文京学院大学研究紀要 Vol.7, No.1, pp.149～167, 2005

Three-year-old children's interactional skills and parental speech styles in triadic family discourse

Hiroko Kasuya・Kayoko Uemura*

Key Words: triadic interaction, speech styles, parental input, social toy play, language learning

1. Introduction

Direct interaction with family members such as parents and siblings may provide opportunities to learn, rehearse, and refine social skills that are common to successful social interaction not only in family contexts but in other social contexts (e. g., peer settings) as well. Children are also interested in what happens between their siblings and their parents, monitoring closely both the language (Dunn & Shatz, 1989) and the emotions expressed (Dunn & Kendrick, 1982; Dunn & Munn, 1985). In triadic conversation which can facilitate these direct and indirect interactions with family members, children learn to find ways to tune into the communicative conventions of their culture. Children's relationships and ways of communicating with their fathers and siblings, however, have received less attention (Brody, Stoneman, & McCoy, 1992; Volling & Belsky, 1992) and there are some inconsistencies in the findings presented in available literature.

Many studies following parent-infant interaction into the early preschool period

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親子間会話における幼児の相互交渉能力と親のスピーチスタイル

＊加須屋裕子・上村佳世子

This study was funded by Japan Society for the Promotion of Science, Grant-in Aid for Scientific Research C (2) grant number 16530407. The earlier version of this paper was presented at the 10th International Congress for the Study of Child Language, Berlin, Germany, in July 2005.

Correspondence Address: Faculty of Human Studies, Bunkyo Gakuin University,
1196 Kamekubo, Fujimino-Shi, Saitama 356-8533, Japan

Accepted November 24, 2005. Published December 20, 2005.

(Pedersen, 1980) revealed many more similarities than differences between parents. Clarke-Stewart (1980), for example, examined children at 30 months of age at home with their parents. In Clarke-Stewart's study, by and large the quality of father-child interaction was equivalent to that of mother and children as measured by paternal responsiveness, stimulation, affection, and teaching. Lytton and Romney's (1991) meta-analysis, however, indicated a great variety of patterns of mother-child and father-child interaction; some factors which appeared in a few studies were non-significant in others.

On the other hand, Lewis's (1997) discussion of studies on both observational and survey data suggests that mothers and fathers engage in different types of interaction with their children. More importantly, longitudinal research on daily family interactions has suggested that the father becomes more involved as the child progresses from infancy to the preschool period. In our previous study (Uemura & Kasuya, 2003), we found a similar tendency in terms of parental language input by demonstrating that mothers talked to younger children more often than to older children and more often than fathers talked to the younger children; conversely fathers talked to younger and older children relatively equally and fathers responded to older children more often than to younger ones. This might suggest that mothers are more sensitive to the child's developmental stage, while fathers may simply be reactive once the child's language skills are proficient.

A study in this line of research involving fathers' styles of verbal interactions was introduced by Gleason (1975) who analyzed the speech addressed to preschoolers of different ages to see if fathers modify their language, as mothers do, to suit the linguistic capabilities of the child. Gleason found that while fathers do use "child-directed speech" as mothers often do, they also occasionally use rare words, which are beyond the two to three-year-old child's capabilities. She then suggested that fathers act as a "bridge" to the outside world. Since Gleason suggested the idea of fathers acting as "bridges" the research in this area has evaluated the "bridge" hypothesis further (Mannle & Tomasello, 1987). While some measures of parent-child interactional language suggest differences between parents, others do not. The data suggest in the main that mothers continue to have a more obvious influence upon their children during later development as well. For example, the study of Pratt, Kerig, Cowan, and Cowan (1992) on parental speech to three-year-olds found that the child's linguistic proficiency later (at age five) was predicted by maternal conversational responsivity, but not by paternal responsivity. In a study involving siblings conducted by Volling and Belsky (1992), however, they found that when significant associations did emerge, aspects of the mother-child relationship including language features predicted sibling conflict while features of the father-child relationship

were related to prosocial interaction between siblings.

There are some more data suggesting that parental styles might have an influence, even if the patterns are more diffuse. For example, Youngblade and Belsky (1992) examined 5-year-olds' interactions with a close or best friend and their study revealed a significant predictive pattern related to father-child interaction at age three; negative peer interaction was related to less positive father-child interaction. Such findings imply that fathers' interactional styles are related to more pragmatic development of children's language associated with social skills in their later life, while mothers' interactional styles may be related more to on-site linguistic development regarding routine language skills (i.e., vocabulary size). This implication appears to support Gleason's "bridge" hypothesis that fathers serve the function of preparing the child for the outside world. However, the statistical power of predicted variables accounted for was weak and the findings clearly need to be replicated and extended.

One of the major influences on parents' ways of interacting with their preschooler as well as children's use of language both qualitatively and quantitatively is the activity. For example, Ross and Taylor (1989) found that a context involving stereotypical "maternal" objects like books and puzzles and one with "paternal" objects like trucks and balls worked differently in their experiment. In order to elicit children's speech which depends on social skills allowing a child to join in others' conversations as well as in parental interactional speech, a context of free play with sets of age-appropriate toys was our focus. This type of context has been reported to induce "pretend" play or symbolic play (Bellinger & Gleason, 1982; Kojima, 2000; Malone & Guy, 1982; Sonoda, 1999; Tomasello, Conti-Ramsden, & Ewert, 1990). Observing "pretend" play also led us to evaluate the content of talk because the amount of utterances addressed to parents or children either within a pretend play context or outside of it may not be the only measurement of interaction skills. In addition, knowledge of what the speakers are talking about and with whom they are talking may be of help in understanding what kind of linguistic environment children are exposed to and to learn how children deal with it. For example, simple object labeling can be done repeatedly by parent and child (e. g., "What's this?" "Watermelon." "Then what is this one?" "Apple." "How about this?" "I don't know."), and this type of activity may be qualitatively different from constructing a conversational sequence using action-related words and vocabulary associated with feeling states (e. g., "Please cook dinner for us." "OK, I need a watermelon." "It looks yummy!" "You can't eat it now." "Why not?" "Because I'm going to cook it on the stove." "Oh no, are you frying watermelon?!").

Considering the rather overwhelming number of parent-child interactional speech styles,

we had to focus on a more limited range of parent-child conversational modes than originally conceived. We examined not only the quality of relations between mother and child, widely considered to be important in the development of social skills, but also the possibility that relations between other family members may also be implicated in the development of social understanding (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991). In this study, therefore, children's conversational styles in triadic interactions with elder brothers and mothers or with elder brothers and fathers during toy play were compared. Also we explored how these styles were associated with mothers' and fathers' speech to younger children.

2. Method

2-1 Participants

Ten families with two boys (M=37 month, SD=1.05 for a child aged from 2;11 to 3; 2 and M=71.3, SD=6.93 for a sibling aged from 5; 0 to 6; 7) participated in this study, which is drawn from our ongoing longitudinal study. All of the families were comprised of the parents and two male children at the time of our observation. The mother's average age was 36.3 years (range=29-44), with a mean of 13.3 years of education, whereas the father's average age was 37.3 years (range=29-45) with a mean of 14.9 years of education. All of the fathers worked full time, predominantly as office workers and regarding the mothers, none worked outside the home. Triadic family interactions (mother-child-sibling and father-child-sibling) were videotaped for 30 minutes each time while the children and the siblings were "playing house" with the mothers and "playing store" with the fathers at home at Time 2 (the same procedure had been used 6 months earlier at Time 1). The use of these toys was intended to stimulate triadic conversation with special attention paid to keeping both the children of different ages participating in the interactions with their parent (see details in Kasuya & Uemura, 2005).

2-2 Observation

The observations were carried out in the home. Videotape and audiotape recording methods were used. Parents and siblings were videotaped in their living rooms. First mothers were videotaped interacting with both children (M-sessions); then fathers were videotaped interacting with both children (F-session). We found this order made it easier for children to get involved in play in each session and also gave the fathers a little more

warm-up time. Neither parent was present during the other's interaction with the siblings. We emphasized to the parents that we wished to study "normal" interactions among a respective parent and her/his children. The parents' response to our after-session interviews, indicating that children played as normally as they did at home with a slight tension only at the very beginning of play, suggests that the attempts to minimize the intrusive effects of our presence and videotape equipment were reasonably successful. Respective periods of 10 minutes of mother-child-sibling and father-child-sibling interactions were used for the analyses in this study.

2-3 Coding and analysis

All the discourse samples were fully transcribed and all transcripts were formatted according to the CHILDES (Child Language Data Exchange System) (MacWhinney, 1995; MacWhinney & Snow, 1990; Oshima-Takane, MacWhinney, Sirai, Miyata, & Naka, 1998). Coding of the transcript was conducted in several phases in order to capture different aspects of the interactions. The first phase identified who addressed and responded to whom while the second phase of coding categorized each utterance by focusing on the types of speech. The third phase categorized each utterance as the content of talk or conversational topic. The final phase was to identify play styles. Operational definitions for these phases as parents' and children's interaction measures are as follows.

2-3-1 Parental interaction measures

1 Direction — All parents' utterances were coded for their direction (the person whom the parents addressed): younger child, older sibling, or "other", (a category which includes both children, self-directed speech, or unknown).

2 Types of speech — The types of parents' utterances include:

a) Information giving (INF); giving new and old information and stating the facts, without any intention to encourage children to do something,

b) Question (QUE); asking children simple questions without any clear implicit meanings,

c) Regulating behavior (REG); regulating children's behavior to encourage or discourage children's actions by using a form of command, a request form, disciplinary strategies, a prohibition form, and other speech acts involving children's actions,

d) Response (RES); responding to children's utterances and/or non-verbal behaviors and confirming them by repeating children's utterances, and

e) Other (OTH); none of the above categories such as back-channeling, sound effects, confirmation of their own utterances, and exact imitation of children's utterances by

a parent.

3 Conversational topic — Since the categorization of conversational topics is notoriously complicated, a working definition of this coding is simply whether parents and children referred to an object-dominated topic or an action-related topic, and the latter was further divided as follows:

a) Affective states (AFF); referring to affective, emotional and feeling states such as "It's a cute apron!" "Yummy!" "Your brother may feel sad if only you play this one," "Watch out, or you're going to burn yourself if you touch it," "Mommy is hungry!" with an emphatic tone of voice,

b) Internal states (INT); referring to action-inducing/related topics and topics of a descriptive nature such as "Go shopping at this store.", "What are you doing next?", "You are using the knife upside down.", "It's expensive, isn't it?".

c) Object reference (OBJ); referring to any objects and object-related talk (including abstract objects) such as "What time is it?" "Who likes broccoli?" (used in a game), "What sound is this stove making?" as well as "What's this?" and "It's not a pumpkin."

d) Reasoning and explaining rules and consequences (RER); referring to social rules and roles as well as inference of consequences of events and actions such as "Let your brother use the cutting board if you aren't using it.", "Don't touch it because it's too hot.", "It's your turn to be the cook.", "You should pay after your brother tells you how much this is,"

e) Other (OTH); none of the above categories such as back-channeling, sound effects, greetings, and responses.

4 Play style — This category was coded as two styles:

a) In Pretend-play (INP); this refers to utterances which were used in pretend or symbolic play, most of which were expressed in a different, sometimes exaggerated tone of voice, and

b) Out Pretend-play (OUT); this refers to an utterance used outside of play or any interactions which were not categorized as a).

2-3-2 Children's interaction measures

1 Direction — The same coding used with parental utterances was applied for all the children's utterances in each session.

2 Types of speech — The types of children's utterances include:

a) Initiation (INI); this coding is used when the child initiated the utterance, one which was not a response to the immediately preceding utterance (including the child's own

utterance),

b) Response (RES); this coding is used when the child responded to another person's previous utterance,

c) Other (OTH); this is used for utterances that fit into neither of the above two categories such as exact imitation and utterances of unknown function.

3 Conversational topic; All the children's utterances were coded for the content of their talk, similarly to the designations of parental interaction categories except for d), which was created specifically for children's utterances;

a) Affective states (AFF); referring to affective, emotional, or feeling states such as "It's OK if my brother wants to use that.", "I want to have that toy." expressed in a sad tone of voice at the end of the Japanese sentence.

b) Internal states (INT); referring to action-related or person-related topics and topics of a descriptive nature such as "It tastes better if it's grilled.", "I'll do this.", "Have you finished eating everything?" and "It's not hot."

c) Object reference (OBJ); referring to any objects and object-related talk (including abstract objects) such as "It's 6 o'clock.", "How about a knife?", and "This fish is still here".

d) Formulaic expressions (FOE); referring to any fixed phrases used as greetings and as social conventions, numerous in the Japanese shop owner-customer context, such as "Bon appetit!", "Goodbye!" ,"Thank you.", "May I help you?", "Here you are.", "No good.", "Certainly."

e) Other (OTH); none of the above categories such as sound effects, unintelligible speech, and responses.

4 Play style: The same coding used for parental utterances was applied for all the children's utterances.

Reliability for the parental and children interaction coding categories was assessed using Cohen's kappa for two families. The mean Cohen's kappa for the coding of direction was .74; for type of speech, .71; for conversational topic, .70.

Regarding analyses of the data, following the videotaped observation, we categorized child and parental utterances in the transcripts using the above coding schemes. Descriptive statistics are shown based on the mean proportion and absolute number for each of these categories for child and parental utterances respectively. Since we found maternal and paternal use of utterances directed toward the two children to be similar, we report below only results reached from analyses of the absolute numbers. For the analysis of children's utterance categories, paired-t tests were run to test the difference between M-

session and F-session. For the analysis of parents' utterance categories, a 2 (gender of parent) x 2 (addressees, child or sibling) repeated-measures ANOVA was conducted on the number of utterances each parent used in a 10-minute session. However, the statistical power of these tests is not strong because the sample size was small and the results should be interpreted cautiously. For an overly small sample, therefore, Spearman's rank order correlation was run to determine whether we can reject the null hypothesis that there is no rank-order relationship between the number of parents' and children's variables.

3. Results

3-1 Children's interaction modes

Figure 1 shows the mean frequency of children's utterances directed toward a parent or sibling in each session. As seen in Figure1, children talked to mothers more often than to fathers although this was not statistically significant and children talked to siblings more often in the F-sessions than in the M-sessions at a level of statistical significance ($M=12.9$, $SD=5.15$ for M-sessions, $M=20.1$, $SD=9.30$ for F-sessions, $t(9)=-5.15$, $p<.001$). Mean proportions of major categories selected from all the children's utterances addressed to each parent are shown in Table1. The frequency of affective states was very low, ranging from 0 to 2 addressed to parents and from 0 to 4 to siblings, so we combined the raw numbers of utterances to be compared with parents' utterances in this category shown in the latter section.

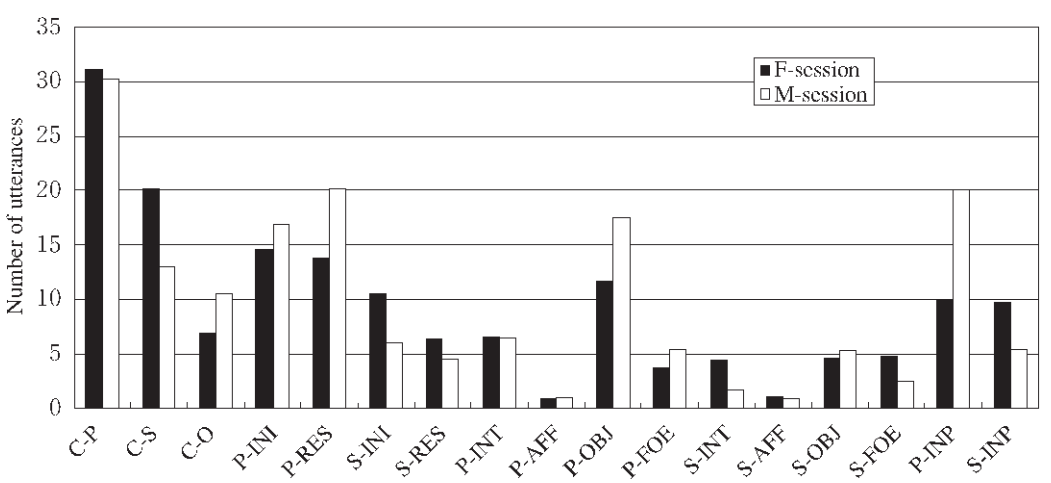

Figure 1 Mean frequency of chidren's utterances in each session

Table 1 Mean frequency of children's utterances in main discourse modes addressing each parent (%) (SD)

	Initiation	Internal state	Object ref	Formulaic	Pretend-PLY
Mother	.40(.09)	.16(.05)*	.42(.07)	.14(.08)	.48(.19)**
Father	.47(.13)	.24(.14)*	.37(.15)	.10(.10)	.27(.18)**

Paired t-test *p<.05 **p<.01

As seen in Table 1, children proportionately talked more about action-related or person-related utterances with the fathers than the mothers ($t(9) = -1.90$, $p < .05$) (although absolute numbers were almost the same), while they proportionately talked more about things in pretend play with the mothers than the fathers ($t(9) = 3.13$, $p < .01$, ranging from .16 to .72 with the mothers and from 0 to .57 with the fathers). Furthermore, regarding the siblings' contribution to this scenario at each session, Figure 2 illustrates proportions of children's utterances during pretend play addressed to parents or siblings.

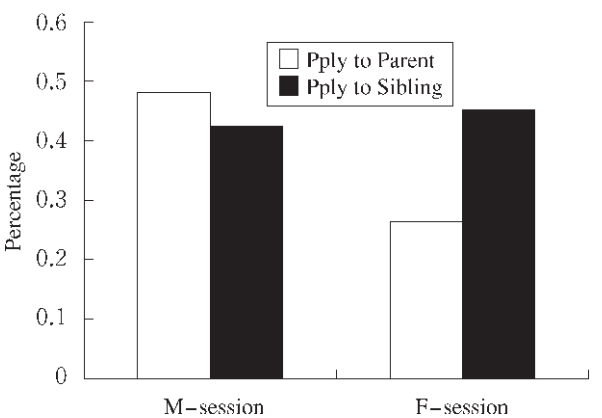

Figure 2 Mean proportions of children's utterances for pretend play addressing parents or siblings

Children played in pretend play with the mother (48%) and sibling similarly (42%) proportionately, while they played with the sibling (45%) proportionately more frequently than with the father (27%). In other words, children played with the mothers relatively often but in the father's session they played more with the siblings. This finding was consistent with our previous results where a greater frequency of exclusive sibling talk (more than 4 conversational turns) was observed in the fathers' sessions than in the mothers' sessions. We need to find out what parents' discourse modes were like, which may help to explain why the children behaved differently in each session.

3-2 Parents' interaction modes

Figure 3 shows the mean frequency of parents' utterances. Both mothers and fathers appeared to direct their utterances more toward younger than older siblings on average although there was no significant difference between mothers' and fathers' mean utterances directed toward each child (M=63.0, SD=26.84 for Mother to Child; M=50.6, SD=17.08 for Mother to Sibling; M=63.1, SD=26.81 for Father to Child, M=47.4, SD=18.62 for Father to Sibling). We also found individual differences with each parental direction toward each child: there were two types, a parental congruent type where both parents directed utterances more toward one child than the other and a parental differential type where each parent directed utterances toward one child differently than toward the other. The details regarding these types are shown in Table 2.

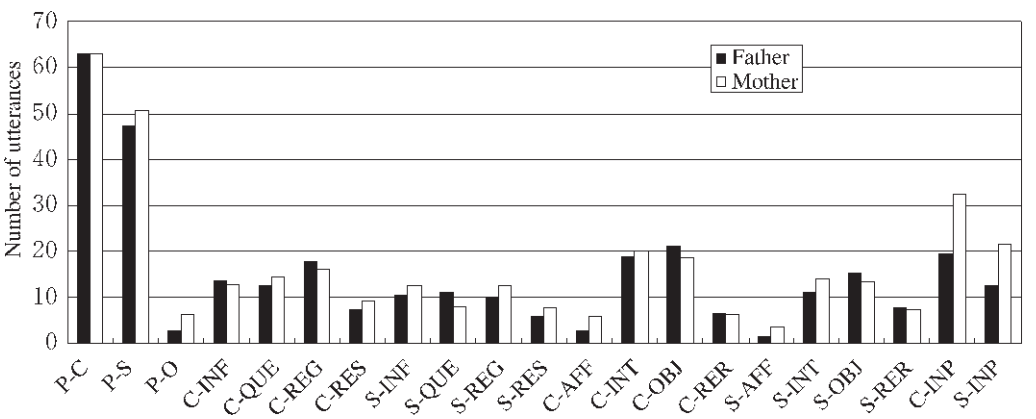

Figure 3 Mean frequency of parent's utterances

Table 2 Parental direction types in each family

Types	Parents	Directions	Families	Significant level
Congruent	Mother=Father	Child>Sibling	DK, RH, UI, WS*1	*1 $\chi^2=4.08$, $p<.05$
	Mother=Father	Child<Sibling	DT, NH	
Differential	Mother Father	Child>Sibling Child<Sibling	YA*2, ZI	*2 $\chi^2=5.72$, $p<.05$
	Mother Father	Child<Sibling Child>Sibling	MH*3, SY*4	*3 $\chi^2=19.09$, $p<.05$ *4 $\chi^2=4.50$, $p<.05$

Six families can be labeled as congruent families, four of which directed utterances more to children than siblings although only one case reached a statistically significant level, while three out of four differential families showed a significantly different utterance

direction toward each child. Since the number of families was too small to proceed with further analyses according to this type of categorization as opposed to mother-father comparison, we are certainly considering further study with this as we continue to add more participating families.

As seen in Figure 3, the mean numbers of parents' utterances in main interaction modes addressed to the child and sibling were similar but some significant differences emerged. Mothers talked much more in pretend play with the children than with the siblings and also more than fathers did ($F(1,9)=4.15$, $p<.05$ for C>S direction effect and $F(1,9)=6.58$, $p<.05$ for session effect). This finding may explain why the children turned to play with the siblings more in the father's session than in the mother's session since fathers did not appear to be willing to talk with the children in the play. Moreover, both mothers and fathers engaged in more regulating behavior with the child than with the older sibling; in particular fathers used regulating behavior directed toward the children significantly more than toward the sibling, ($M=17.7$, $SD=7.96$ to the children and $M=9.8$, $SD=6.60$ to the sibling, $F(1,9)=5.62$, $p<.05$). These facts suggest that children at this age still need to be taken care of by both parents when playing with others. Also there is the suggestion that fathers more than mothers may need to control children's behavior when playing together with children since the fathers may not be able to play peacefully with the children otherwise.

Mothers displayed more feelings and affective states when addressing both children (according to combined data for the two children) than fathers did ($M=9.2$, $SD=5.47$ for mother, $M=4.1$, $SD=3.25$ for father, $t(9)=2.53$, $p<.05$), as seen in Figure 4.

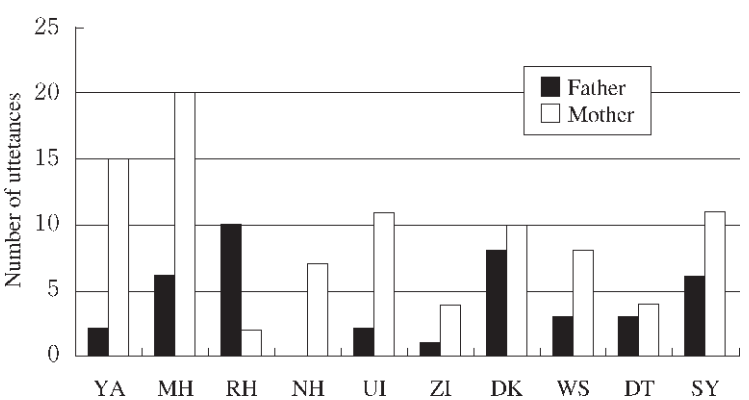

Figure 4 Parents' utterances related to affective states

In order to see how the frequency of these parental affective states was associated with

that of children, Spearman's rank-order correlation was used and revealed rs=.524, approaching a significant level. There was a mildly positive correlation between mothers' and children's affective states, as seen in Figure 5, while there was no such correlation for fathers.

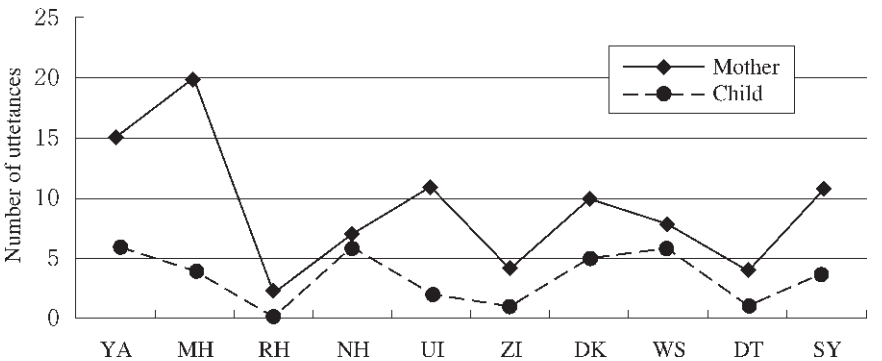

Figure 5 Mothers' and children' total number of utterances related to affective states

These findings suggest that the mothers' triads may create an encouraging atmosphere for the children to feel at ease enough to express more feeling states and this association that encourages the expression of feelings can be bidirectional; because of children's frequent verbal expression of affective states their mothers would have been encouraged to verbally express theirs as well.

3-3 Correlations between parents' and children's interaction modes

Table 3 shows the results of Spearman's rank-order correlation. There were similar categories (pretend play and object reference) associated with one another in both parents' interaction modes but the category of regulating behavior was related to only the mothers' correlation tables, while information giving was associated only with the fathers' tables. The finding may suggest that mothers should use more action-related activities using object reference during pretend play, whereas fathers should get involved in stating some object-related information during pretend play. Regarding an association between parents' and children's interaction modes, we found that mothers' reasoning and explanation of rules and the consequences of actions were associated with children's use of object reference directed to the parents, while fathers' association with the children was rather direct as fathers' object reference was associated with children's object reference.

Furthermore, the more mothers talked during pretend play, the more children engaged in pretend play or vice versa, whereas this association was not observed in the fathers'

Table 3 Spearman's rank-order correlation between parents' and children's interaction modes

	Interaction Category	r_s
Within Mother	Pretend play In ↔ Regulating behavior	.818**
	Regulating behavior ↔ Object reference	.788*
	Object reference ↔ Pretend play In	.715*
Between Mother and Child	M's Reasoning and rules ↔ C's Object reference	.873***
	M's Pretend play In ↔ C's Pretend play In	.700*
Within Father	Information giving ↔ Object reference	.933****
	Pretend play In ↔ Information giving	.758*
	Object reference ↔ Pretend play In	.673*
Between Father and Child	F's Object reference ↔ C's Object reference	.924****
	F's Information giving ↔ C's Object reference	.845***

*p＜.05 **p＜.01 ***p＜.005 ****p＜.001

sessions. Additionally, the more the fathers engaged in object reference talk, the more the children did so as well and vice versa, though this situation did not occur in the mothers' sessions.

3-4 Examples of parents' and children's interaction

We may summarize some of the stylistic differences in mothers' and fathers' discourse modes by presenting examples below. In Example 1, the mother tried to distract the child and stop him from continuing his demands to get his turn to use the stove the sibling was using. She did this by explaining the situation and what would happen consequently after the child did a new thing, "going to kindergarten" (lines 5, 11, 13, and 15). The child was persistent with his demands (lines 4, 8, and 10) and refused to accept his mother's offer (line 6) but was eventually persuaded by the mother's skillful distracting technique (line 16) and happily said goodbye (line 18). The child would have had a conflict with the sibling directly over the use of the stove unless the mother had intervened to prevent a possible dispute.

Example 1: Mother-child-sibling triad (YA)

1CHI :	I want to do this (pointing at what the sibling is doing in front of the stove).
2MOT :	(to SIB) SIB, why don't you let CHI use the stove for a while?
3SIB :	No.
4CHI :	Take turns (using children's way of expression).
5MOT :	Right, well then CHI, please go to kindergarten first, carrying this with you (giving a toy box to the child).
6CHI :	(Refusing the offer) Take turns.
7MOT :	Take turns, right.
8CHI :	This (pointing at the stove).
9MOT :	Yeah, right.
10CHI :	First..
11MOT :	Well, since your brother is now using it first....
12CHI :	Yeah.
13MOT :	You go to kindergarten first and then you'll have your turn to use it when you come back.
14CHI :	0.
15MOT :	You go to kindergarten, have lunch there, and come back.
16CHI :	OK.
17MOT :	Goodbye (the farewell regularly said in Japanese by the person remaining behind, to someone leaving his own home).
18CHI :	Good-bye (the farewell regularly said by someone leaving his own home to the person remaining behind)

In Example 2, on the other hand, the father tried to control the sibling to make the child feel content but failed. The father repeatedly (lines 6, 10, 12, 14, and 19, "Just lend him the money") told the sibling to give the child all the money the sibling insisted on keeping. However, the father did not provide some comprehensible reasons why the sibling had to give away all the money. The child, on the other hand, appeared to try to get all the money that the sibling had (lines 1 and 18), a demand which was simply supported by the father. The ways in which the father interacted with the child and the sibling did not seem to solve the problem. In this example, the child eventually shouted about the ownership of every toy and the sibling became angry (lines15 and 21) and felt dispirited after having to obey the father's order about the unfair treatment. However, the children may learn that events won't necessarily develop as they wish in situations where they don't receive explicit explanations that they understand.

These findings suggest that the children seem to have their social skills challenged more in the father-sibling triads than in the mother-sibling triads and the differing maternal and paternal roles regarding nurturing behaviors appear to be created in the dynamics of triadic discourse.

Example 2: Father-child-sibling triad (SY)

1CHI: I want to use all (the money).
2FAT: But you don't shop at all, CHI.
3CHI: Err.
4FAT: Are you going to shop with the money if you have it all?
5CHI: Yeah..
6FAT: SIB, lend him the money for a while.
7SIB: Why?
8FAT: He is going to shop, he said he would shop now, so...
9SIB: 〈Shopping..., shop this...〉 [>].
10FAT: 〈Just lend it to him〉 [<].
11SIB: 〈This is not the money, not that money〉 [<]
12FAT: Just lend him.
13SIB: Uhhh.
14FAT: SIB, please lend him the money.
15SIB: OK (throwing the money on the floor).
16FAT: (To CHI) All right, all this money is yours.
17FAT: Then, go shopping for something with this money please.
18CHI: 0 (coming closer to SIB in front of the cash register and trying to use the register).
19FAT: (To SIB who is holding the cash register) Let him use it, let him use it, 〈please let him use it for a while〉 [[>]
20CHI: 〈Ahh ahh ahh〉 [<].
21SIB: I've had enough of this!

4. Concluding discussion

The results of this study indicated that there were parental differences in the types of linguistic input (e. g., M>F for P-ply, C>S for mother's P-ply, C>S for father's Regulating behavior) and the content of family interaction (e. g., M>F for Affective states) during toy play although individual differences among families also emerged. There were some variables in interaction modes which were demonstrated by both parents in a similar manner in the areas of "object reference" and "internal states." As for the results dealing with children's discourse modes, we found that children talked to their siblings in the father's session considerably more than in the mother's session but they talked in the pretend play more with the mother than with the father. All in all, the rank-order relationship between children's and parents' interaction variables suggests that mothers' reasoning and explaining rules and pretend play variables were associated with children's object reference and pretend play. On the other hand, fathers' object reference and information-giving were associated with children's object reference.

These findings imply that both mothers and fathers may need to interact with the younger child more often than the elder one. However the mothers' styles of interaction tend to be more explanatory and addressed directly to the child, encouraging him to get involved in the pretend play. The fathers, though, also encourage both children to play with the toy by giving more object-related information, which is directed toward the siblings relatively more often. As a result, the children had more opportunities to turn to their siblings to talk as compared with opportunities for talking with the fathers. One of the reasons for this situation would be that fathers talked to the children less than the mothers did. It may be plausible that fathers provide a special training environment for their children, an environment where interactional patterns between parents and children are mutually reinforced and, over time, become generalized to the sibling relationship and possibly to peer relationships later outside the home. The significance of factors such as siblings' ages and interaction roles in contributing to these differences has been reported elsewhere (Kasuya & Uemura, 2004). The point to be emphasized in this study is that children grow up in a family; they not only respond to remarks addressed directly to themselves, but also attend to and join in conversations among other family members. Rather than looking for simple cause-effect patterns we have had to turn to examine the effects of a network of family relationships on the child's development.

In Brown and Dunn's study (1992), among other studies, it was found that mothers talked about the child's feelings more often than they (mothers) talked about the siblings' feelings. In this study, we found that mothers' use of language describing feeling states was mildly correlated to the children's use of language related to feeling states although the absolute number was too small to show this tendency statistically. Also, the toys used in this study did not seem to stimulate many emotional states. The use of language related to feelings may be highly activity-dependent.

The findings from this study are limited in several aspects. It cannot be determined from this data set whether parental interaction behaviors influenced the children's behaviors, or vice versa. This direction of effect issue should be examined in future studies. Secondly, only same-sex children were included, not allowing a test of the often-proposed hypothesis that fathers treat sons and daughters differently though mothers' treatment of children doesn't differ with the child's gender (Parke, 1987). In our data set, we do have sister pairs as well as brother-sister and sister-brother pairs so the issue of children's gender would be the next aspect of triadic family interactions to be explored. Thirdly, in cases where mothers had full-time jobs, something which did not occur in this study, the bridge hypothesis could be interpreted differently since these working mothers would be

spending less time sharing everyday activities with children as compared with jobless mothers. The resultant lack of mother-child shared knowledge could encourage children to talk explicitly and elaborately, just as they had to do with the fathers in the present study. Exactly how mothers' job statuses as well as the presence of fathers at home can be related to children's pragmatic language development within the framework of the bridge hypothesis is beyond the scope of the present study. However, these relationships should be explored in the future to fully understand children's language socialization. Finally, the issue of how far language experiences are related to the conceptual development reflected in children's growing understanding of "other minds" has been of interest to us. Being in a triadic context where, for instance, joining in others' conversations with relevant comments related to an ongoing conversational topic, certainly requires intuiting and understanding other people's thinking. It is a reasonable hypothesis that family conversations about why people behave the way they do may foster the development of children's understanding of the connection between others' thoughts and beliefs and their behavior.

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