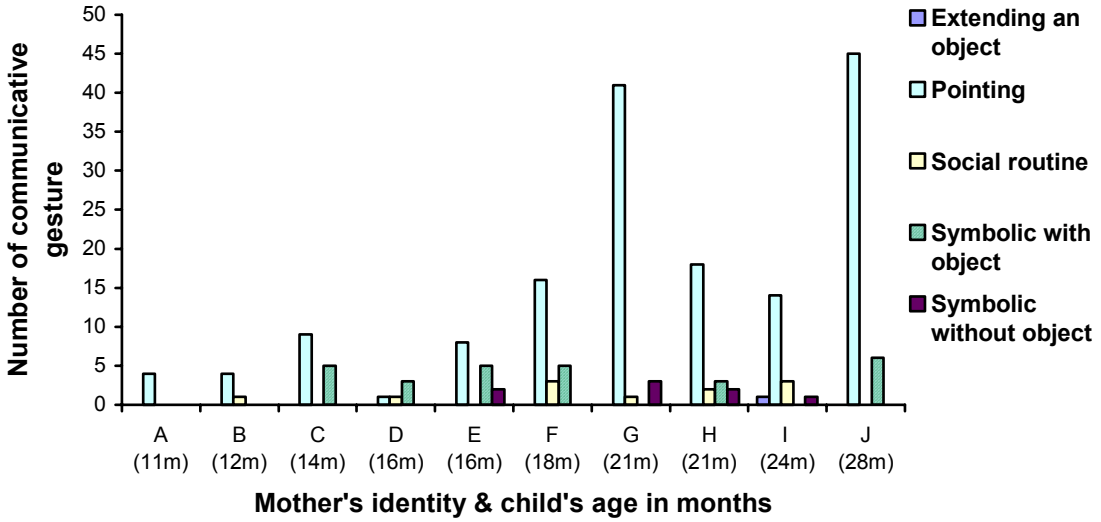

Figure 5. Communicative gestures used by mothers

As seen in this figure, pointing is the commonest gesture for mothers of the older children. Detailed examination revealed that these pointing gestures came from a book-reading context where these mothers pointed at the picture referring to an object or asked the child what it was. This was observed particularly in the interaction of dyad #G (21 month) and #J (28 month). However, a review of recorded tapes and transcripts indicated that there was no development in this type of joint book-reading episodes for these two dyads whereas other dyads of older children, for example #H (21 month), appeared to spend time discussing ideas related to the object of their focus. The mother in dyad #H not only refer to an object by name or asking the child for the name of the referent but also referred to the emotion of her and her child in relation to that of the protagonist in the story.

Overall, there appears to be two possible avenues that could be investigated further in the main study. The first is that the mothers' interaction style may change as the child's language develops. Although early literature (eg, Newport *et al*., 1977; Snow, 1972) investigating mothers' interaction failed to identify any changes in terms of syntax as children developed, an examination of the pragmatic aspects of mothers' interactional style might uncover such a difference. The second is that there may be individual differences in interactional styles across dyads in children of the same age. Therefore, investigating the implications of such differences in relation to children's ability to express their communicative intents is one of the main goals of this study.

Summary and Implication

This preliminary study has analysed cross-sectional data from recordings of 10 Japanese mother-child dyads engaging in two types of interactions: joint book reading and play with toys.

Despite the small number of participants studied, there appears to be a clear developmental difference between the children of different ages in terms of frequencies and types of communicative acts. The coding system adapted from Ninio, Snow and Rollins (1994) proved to be appropriate for coding Japanese children's communicative acts. Furthermore, a gestural level of coding in addition to an existing coding system (ie, the INCA-A) seems to reveal a developmental difference, showing how young children deploy communicative gestures while their verbal communicative exchange is still limited. At this stage it is not possible to say that gesture is a precursor to speech in communication per se. In the current study, gestures accompanied by speech seemed to be present in most of the children

examined; as McNeill (1992) regards gesture and speech as a single integrated process in which different modes of thought are synthesised, gesture seems to continue to coexist with speech throughout adulthood to present meaning in a fundamentally different form to that of speech. The developmental trajectory of the relationship between gesture and speech is a further question for the main study.

Secondly, the examination of both mother's and child's communicative acts indicates some possibilities for identifying different styles across different dyads and within a dyad over time. It is important to consider mother and child dyads as having reciprocal effects. To study individual differences it is necessary to examine longitudinal data from a large number of mother-child dyads. However, a major methodological issue of this type of research is that of transcribing and coding the tapes, which provide the raw data, is extremely time consuming. This means that in order to gain a detailed picture of development, realistically, the sample size has to be relatively small. Therefore, an analysis regarding such differences needs to draw mainly on qualitative data. The mothers' interviews in this pilot study were only used to gain insights for the observational procedure and were therefore not analysed systematically. It is also possible to use such data to illustrate the underlying insights regarding the interaction with their children in addition to mothers' use of communicative acts.

Finally, in the results presented, some communicative exchanges appear to be revealed in a specific context, such as pointing during book-reading. Although the current analysis was carried out on the combined data of two discrete semi-structured contexts, book reading and toy play, it may be possible to examine the contextual difference by analysing each context separately.

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