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THE DEVELOPMENT OF AUTONOMY IN PRESCHOOL MANDARIN CHINESE-SPEAKING CHILDREN'S PLAY NARRATIVES

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This paper aims to examine to what extent preschool Mandarin Chinese-speaking children can create an autonomous replica play narrative. Twenty-four Taiwanese children, 12 four-year-olds and 12 six-year-olds, participated in this study. The focus of investigation is on the linguistic resources (i.e., temporal and referential devices) the children use to maintain story lines and to mark shifts between types of talk in replica play. Developmental shifts are evident in these children's use of temporal and referential devices to build up a coherent play narrative. The four-year-olds exhibit a great difficulty sustaining their narrative talk, making use of temporal devices, and managing reference in their replica play. The six-year-olds, in comparison, use clearer reference and more temporal and causal connectives, but their ability to achieve autonomy in play narratives is limited. Developmental differences found in this study, in general, accord with crosslinguistic results.

INTRODUCTION

Children as young as two or three years old are able to participate in narrative activities such as the sharing of personal experiences, retellings of stories, and make-believe play with support from caregivers (Sachs, 1982). In performing narrative tasks, children require autonomous narrative skills: the ability to produce a coherent text without relying on immediate physical and social context (Olson, 1977; Snow & Dickinson, 1991). Extensive research suggests that the ability of preschool children to construct autonomous narratives is

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highly related to later academic success and literacy performance (Feagans, 1982; Michaels, 1981; Snow, 1983; 1991; Snow & Dickinson, 1991). Therefore, it is important to investigate the extent to which preschool children can perform autonomous narrative tasks.

COHESION IN NARRATIVES

A challenging task for young children in constructing narratives is to maintain cohesion. Narrative cohesion is achieved through joined use of linguistic devices (e.g., anaphoric, connectives etc.) which link a span of sentences together as a whole (Bamberg, 1987; Halliday & Hasan, 1976; Hickmann, 1980, 1991; Karmiloff-Smith, 1980, 1981). According to Halliday and Hasan (1976), techniques for creating cohesion in English include reference (e.g., pronominals, demonstratives), substitution (e.g., *one, the same*), ellipsis, conjunctions (e.g., *and, but, then*), and lexical cohesion. In order for text to be cohesive, these intralinguistic devices must be coreferential to another textual element and thereby constitute a "tie" (Halliday & Hasan, 1976).

Making reference within intralinguistic contexts to produce a cohesive narrative is very difficult for children younger than five years old. In Karmiloff-Smith's research on English- and French-speaking children aged four to nine (1980, 1981), she found that small children typically used pronouns deictically rather than anaphorically in their narratives. The four-year-olds' referring expressions in her study were usually accompanied by deictic elements (e.g., *here*, *there*, etc.) and paralinguistic gestures (e.g., pointing, eye gaze, etc.). Only when children get older does anaphoric pronominalization occur. Similar results were also found in the studies of Japanese-speaking children (Clancy, 1982 cited in Shapiro & Hudson, 1991). Different discourse contexts (introduction, subject switch, same subject), in Clancy's terms (1992), evoke different referential choices. To use appropriate referring expressions for different discourse contexts is particularly difficult for young children. In English, the appropriate referential expression to mention a referent that is first introduced is an indefinite article and a full noun phrase. In Karmiloff-Smith's study of English- and French-speaking children (1980, 1981) and Bamberg's study of German-speaking children (1987), however, they found children of four years of age tended to use pronouns or definite nominals rather than full noun phrases or indefinite articles to identify the referent that is first mentioned. As for successive and switch reference, three- and four-year-old German- and English- speaking children tended to use pronouns (Bamberg, 1987; Hickmann, 1980). The default strategy for referring to the same subject for Japanese-speaking children, however, was ellipsis (Clancy, 1992). The difference suggests children speaking different languages might use different linguistic devices for successive mention of the same referent.

Besides reference, another important type of linguistic marking for achieving cohesion in narratives is connectives. In comparison to other types of texts, connectives occur particularly frequently in narratives (Peterson & McCabe, 1988). Connectives describe the coordinating, temporal, enabling, causal, and/or antithetical relationships between clauses. Peterson and McCabe (1991) found children by three and half years of age have already used the connectives such as *then*, *and*, *so*, *because*, and *but* in their narratives. The most frequent connective found in narration in their study was the sequencer *then* (Peterson & McCabe, 1991). Berman and Slobin (1994) also found that over two-thirds of the English nine-year-old children introduced their clauses by the sequential marker "(and) then."

AUTONOMY IN PLAY NARRATIVES

The focus of this study is on pretend play narratives. Play narration, like personal narratives, is an early-emerging form of extended discourse (Wolf, 1993). Several researchers discovered that language used in pretend play was similar to decontextualized, literate use of language (Garvey & Kramer, 1989; Guttman & Frederiksen, 1985; Pellegrini, 1982, 1985; Pellegrini & Galda, 1991; Wolf & Pusch, 1985).

During episodes of pretend play, children play several different roles displaying separate voices: the voices of actors, narrators, directors, stage managers, etc. (Wolf & Hicks, 1989). A distinctive characteristic of pretend play is that it involves interplay of various types of talk or voices, such as talk about event narration, talk about character speech, talk about stage-managing, etc. (Wolf, Moreton, & Camp, 1994). These different modes of speaking can be categorized into two types: narrative talk ("there-and-then" talk or talk within a fantasy story world) and non-narrative talk ("here-and-now" talk or talk about the immediate physical, social context and non-fantasy concerns).

Cohesion of play narrative, like that of other extended discourse, is achieved by appropriate use of referential strategies, temporal expressions, and connectives. In English, for example, first and second person pronouns usually occur in the talk that involves face-to-face interaction such as character speech and stage-managing talk. Third person pronouns, on the other hand, predominate in talk about event narration because events are usually narrated from the omnipresent third person point of view (Wolf et al., 1994). Temporal (e.g., *after*, *before*, *at the same time*) and sequential (e.g., *and*, *then*, and *then*) connectives are commonly used in narrative because they link temporally ordered events together as a whole. Occurrences of these linguistic devices also mark transitions of types of talk (Wolf et al., 1994). English-speaking children by age three are found to be able to differentiate types of talk by marking different voices in each type of talk (Wolf & Hicks, 1989). Preschool children find it more challenging, however, to make references which are internal to the text and use correct connectives to construct an autonomous play narrative.

Furthermore, autonomy of play narrative is manifested in the ability to sustain narrative talk in the fantasy world and to protect the replica play from interruptions from the real world, such as trouble with props, intrusions, etc. (Wolf & Pusch, 1985). Wolf and Pusch (1985) found that children by the age of five are aware of the importance of independence of text and context. Encountering interruptions during pretend play, they either ignore or transform the intrusive events. Nevertheless, preschool children are still struggling to sustain narrative talk and quickly shift back from non-narrative talk to narrative talk for the purpose of maintaining the continuity of the replica play.

Previous study of narrative development has primarily focused on English and other European language speakers (Applebee, 1978; Berman & Slobin, 1994; Peterson & McCabe, 1983; Wolf, 1993). Worldwide, more than one billion people speak Mandarin Chinese, but little is known about how Mandarin-speaking children develop narrative skills in the preschool years. This study, accordingly, extends the field of narrative study to Mandarin-speaking children.

This study is designed to answer the following two research questions:

1. What linguistic resources do young Mandarin Chinese-speaking children use to tell a coherent play narrative while marking shifts between "there-and-then" and "here-and-now" talk in replica play?
2. What developmental shifts between ages four and six are evident in these children's ability to establish and maintain a coherent play narrative?

Based on the previously reviewed study on narrative development, three general hypotheses are built up: (1) Due to different levels in linguistic and cognitive development, narrative talk should occur more frequently and be sustained for longer periods of time in the replica play of the six-year-olds than in the play of the four-year-olds. (2) Because in narrative, events are temporally sequenced, more temporal devices should occur in narrative talk than in non-narrative talk. The six-year-olds should employ more temporal devices in their narrative talk than the four-year-olds. (3) Maintaining referential clarity is a challenging task for young children. Therefore, there should be more deixis and referential ambiguities in the play talk of the four-year-olds.

METHOD

Sampling and Subjects

One group of 12 four-year-old children (mean age: 4; 1) and one group of 12 six-year-old children (mean age: 6; 0) recruited from a kindergarten in Taiwan, participated in this study. In order to offer a balanced sample, half of the children selected were girls and half were boys. The children came from middle class, often highly-educated families, and were native speakers of Mandarin Chinese without any speech or hearing problems. They were selected by the teachers from two classes classified by age.

Procedures and Data Collection

Each subject was interviewed individually in a room outside the classroom. Following the same procedures employed in Hemphill and Wolf's research on narrative development in English-speaking children (Hemphill et al., 1994), the experimenter presented the child with a set of toy animals and props, including a lion family (a daddy lion, a mommy lion, and two baby lions), a bird, a purple elephant, felt pieces for a pond, three plastic trees, and a jungle backdrop from a bag. Then the child was asked to help the experimenter set up the jungle. After the setting up session, the experimenter initiated the first narrative prompt:

> The other animals all teased this elephant because he is purple. The baby lion says, "You're so ugly. You are like a giant purple grape." What do you think the other animals were saying to the elephant?

After the child's responses, the second prompt was given with presentation of the dragon:

> One day the animals were all in the jungle. Suddenly they heard a very loud noise. Boom, Boom, Boom. Do you know what it was? It was a big dragon (take out the dragon). The dragon came right into the pond, and he would not let the animals swim in the pond or drink in the pond or do anything. What do you think happened next?

Then the child was asked to continue the story while playing.

The primary purpose of this study is to examine the child's monologic performance. However, play, in nature, is interactive (Garvey, 1990). In order to preserve the interactive quality of play, the experimenter offered responses like "uhhuh," "and then," "what happened next," but did not ask any leading questions or supply any information for the child. The whole process of performing the task was audiotaped and videotaped.

Transcription

The Codes for the Human Analysis of Transcripts (CHAT) conventions of the Child Language Data Exchange System (CHILDES) were used to transcribe all language and corresponding actions from the audio and video tapes initially in Chinese characters. All the transcripts then were transliterated into romanization following *pinyin*[1] system so that the Child Language Analysis (CLAN) software program could read and analyze them (MacWhinney, 1995; MacWhinney & Snow, 1985, 1990).

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[1] *Pinyin* is the transcription system adopted in the People's Republic of China. It is a widely used system in scholarly writings on Chinese in the West (Li & Thompson, 1981) In this paper, examples and excerpts are English translations. *Pinyin* and Chinese character versions are available upon request.

Categories of Analysis

Each child's speech was broken down into clauses and then coded from the first narrative prompt until the end of the text. According to Berman & Slobin (1994), the clause is defined as "any unit that contains a unified predicate" which "expresses a single situation (activity, event, or state)" (p. 657). Their definition of clause is applicable to Mandarin Chinese sentence construction in general so the data were coded following their clausing rules.

Four coding systems, i.e., types of talk, temporal devices, referential strategies, and discourse contexts, were designed to answer the research questions.

Types of talk

Twelve types of talk were categorized from the transcripts using an adaptation of a coding system previously developed to analyze lines of talk for the same replica play jungle task (Wolf et al., 1994). The main codes with definitions and examples are listed below:

Narrative talk. Talk about the fantasy story world ("there-and-then" talk), including:

(1) Event Narration: talk about events or actions that advance the plotline in the story (e.g., He returned to the jungle again.)

(2) Descriptive talk: talk about descriptive or durative information related to who/what is involved in the narrated events and where/when the events take place (e.g., He was on the tree.)

(3) Evaluation: talk about internal states (expressions of emotions, cognition, and physical states), intentions (want, hope), compulsions (have to, must), or explicit negatives (not) (e.g., All the lions did not like to play with the elephant.)

(4) Character Speech: talk about direct or reported character speech told by the child as a character in the story (e.g., Then the dragon said, "why is your color so ugly?")

(5) Closing: talk which serves to mark an explicit termination or resolution of the plot (e.g., The dragon would never come back.)

Non-narrative talk. Talk about the immediate physical and social context and non-fantasy concerns ("here-and-now" talk), including:

(1) Real World Knowledge: talk about general knowledge in relation to the materials or the task (e.g., There is also an elephant in the zoo.)

(2) Meta-narrative talk: talk about predications or evaluations of plot elements (e.g., (It) is funny (that) this died.)

(3) Off Task: talk which is very clearly off the task, including random personal anecdotes and intrusions of the reality of the tale's construction (e.g., Don't you have Santa Claus?)

(4) Response: talk which refers to responses to experimenter's queries or narrative prompts for the purpose of keeping the conversation going, not adding new information to the narrated story (e.g., Experimenter: You tell the story while playing, okay? Child: Okay.)

(5) Task: talk about here-and-now world of task, props, and animal figures, such as setting up materials, labeling objects by their attributes, questions about props, task, and narrative prompts (e.g., Why there was a pearl on his tongue?)

Temporal devices

Adapted from Erbaugh's (1992) and Li and Thompson's (1981) analyses of temporal categories in Mandarin Chinese and developed from the actual data, four main categories for time reference were classified:

(1) Temporal connectives

Temporal connectives are temporal conjunctions or adverbs for linking events or states, such as *before*, *when*, *afterwards*, *finally*, *as soon as*, *from then on*, *one day*, etc.

(2) Causal connectives

Causal connectives are causal conjunctions or adverbs for linking events or states, e.g., *because*, *so*, *as a result*, *but*, *if*, etc.

(3) Sequencers (sequential connectives)

Sequencers in this study refer to connectives that forward sentence-linking elements only (Li & Thompson, 1981), including three connectives, *then*, *then ... later*, *and then* (*later then*).

(4) Aspectual expressions

The aspect category includes aspectual morphemes, e.g., *-le5* (past or perfective marker) and extended aspectual expressions, e.g., *already*. These temporal devices form part of a larger group, which includes perfective (*already*, *-le5* past or perfective marker, *-guo4* perfective marker) and durative markers (*zai4*, *zhe5*), inceptive (*kai1shi3*),[2] etc.

Referential strategies

This coding system is to capture the linguistic devices Mandarin-speaking children use to introduce and maintain reference in the replica play. In order to fully understand what device the children used to mention each referent, the references occurring in subject, topic, and object positions were all coded.[3] Adapted from Li and Thompson's analyses of referential strategies in Mandarin Chinese (1981) and developed from the actual data, five referential categories were classified: (1) noun phrases,[4] (2) pronouns (first/second

[2] *-le5* is a marker for perfective aspect and past tense, and it occurs either after a verb (verbal *-le5*) or at the end of a sentence (sentential-*le5*). The word *zai4* and the suffix *-zhe5* are markers that signal the durative nature of an event in Mandarin (Li & Thompson, 1981, p. 216). The use of *zai4* or *-zhe5* depends on the semantic content of the concurring verbs. *zai4* indicates the durative aspect of an ongoing action and *-zhe5* denotes "postures or physical disposition of an entity at a location" (Li & Thompson, 1981, p 219) or the continuance of a state resulting from the operation of an action verbs.

[3] Mandarin Chinese is characterized by a topic-prominent nature. A topic in Mandarin is not a subject. According to Li and Thompson (1981), a topic is "typically a noun phrase (or a verb phrase) that names what the sentence is about, is generic or definite, occurs in sentence-initial position, and may be followed by a pause or a pause particle" (p. 87). A subject is "the noun phrase that has a 'doing' or 'being' relationship with the verb in that sentence" (p. 87).

[4] In other studies of referential devices (Bamberg, 1987; Hemphill et al , 1991; Karmiloff-Smith, 1980, 1981), the use of definite articles + nominals and indefinite articles + nominals are seen as reflecting specific versus nonspecific reference. In this study, however, they are not regarded as two separate categories because Mandarin does not have words that correspond to

and third person pronouns), (3) ellipses,[5] (4) deixis,[6] and (5) referential ambiguities.

Discourse contexts

This coding system is designed to examine in what discourse context a referent is mentioned (Clancy, 1992). As previous research shows (Bamberg, 1987; Hickmann, 1980, 1991; Karmiloff-Smith, 1980, 1981), different discourse contexts elicit different referential choices. Three discourse contexts are categorized following Clancy's (1992) coding scheme: (1) introduction (first mention of the referent), (2) continuance (successive mention of the same referent that has been referred to by the immediately prior clause), and (3) shift (reference back to an entity that has been mentioned).

Reliability of Coding

Two transcripts randomly selected from each group were coded by another native Mandarin speaker. Cohen's kappa statistic was used to estimate the corrected-for-chance agreement for each of the coding systems. Inter-rater agreement results are 93% for types of talk coding, 100% for temporal devices coding, 91% for referential strategies coding, and 94% for discourse contexts coding.

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determiners in English, i.e., "a" and "the" (Li & Thompson, 1981). Unlike English and other Indo-European languages in which the use of determiners is obligatory with nominals (Hickmann, 1991), in Mandarin determiners are not obligatory and nominals without determiners can be understood as definite or indefinite depending on the context.

[5] A striking feature of Mandarin Chinese reference is that zero anaphors can be used in any contexts when what is referred to can be understood by the hearer (Li & Thompson, 1981). These contexts include multiple actions ascribed to the same agents, referents that are understood from having been mentioned, etc.

[6] Deixis is direct reference to the characteristics of the situation in which an utterance takes place. In this study, no matter what linguistic form (demonstratives, ellipses, or pronouns) the child used to mention a referent, if the identification of the referent is established through a "here-and-now" strategy (e.g., holding up the animal or pointing to the animal) and the reference functions deictically, that reference is coded as deixis.

TABLE 1
Means and Standard Deviations of Total Number of Words, Total Number of Different Words, Type-token Ratio, Total Number of Utterances, Mean Length of Utterances, and Total Number of Clauses by Age Group

	Four-year-olds ($n = 12$)		*Six-year-olds* ($n = 12$)		
Variable	M	SD	M	SD	t
Total number of words	354.17	290.91	543.25	301.57	−1.56
Total number of different words	107.67	57.66	142.83	51.89	−1.57
Type-Token ratio	0.36	0.08	0.31	0.10	1.40
Total number of utterances	86.92	62.51	89.00	53.49	−0.09
Mean length of utterances	3.80	0.84	5.81	1.58	3.90***
Total number of clauses	92.00	69.64	114.00	62.59	−0.81

*** $p < 0.001$

RESULTS

Quantitative Findings

Basic Length Measures. FREQ, MLU, and MLT programs of CLAN were used to compute several basic length measures of the child's utterances. Table 1 lists the results of these calculations:

As Table 1 shows, except for the mean length of utterances (MLU),[7] there was no significant difference in total number of words (morphemes), total number of different words, type-token ratio, and total number of clauses between the four-year-olds and the six-year-olds. T-tests also showed that gender did not significantly affect any of the length measures.

Types of Talk. In the replica play of the four-year-olds, the proportion of total narrative talk and the proportion of total non-narrative talk were the

[7] Mean length of utterance (MLU) computes the ratio of morphemes to utterances. It is regarded as an important measure of level of language development (Brown, 1973) because it can capture the added components of words, such as plurals and past tense. Mandarin Chinese is not an inflected language so one word is counted as one morpheme. What MLU measures in this study, therefore, is actually the ratio of words to utterances.

TABLE 2
Distribution of Types of Talk as a Proportion of Total Clauses by Age Group

Variable	*Four-year-olds* ($n = 12$) M	SD	*Six-year-olds* ($n = 12$) M	SD	t
Total non-narrative talk	0.46 (41.92)	0.19 (35.80)	0.20 (21.08)	0.16 (20.81)	3.56**
Total narrative talk	0.46 (42.67)	0.21 (37.30)	0.76 (88.25)	0.22 (56.18)	−3.44**
Character speech talk	0.06 (9.00)	0.10 (16.91)	0.15 (22.92)	0.18 (34.34)	−1.51
Closing talk	0.004 (0.42)	0.01 (1.44)	0.01 (1.00)	0.02 (0.74)	−1.76
Descriptive talk	0.03 (3.25)	0.03 (4.07)	0.06 (5.75)	0.05 (5.19)	−1.55
Evaluative talk	0.08 (8.67)	0.06 (9.15)	0.14 (13.00)	0.10 (7.87)	−1.70
Event talk	0.26 (19.92)	0.14 (12.57)	0.37 (42.17)	0.13 (23.16)	−1.97*
Narrative unclassifiable talk	0.02 (1.42)	0.02 (1.98)	0.02 (3.42)	0.03 (6.61)	−0 65
General knowledge	0.02 (2.00)	0 01 (2.17)	0.002 (0.42)	0.01 (1.00)	4.15***
Meta-narrative talk	001 (0.17)	0 004 (0.39)	0.0008 (0.17)	0.003 (0.58)	0.49
Off task talk	0.10 (10.17)	0.10 (18.07)	0.04 (5.58)	0.05 (8.27)	1.85
Response talk	0.18 (15.00)	0.10 (11.00)	0.09 (6.92)	0.11 (4.03)	2.07*
Sound effect talk	0.10 (8.50)	0.13 (10.05)	0 06 (6.50)	0.11 (11.90)	0.89
Task talk	0.15 (14.58)	0.11 (14.58)	0.07 (8.00)	0.09 (12.17)	2 15*
Unclassifiable talk	0.08 (7.08)	0.08 (6.50)	0.04 (4.17)	0.08 (8.39)	1.31

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Note. Actual frequencies are given in parentheses.

same (see Table 2). In comparison, in the play of the six-year-olds, 76% of the clauses were narrative talk but only 20% were non-narrative talk. The contrast between the two age groups in frequency of narrative talk and in frequency of non-narrative talk is striking and significant and confirms my first hypothesis. As for frequency of each specific type of talk, there was a significant difference in event talk, in talk about general knowledge, in talk concerning responses to the experimenter's queries or prompts, and in talk about the task between the two age groups.

In terms of length of talk, although the four-year-olds ($M = 13.50$ chains) produced more chains of narrative talk than the six-year-olds ($M = 10.83$ chains), the difference was not significant ($t = 0.66$, $p < 0.52$). The average length per chain in narrative talk in the four-year-olds ($M = 3.21$ clauses), however, was much shorter than that in the six-year-olds ($M = 12.22$ clauses)

TABLE 3
Distribution of Temporal Devices as a Proportion of Total Words in Narrative Talk by Age Group

	Four-year-olds ($n = 12$)		*Six-year-olds* ($n = 12$)		
Variable	*M*	*SD*	*M*	*SD*	*t*
Total temporal devices	0.10 (15.58)	0.05 (10.89)	0.12 (53.00)	0.03 (28.75)	−1.49
Aspectual expression	0.06 (8.17)	0.05 (5.64)	0.03 (13.00)	0.02 (7.76)	1.81
Causal connective	0.003 (1.00)	0.007 (1.60)	0.01 (4 92)	0.01 (5.53)	−2.04
Sequencer	0.02 (5.00)	0.02 (5.41)	0.06 (30.25)	0.02 (21.60)	−4.06**
Temporal connective	0 005 (1.42)	0.006 (1.93)	0.01 (4.83)	0.01 (5.37)	−2.06*

$^{*}p < 0.05$, $^{**}p < 0.01$.
Note. Actual frequencies are given in parentheses.

and there was a significant difference between the two age groups ($t = -3.21$, $p < 0.008$).

Within groups, in the replica play of the four-year-olds, the average length of narrative chains ($M = 3.21$ clauses) and the average length of non-narrative chains ($M = 3.24$ clauses) were almost the same. Yet, in the replica play of the six-year-olds, the difference between average length per narrative chain ($M = 12.22$ clauses) and average length per non-narrative chain ($M = 2.27$ clauses) was striking.

Temporal Devices. The disproportional use of temporal devices in narrative talk and in non-narrative talk was obvious. In the replica play of both groups, the occurrences of total temporal devices in narrative talk, on average, were significantly higher than in non-narrative talk (four-year-olds: $t = 5.13$, $p < 0.0003$; six-year-olds: $t = 3.18$, $p < 0.009$). The same result was found in rates of aspectual expressions ($t = 3.07$, $p < 0.01$) and sequencers ($t = 3.03$, $p < 0.01$) in the pretend play of the four-year-olds, and in proportions of sequencers ($t = 8.14$, $p < 0.0001$) and temporal connectives ($t = 2.88$, $p < 0.02$) in the pretend play of the six-year-olds. The higher frequency of temporal devices in narrative talk suggests that the children, whether they were four- or six-year-olds, did use temporal devices to sustain their narrative talk or to mark shifts between types of talk.

Although both groups of children were able to use temporal devices to distinguish narrative talk from non-narrative talk in their replica play, they

TABLE 4
Distribution of Temporal Devices in Transitions between Narrative and Non-narrative Talk by Age Group

Variable	Four-year-olds ($n = 12$) *M*	*SD*	Six-year-olds ($n = 12$) *M*	*SD*	*t*
Narrative→Non-narrative Talk					
No temporal device	0.90 (8.50)	0.14 (5.70)	0.91 (5.58)	0.13 (3.92)	−0.12
Sequencer	0.00 (0)	0.00 (0)	0.04 (0.25)	0.09 (0.62)	−1.47
Causal connective	0 (0)	0 (0)	0 (0)	0 (0)	0
Aspectual expression	0.09 (0.58)	0.15 (0.67)	0.05 (0.42)	0.08 (0.67)	0.69
Temporal connective	0.01 (0.08)	0.04 (0.29)	0.00 (0)	0.00 (0)	1.00
Non-narrative→Narrative Talk					
No temporal device	0.63 (5.92)	0.20 (4.29)	0.44 (2.67)	0.27 (1.92)	1.94
Sequencer	0.07 (0.67)	0.10 (0.78)	0.40 (2.33)	0.26 (1.67)	−4.09***
Causal connective	0.00 (0)	0.00 (0)	0.07 (0.50)	0.2 (1.00)	−1.42
Aspectual expression	0.27 (2.25)	0.22 (1.48)	0.06 (0.67)	0.09 (1.23)	3.07**
Temporal connective	0.02 (0.33)	0.05 (0.65)	0.03 (0.42)	0.07 (1.00)	−0.25

** $p < 0.01$, *** $p < 0.001$.
Note. Actual frequencies are given in parentheses.

used different types of temporal devices in their narrative talk: the six-year-olds produced significantly more sequencers and temporal connectives than the four-year-olds (see Table 3). Also, it was obvious that the two groups of children relied heavily on different temporal devices to sustain their narrative talk and to mark shifts from non-narrative to narrative talk: The four-year-old children relied more on aspectual expressions (6%) and the six-year-olds used more sequencers (6%).

The frequency of each temporal device occurring in transitions from narrative to non-narrative talk and from non-narrative to narrative talk over total transition clauses was also calculated (see Table 4).

As expected, both groups of children tended not to use any temporal devices to mark shifts from narrative talk to non-narrative talk. Nevertheless, in shifting from non-narrative to narrative talk, 37% of the transition clauses were marked with temporal devices by the four-year-olds and 56% were marked by the six-year-olds. The most commonly used device to mark such transition into narration was aspectual expressions for the four-year-olds and

TABLE 5
Distribution of Referential Strategies by Age Group

	Four-year-olds ($n = 12$)		*Six-year-olds* ($n = 12$)		
Variable	*M*	*SD*	*M*	*SD*	*t*
Nominal	0.26 (30.33)	0.10 (28.10)	0.40 (55.92)	0.16 (33.49)	−2.43*
Pronoun:first/second	0.06 (6.92)	0.05 (10.37)	0.06 (10.58)	0.06 (14.88)	0.19
Pronoun:third	0.06 (6.83)	0.06 (8.31)	0.12 (16.00)	0.07 (10 80)	−2.11*
Deixis	0.21 (22.08)	0.08 (15.04)	0.10 (15.25)	0 09 (20.07)	3.15**
Ellipses	0.12 (14.92)	0.06 (14.69)	0.15 (21.08)	0.05 (12 52)	−1.24
Referential ambiguity	0.08 (8.50)	0.03 (8.36)	0.04 (5.42)	0.03 (8.62)	2.91**
Unclassifiable	0.21 (22.33)	0.13 (18.08)	0.14 (18.83)	0.10 (15.71)	1.36

* $p < 0.05$, ** $p < 0.01$.
Note. Actual frequencies are given in parentheses.

sequencers for the six-year-olds. These group differences in use of aspectual expressions ($t = 3.07$, $p < 0.006$) and sequencers ($t = -4.09$, $p < 0.001$) were statistically significant.

Referential Strategies. An important finding regarding use of referential strategies in narrative and in non-narrative talk was that the four- and six-year-olds used significantly more third person pronouns in narrative talk than in non-narrative talk (four-year-olds: $t = 2.17$, $p < 0.05$; six-year-olds: $t = 5.56$, $p < 0.0002$). This suggests that both age groups of children, to some extent, could take third person perspective to tell the story.

In terms of group differences in use of referential strategies in replica play, as predicted, the four-year-olds used significantly more deixis and referential ambiguities than the six-year-olds (see Table 5). This suggests that the four-year-olds relied more on immediate context to make reference, whereas the older children lexicalized it. In contrast, there were significantly more nominals and third person pronouns occurring in the replica play of the six-year-olds than in the four-year-olds' replica play. Compared to the four-year-olds, the six-year-olds used more explicit referential devices.

Different referential strategies for marking transitions between types of talk were also found across groups (see Table 6).

As Table 6 displays, a striking difference in use of referential devices to mark transitions between types of talk in the replica play of the six-year-olds was that they used many more nominals in shifting from non-narrative

TABLE 6
Distribution of Referential Strategies in Transitions between Narrative and Non-narrative Talk by Age Group

	Four-year-olds ($n = 12$)		Six-year-olds ($n = 12$)		
Variable	M	SD	M	SD	t
Narrative→Non-narrative Talk					
Nominal	0.14 (1.25)	0.14 (0.87)	0.20 (1.33)	0.17 (1.30)	−0.86
Pronoun: first/second	0.04 (0.33)	0.08 (0.49)	0.03 (0.17)	0.07 (0.39)	0.56
Pronoun: third	0.10 (0.92)	0.12 (0.90)	0.05 (0.42)	0.10 (0.79)	1.24
Deixis	0.23 (1.83)	0.18 (1.70)	0.07 (0.67)	0.12 (1.23)	2.56*
Ellipses	0 13 (1.25)	0.17 (1.42)	0.17 (0.75)	0.18 (0.62)	−0.59
Referential ambiguity	0.02 (0.33)	0.04 (0.49)	0.005 (0.08)	0.02 (0.29)	1.63
Unclassifiable	0.33 (3.25)	0.19 (3.25)	0.48 (2.75)	0.26 (1.66)	−1.62
Non-narrative→Narrative Talk					
Nominal	0.30 (2.83)	0.16 (2.48)	0.70 (3.58)	0.25 (2.02)	−4.57***
Pronoun: first/second	0.08 (0.83)	0.07 (0.83)	0.07 (0.25)	0.16 (0.25)	0.10
Pronoun: third	0.03 (0.40)	0.05 (0.70)	0 (0)	0 (0)	2.33*
Deixis	0.31 (2 92)	0.21 (2.27)	0.13 (1.08)	0.16 (2.02)	2.38*
Ellipses	0.11 (0.33)	0.23 (0.65)	0.04 (0.25)	0.09 (0.45)	0.86
Referential ambiguity	0.13 (1.00)	0.15 (1.04)	0.02 (0.17)	0.04 (0.40)	2.59*
Unclassifiable	0.04 (0.50)	0.06 (0.80)	0.05 (0.42)	0.07 (0.67)	−0.33

$^{*}p < 0.05$, $^{***}p < 0.001$.
Note. Actual frequencies are given in parentheses.

to narrative talk (70%) than in shifting from narrative to non-narrative talk (20%). In the replica play of the four-year-olds, however, the difference in use of nominals between the two types of transitions was not so prominent as in the replica play of the six-year-olds. In shifting from non-narrative to narrative talk, only 30% of the transition clauses were marked with nominals by the four-year-olds. It was obvious that the six-year-olds were more likely to use explicit reference (nominals) to indicate shifts back to the story world.

Discourse Contexts. Tables 7, 8, and 9 exhibit the distributions of the referential devices employed in different discourse contexts (introduction, continuance, shift):

As Table 7 shows, both age groups, on average, used nominals most frequently to introduce a referent that was first mentioned. This finding indicates

TABLE 7
Distribution of Referential Strategies for First Mention of a Character by Age Group

	Four-year-olds (n = 12)		Six-year-olds (n = 12)		
Variable	M	SD	M	SD	t
Nominal	0.66 (9.08)	0.17 (7.01)	0.85 (11.67)	0.14 (8.00)	−2.92**
Pronoun:first/second	0.006 (0.08)	0.02 (0.29)	0 (0)	0 (0)	1.00
Pronoun: third	0.05 (0.42)	0 09 (0.67)	0.05 (0.42)	0.07 (0.51)	−0.05
Deixis	0.28 (2.92)	0.15 (1.16)	0.10 (1.50)	0.13 (2.20)	3.26**
Ellipses	0 (0)	0 (0)	0 (0)	0 (0)	0
Referential ambiguity	0 (0)	0 (0)	0 (0)	0 (0)	0
Unclassifiable	0 (0)	0 (0)	0 (0)	0 (0)	0

** $p < 0\ 01$.
Note. Actual frequencies are given in parentheses.

TABLE 8
Distribution of Referential Strategies for Successive Mention of the Same Character by Age Group

	Four-year-olds (n = 12)		Six-year-olds (n = 12)		
Variable	M	SD	M	SD	t
Nominal	0.33 (8.25)	0.20 (6.06)	0.27 (11.17)	0.12 (6 52)	0.87
Pronoun:first/second	0.005 (0.08)	0.02 (0.29)	0 001 (0.08)	0.004 (0.29)	0.74
Pronoun: third	0.15 (5.33)	0.15 (7.04)	0.28 (11.33)	0.14 (8.06)	−2.16*
Deixis	0.27 (5.75)	0.18 (3.82)	0.10 (4.08)	0.14 (7.56)	2.50*
Ellipses	0.23 (7.92)	0.13 (8.78)	0.34 (13.17)	0.09 (7.67)	−2.48*
Referential ambiguity	0.02 (0.33)	0.05 (0.89)	0 (0)	0 (0)	1.08
Unclassifiable	0 (0)	0 (0)	0.001 (0.08)	0.004 (0.29)	−1.00

* $p < 0.05$.
Note. Actual frequencies are given in parentheses.

that most of the children in this study could use explicit reference (nominals) for first mentions. Developmental shifts, however, were evident in the two age groups. The four-year-olds used deixis to introduce a referent significantly more often than the six-year-olds. The six-year-olds, on the other hand, used significantly more nominals.

TABLE 9
Distribution of Referential Strategies for Shift Reference by Age Group

	Four-year-olds ($n = 12$)		Six-year-olds ($n = 12$)		
Variable	*M*	*SD*	*M*	*SD*	*t*
Nominal	0.42 (11.25)	0.26 (16.61)	0.72 (27.50)	0.21 (18.59)	−3.18**
Pronoun: first/second	0.01 (0.42)	0.03 (1.16)	0.001 (0.08)	0.005 (0.29)	1.25
Pronoun: third	0.03 (0.83)	0.03 (1.11)	0.04 (2.00)	0.06 (2.59)	−0.45
Deixis	0.47 (10.25)	0.21 (9.59)	0.21 (6.67)	0.22 (9.98)	3.10**
Ellipses	0.05 (0.33)	0.14 (0.49)	0.02 (0.25)	0.07 (0.45)	0.63
Referential ambiguity	0.004 (0.08)	0.01 (0.29)	0 001 (0.08)	0.005 (0.29)	0.61
Unclassifiable	0.005 (0.17)	0.02 (0.39)	0.001 (0.08)	0.004 (0.29)	0.93

** $p < 0.01$.
Note. Actual frequencies are given in parentheses.

With respect to successive mentions of the same referent, nominals, on average, occurred most frequently in the replica play of the four-year-olds (see Table 8). Deixis and ellipses were also used frequently. In the replica play of the six-year-olds, ellipses occurred most often. Their next two referential choices were third person pronouns and nominals. According to the t-tests, the four-year-olds used deixis significantly more often than the six-year-olds. The occurrences of ellipses and third person pronouns, however, were significantly less frequent in the replica play of the four-year-olds.

As for the devices used to mark shifts in reference back to a referent that has been mentioned, the four-year-olds used deixis 47% of the time and nominals 42% of the time (see Table 9). In contrast, nominals were used most often in the replica play of the six-year-olds and deixis occurred much less frequently. These group differences in use of deixis and nominals were statistically significant.

In the following, excerpts taken from the data will be presented to support the main quantitative findings reported above and to illustrate to what degree the Mandarin Chinese-speaking children could create an autonomous replica play through appropriate use of temporal and referential strategies, with the focus on developmental differences.

Qualitative Analyses

Developmental Differences in Length of Talk. Excerpts (1) and (2)[8] are representative examples to show age difference in length of narrative and of non-narrative talk:

Excerpt (1) Ru-yi (4;3, girl). (EXP: experimenter; CHI: child)

	EXP:	He went to the pond and he didn't let the other animals swim in the pond, drink in the pond, or do anything.
	EXP:	What do you think would happen in the jungle next?
01	CHI:	(I) don't know. (shakes head)
	EXP:	(Go ahead and) play.
	EXP:	You tell Auntie (the story) while playing.
02	CHI:	When (can I) finish telling (the story)?
	EXP:	Just finish it whenever you like, okay?
03	CHI:	Okay.
04	CHI:	He, he just stayed there temporarily, *because* he couldn't run any more,* (*so*) he stayed there temporarily. (makes dragon leave pond)
	EXP:	Uh-huh.
05	CHI:	He, he keeps falling down, what (should I) do?
	EXP:	What (should you) do?
	EXP:	Is this okay? (EXP helps CHI make dragon stand up)
	EXP:	Okay.
06	CHI:	(I) finished the story with this one. (touches mommy and baby lions)
	EXP:	(You) finished (the story) so quickly?
07	CHI:	That's all.
	EXP:	Auntie hasn't heard (anything) yet.
08	CHI:	Why is the tree not real? (touches one tree)
	EXP:	Yeah, that is not real.
09	CHI:	Ah!
10	CHI:	Why is this tree there? (touches another tree)
11	CHI:	This is like Santa's hat. (touches the other tree)

[8] In the excerpts, occurrences of *-le5* are marked with "*" and temporal devices are italicized.

Excerpt (2) Wei-ren (6;5, girl).

EXP: This dragon went to the pond and he didn't let other animals swim in the pond, drink in the pond or do other things.
EXP: What do you think would happen next?
01 CHI: *Then* he jumped into the water himself.
EXP: He jumped into the pond and then what?
02 CHI: *Then* he swam back and forth, he drank water, and (he) didn't let others drink water here. (touches dragon)
EXP: Right, you can tell (the story) while playing.
03 CHI: *Then* another animal touched him, he, he, *then* he pushed him away. (plays with dragon's mouth)
04 CHI: (He) didn't let him come to the pond.
05 CHI: *Then* he himself was very happy here, keeping drinking water for fun.
EXP: Yes, very good.
06 CHI: *Then* he jumped back and forth. *Then*, carelessly, (he) dropped into the water.*
EXP: Right.
07 CHI: *Afterwards*, the dragon could swim, *so* he swam up (out of pond) himself.
EXP: Oh, he swam up (out of pond) himself.
08 CHI: *Then* the lion kicked this dragon with his feet.
09 CHI: *Then* the dragon fell, fell, and was drowned.*
EXP: Then (the dragon) was drowned.
10 CHI: *Then* all the other animals were very happy.
EXP: All the other animals were very happy.
11 CHI: Yeah, *because* the dragon was mean to him.

It is obvious that the four-year-old girl Ru-yi could not sustain her narrative talk for long periods of time (see Excerpt 1). Her concerns were more on the here-and-now non-fantasy world than on the there-and-then story world: why the dragon kept falling (line 05), why the tree was not real (line 08), and why the tree was put in the wrong place (line 10). In contrast, in Excerpt (2), the six-year-old girl Wei-ren produced much longer narrative chains than Ru-yi. All her talk in the excerpt was about the story world: event narration, evaluation, descriptive information, and closing remarks.

Not every six-year-old child in this study, however, could sustain his/her narrative talk for such a long period of time as Wei-ren did. The six-year-olds were also concerned about the immediate, here-and-now world and shifted their utterances from narrative to non-narrative talk as the four-year-olds did while performing the task. Yet, the major difference in length of talk between the two age groups was that the six-year-olds could quickly shift from their non-narrative talk back to narrative talk autonomously or in response to the experimenter's prompts and sustain their narrative talk for much longer periods of time. In comparison, the four-year-olds relied heavily on the experimenter's prompts to shift back to the story world and they could not sustain their narrative talk for long periods of time. See Excerpt (3) for example:

Excerpt (3) Li-zhang (6;5, boy).

EXP: Why don't you tell Auntie the story while playing?
01 CHI: The dragon *then* blew out fire (from his mouth).
02 CHI: O. (sounds of blowing fire)
EXP: Gosh!
03 CHI: *Afterwards, then* the lion did not dare to come to the pond any more.* (daddy lion leaves pond and stands with other animals)
EXP: Then what else happened?
04 CHI: The dragon, *then* no (other) animals came to the pond to drink water (or) take a shower *from then on.** (touches dragon)
EXP: Really?
05 CHI: *When* the dragon was hungry, *then* (he) came out to look for something to eat. (makes dragon turn around facing other animals)
EXP: Uhhuh.
06 CHI: *Then* (he) found the pterodactyl to eat. (touches pterodactyl)
EXP: Uhhuh.
07 CHI: The pterodactyl flew up.* (makes pterodactyl fly in air)
EXP: Uhhuh.
08 CHI: *Then* the fire dragon blew (fire). (puts pterodactyl in dragon's mouth)
09 CHI: *Then* he fell down. (makes pterodactyl fall down gently)
EXP: Oh.
10 CHI: (The dragon) wanted to eat (the pterodactyl). (puts pterodactyl in dragon's mouth)

EXP: (The dragon) wanted to eat him up.
EXP: Then what else happened?
11 CHI: *Then* the purple elephant rushed over. (elephant walks toward dragon)
12 CHI: His tusks even knocked him.* (elephant hits dragon with his tusks gently without making sounds)
EXP: Uhhuh.
13 CHI: The purple elephant is very sticky.
EXP: Sorry, because Auntie splashed paint (on the elephant).
14 CHI: 0. (puts elephant back behind tree)
15 CHI: *Then* the dragon knocked the tree down. (makes dragon turn over in pond)
EXP: Uhhuh.
16 CHI: Can (I) really knock the tree down?
EXP: Yes, don't worry, okay?
17 CHI: Okay. (makes tree fall down gently)
EXP: Go ahead and do whatever you'd like to do.
18 CHI: The dragon *then* burned the tree. (makes another tree fall down gently)
19 CHI: 0. (sounds of blowing fire)
20 CHI: The dragon, the dragon *then* jumped out of the pond.* (takes dragon off pond)

In Excerpt (3), after sustaining his narrative talk for a long period of time (lines 01–12), the child Li-zhang shifted his utterances from narrative talk to non-narrative talk because he found the elephant was sticky (line 13) and he was concerned about whether he could really knock the tree down (line 16). After the two brief asides, however, he quickly returned to the fantasy world (line 18) by himself and sustained his narrative talk until the end of the excerpt. This example further exhibits a developmental difference in the ability to sustain narrative talk.

Developmental Differences in Use of Temporal Devices

Use of temporal devices to maintain narrative talk. In replica play, where different types of talk interplay, temporal devices are particularly useful in sustaining narrative talk. See Excerpt (3) again and the following excerpt for examples:

Excerpt (4) Ting-wei (3;10, boy).

EXP: And how about the daddy lion?
01 CHI: Also, (he), (he) beat him [=dragon] to death with (his) tail.
EXP: Beat him to death with (his) tail.
02 CHI: *Then* the lion kept beating him, beating, and beating.
03 CHI: Smashed (him).*
EXP: Smashed him.
04 CHI: The lion (he) smashed him*. (points to dragon)

As shown in Excerpts (3) and (4), both of the children used temporal devices, i.e., the sequencer *then* and the aspectual morpheme *-le5* (for past or perfective tense) to sustain their narrative talk. The sequencer *then* indicates that the events are temporally sequenced. The aspectual morpheme *-le5* is a marker for either past or perfective tense, which suggests that the events in the story happened in the past or have been completed. This finding corresponds to the convention of narrative in which past tense is usually used.

Although both age groups used temporal devices to maintain narrative talk, developmental contrast in the degree of elaborateness and cohesiveness achieved through the use of the temporal devices was evident. Again, Excerpts (1) and (2) are good examples to disclose developmental differences in the use of temporal devices to sustain narrative talk. In excerpt (1), the four-year-old child Ru-yi only used two causal connectives and one aspectual morpheme *-le5* to maintain her narrative talk (line 04). In comparison, in excerpt (2), the six-year-old girl Wei-ren flexibly used a number of aspectual expressions, sequencers, causal and temporal connectives to build up the time line of the story. Using these devices to sustain her narrative talk, Wei-ren built up a well-structured story with a very clear time axis. Compared to Wei-ren's story, Ru-yi's replica play was fragmented and incohesive, without an explicit temporal relation between events.

Use of temporal devices to mark shifts from non-narrative to narrative talk. Temporal devices are also effective in marking shifts from non-narrative to narrative talk, which was manifested in the pretend play of both age groups. See Excerpts (5) and (6) for examples:

Excerpt (5) Qi-jing (4;3, boy).

01 CHI: My mother said this is a pterodactyl. (takes pterodactyl)
EXP: This is a pterodactyl, not a bird, right?

02 CHI: Pterodactyls have feet. (makes pterodactyl fly in air and then tries to put him on top of tree)
EXP: Pterodactyls have feet.
EXP: What happened in the jungle?
03 CHI: 0. (picks up dragon)
04 CHI: 0. (puts dragon in pond and dragon falls down)
EXP: Then what?
05 CHI: 0. (tries to make dragon stand up but dragon keeps falling down)
EXP: What else?
06 CHI: xxx.
EXP: You told Auntie what happened in the jungle?
07 CHI: 0. (makes dragon stand up in pond)
08 CHI: *Then* he stood up.*
EXP: He stood up.

Excerpt (6) Ping-si (5;6, girl).

01 CHI: He, *then* the daddy lion said he wanted to fight with him.
02 CHI: *But* he did not dare to fight.
03 CHI: *Because* his, his claws were very sharp.
04 CHI: Auntie, I ask you (a question). Have you ever watched *The Lion King*?
EXP: Yes, I have.
05 CHI: We have the videotape at home.
06 CHI: *Then* the baby lion was also very thirsty.
07 CHI: *Then* he also walked. (makes the other baby lion walk towards mommy lion)
08 CHI: (He) walked there, (and) saw a lion, xxx, a dragon. (puts baby lion on mommy lion's back)
09 CHI: (He) saw a dragon.
10 CHI: (He was) scared.

As exhibited in Excerpts (5) and (6), both of the children used temporal devices to mark returning to the story world. However, there are developmental differences in using temporal devices to mark shifts between narrative and non-narrative talk. One difference was that the four-year-olds relied more on the experimenter's prompt to shift their utterances from non-narrative to narrative talk than the six-year-olds did. For example, in Excerpt (5), the four-year-old child Qi-jing shifted his non-narrative talk about the pterodactyl (lines 01–02) and enactment of the events (lines 03, 04, 05, and 07) to narrative talk (line 08) due to the experimenter's repeated prompts (e.g., *then what, what else*). In contrast, in excerpt (6), the six-year-old child Ping-si switched her non-narrative talk about the videotape *The Lion King* (lines 04–05) back to narrative talk (lines 06–10) by herself without depending on the experimenter's prompt.

Excerpt (7) Jing-qi (4;3, boy).

EXP: How does the story end?
01 CHI: He and he wanted to go back. (puts elephant behind daddy lion)
EXP: Oh, (they) wanted to go back.
02 CHI: 0. (puts one baby lion on mommy lion's back and the other on daddy lion's back)
03 CHI: (It's) raining. (makes elephant pour water on daddy lion)
04 CHI: 0. (makes elephant eat mommy and daddy lions)
05 CHI: He ate the tree.
06 CHI: He ate the tree. (makes elephant eat tree)
EXP: How does the story end?
07 CHI: 0. (makes pterodactyl hit baby and daddy lions)
08 CHI: 0. (puts pterodactyl in pond)
09 CHI: 0. (makes pterodactyl hit baby lion off table)
10 CHI: 0. (moves the baby lion on mommy lion's back to daddy lion's back)
11 CHI: Bit the tree, he bit the tree.
12 CHI: He loved to eat the root of the tree. (puts baby lion behind trees)
13 CHI: (He was) than than than smaller than him/it. (moves tree to baby lion's right)
14 CHI: Smaller than him/it.
EXP: Oh.
15 CHI: 0. (makes tree hit jungle floor)
16 CHI: 0. (hands baby lion to EXP)
EXP: (You want to) put (them) away?
17 CHI: 0. (nods)

18 CHI: Put this [= pterodactyl] away. (hands pterodactyl to EXP)
EXP: Okay, put this away.
19 CHI: 0. (moves mommy lion besides daddy lion)
20 CHI: 0. (touches microphone)
EXP: (You) don't want to play, do you?
EXP: Do you want to play?
21 CHI: 0. (makes baby lion eat tree)
22 CHI: 0. (makes daddy lion eat tree)
23 CHI: Bit twice. (makes baby lion eat tree)
24 CHI: 0. (makes elephant eat tree)
25 CHI: 0. (makes mommy lion eat tree)
26 CHI: 0. (rearranges the place where trees stand)
EXP: Have you finished the story?
EXP: Uh?
27 CHI: He [= baby lion] ate. (makes baby lion eat tree)

The other difference is that the four-year-olds tended not to use temporal devices to mark shifts between types of talk as often as the six-year-olds did. For example, in Excerpt (7), the child kept switching his talk but he did not use any temporal strategies to mark shifts from non-narrative to narrative talk. In comparison, in the pretend play of the six-year-olds, more temporal devices occurred in the juncture to narrative talk. In Excerpts (3) (lines 15 and 18) and (6) (line 06), for example, the children employed the sequencer *then* wherever there were transitions from non-narrative to narrative talk.

Developmental Differences in Use of Referential Devices

Excerpts (3) and (7) demonstrate age differences in use of referential devices. In Excerpt (7), the child Jing-qi used a great many deictic references. For example, in the first line, the child used *he* to refer to the elephant and the daddy lion. *He* is a third person pronoun but the child relied on the immediate physical demonstration to indicate what *he* referred to. Many instances of *he* in this excerpt were used deictically (e.g., lines 01, 05, 06, and 27). Deictic reference also appeared in the forms of demonstrative *this* (line 18) and ellipsis (line 23).

There were some referential ambiguities in this excerpt too. For example, in line 13 *smaller than him/it*, it was not clear what Jing-qi referred to. From his actions, this clause could be interpreted as "the tree was smaller than the baby lion" or "the baby lion was smaller than the tree." To make explicit reference, the child should have used at least one noun phrase rather than ellipsis and third person pronouns to mention the referents in this case.

Moreover, enacting rather than reporting events, Jing-qi made great use of non-verbal deixis. For example, lines 07 to 10 revealed a number of events (i.e., pterodactyl hit baby and daddy lions, pterodactyl went to the pond, pterodactyl hit baby lion off the table, and the baby lion moved towards daddy lion's back). Instead of verbalizing these events, however, the child relied on the immature discourse strategy of nonverbal enactment to report the happenings. In this way, Jing-qi could only produce a story with a simple plot without involving complex actions.

In contrast, the reference in excerpt (3) was explicit. The six-year-old child Li-zhang used full noun phrases to refer to characters that were first mentioned, e.g., *dragon* (line 01), *lion* (line 03), *pterodactyl* (line 06), etc. In shifting back to a referent that had been mentioned, he also used noun phrases. For example, whenever he switched back to refer to the animal *dragon* from other references, he used the nominal *dragon* (lines 04, 08, 15, etc.).

Another point that was rarely found in the replica play of the four-year-olds but was observed in this six-year-old child was the use of nominals for reference wherever a shift in types of talk occurred. For example, from lines 12 to 18, Li-zhang shifted his talk between narrative and non-narrative talk four times: from narrative to non-narrative (line 12–13), from non-narrative to narrative (13–15), from narrative to non-narrative (15–16), and from non-narrative back to narrative talk again (lines 16–18). He used noun phrases for reference wherever these shifts between types of talk occurred, so every reference is clear.

Overall, the six-year-old child Li-zhang produced a coherent play narrative by using appropriate, explicit referential strategies. Even though the concrete referents (e.g., props and animals) for the text were immediately available, he did not rely on them for making reference. The reference in his play narrative was internal to the text. In this sense, he constructed an autonomous play narrative. In the replica play of the four-year-old child Jing-qi, however, there were a great deal of verbal and non-verbal deixis and referential ambiguities. He depended on here-and-now resources to make reference and report events, without being able to separate the text from the context. His play talk was incoherent and fragmented compared to that of the six-year-old child Lizhang.

DISCUSSION

Work on Japanese-, English-, and other European language-speaking children (Applebee, 1978; Bamberg, 1987; Berman & Slobin, 1994; Clancy, 1992; Karmiloff-Smith, 1981; Peterson & McCabe, 1983) suggests considerable shift in narrative competence in children between four and six. This study on Mandarin Chinese-speaking children also suggests prominent developmental differences in the ability to sustain narrative talk in the replica play and in the skills to use temporal and referential devices to establish and maintain a coherent play narrative.

Temporal Devices

As predicted, the children in this study rely heavily on temporal connectives, sequencers, causal markers, and aspectual expressions to sustain their narrative talk and to mark transitions between types of talk in their replica play. Most of these devices, on average, occur more frequently in their narrative talk than in non-narrative talk. In shifting from non-narrative to narrative talk, the children also use more temporal devices than they do in shifting from narrative to non-narrative talk. This implies that Mandarin Chinese-speaking children by four years of age, to some extent, have developed the ability to use connectives and temporal expressions to set the time frame of their story in the past, to establish and maintain the story lines, and to mark shifts between types of talk to remind the listener of the switch in their talk.

However, developmental shifts in use of temporal devices to maintain a coherent play narrative between the two age groups are evident. The six-year-olds are most likely to use the sequencers *then* and *and … then* to sustain their narrative talk and to mark shifts between types of talk in pretend play. The expressions that occur in adults' discourse when returning to a main topic from digressions such as "*as I was saying*" or "where were we?" were not found in the pretend play of the six-year-olds. The overmarking of sequence by the use of the sequencers *then* and *and … then*, instead of other markers for continuity, suggests the limitation in the six-year-olds' ability to achieve cohesion in narratives. This finding corresponds to what Berman and Slobin (1994) observed in their cross-linguistic study and what Peterson and McCabe (1991) discovered in their study of nine-year-old English-speaking children.

In comparison to the six-year-olds, the four-year-olds use many fewer sequencers in their pretend play. This finding also agrees with Berman and Slobin's observation of the use of sequencers in young children (1994). Instead of using sequential markers *then* and *and ... then*, the four-year-olds tend to use aspectual expressions, especially the aspectual morpheme *-le5*, to sustain their narrative talk and to mark switches between narrative and non-narrative talk. It is worth noting that the main function of aspectual expressions is to mark event time. Dependence on the aspectual morpheme *-le5* to sustain narrative talk and to mark shifts between types of talk suggests that the four-year-old children are able to conform to narrative conventions by setting and keeping the time frame of their narratives in the past. Nevertheless, aspectual expressions are not inter-sentential connectives. They do not function as cohesive devices to link sentences together as a whole. The four-year-olds' over-reliance on the aspectual morpheme *-le5*, without being able to use appropriate connectives to build up inter-sentential relationship within narrative talk and between narrative and non-narrative talk in their replica play, reveals their very limited ability to produce a coherent text and to consider the play narrative as a whole at a global level.

Referential Strategies

With respect to the use of referential strategies in the replica play, the results of this study indicate that in general, the four- and six-year-old Mandarin Chinese-speaking children were able to follow the convention of using third person perspective to narrate the story. The higher frequency of third person pronouns occurring in narrative talk than in non-narrative talk supports this finding.

In terms of referential clarity and cohesion, however, the two groups of children exhibit sharp developmental shifts. As predicted, there are more deictic expressions and referential ambiguities in the replica play of the four-year-olds than the six-year-olds. The four-year-olds tend to make reference in extralinguistic context. The third person pronouns are essentially a cohesive device, but in the four-year-olds' replica play they are often used deictically rather than anaphorically. Considerable research on English- and other

European language young speakers demonstrates similar findings in the use of pronouns deictically (Bamberg, 1987; Berman & Slobin, 1994; Hickmann, 1980, 1991; Karmiloff-Smith, 1980, 1981). This suggests that using third person pronouns deictically in young children may be a cognitive-developmental rather than language-specific phenomenon.

The four-year-olds' inability to make clear reference is also manifested in their implicit referential choices in different discourse contexts. In this study, the experimenter labeled the toy animals and props at the outset, so it should not have been very difficult for the four-year-olds to use explicit reference (nominals) to the animals and props when introducing them for the first time. In fact, 66% of the time the four-year-olds did so. Twenty-eight percent of the time, however, they still relied on deictic expressions to make reference.

To mark switches in reference back to the animals or props posed more difficulty for the four-year-olds. Only 42% of the time did the four-year-olds use nominals; about half of the time they used deictic expressions. As Clancy (1992) suggests, switching reference is difficult because it involves a shift of perspective. It is challenging for a four-year-old child to select a reference not based simply on his or her point of view. That may be why the four-year-olds often choose the least explicit referential form for switching reference.

In contrast, with more developed cognitive and linguistic skills, the six-year-olds are able to manage introduction and switch reference better than the four-year-olds. Eighty-five percent of the time the six-year-olds used nominal reference for introducing a new character and 72% of the time for marking switches in reference back to a character that had previously been mentioned. They do not rely on deictic expressions to make reference as much as the four-year-olds. When switching reference, however, 21% of the time they still used deixis. Again, this implies that even for the six-year-olds, to switch reference is not easy.

With respect to successive reference, both groups of Mandarin Chinese-speaking children use a range of referential strategies, nominals, third person pronouns, deixis, and ellipses to maintain reference. None of these devices seems dominant in the replica play of the children. Although subjects are also deletable in Mandarin as in Japanese, the results of this study show that ellipsis is not the predominant strategy Mandarin Chinese-speaking children use in their pretend play. This finding is inconsistent with what Clancy observed in her research on Japanese-speaking children (1992). Moreover, unlike German- and English-speaking children (Bamberg, 1987; Hickmann, 1980, 1991), Mandarin-speaking children do not use third person pronouns most frequently for successive mentions. The reason why no predominant device is found in Mandarin Chinese-speaking children's replica play might be because there are multiple options in Mandarin for successive mentions of a referent.[9] Third person pronouns, ellipses, and nominals are all appropriate devices for successive reference depending on syntax and context.

Although no predominant referential device for successive mentions occurs in the replica play of Mandarin Chinese-speaking children in this study, developmental shifts in referential choices are evident. The six-year-olds use significantly more third person pronouns and ellipses for successive reference than the four-year-olds. Conversely, the four-year-olds rely on deictic expressions more than the six-year-olds. The differences between the two age groups suggest that the four-year-olds have not mastered use of anaphoric expressions in discourse as well as have the six-year-olds. Making successive reference is a simpler task than introduction of characters or switching reference because the successive reference context requires neither a switch of perspective nor the production of an overt form (Clancy, 1992). Even in the successive reference context, however, the four-year-olds often rely on manipulation of a toy combined with a deictic to maintain reference. Additional evidence of developmental differences in producing coherent play talk is manifested in the children's referential choices in transitions from non-narrative to narrative talk. In shifting from non-narrative to narrative talk, children usually introduce a new character or refer back to a character that has been mentioned before, so nominal reference is usually required. As noted, the six-year-olds used nominals 70% of the time in shifting from non-narrative to narrative talk but the four-year-olds did so only 30% of the time.

The results of this study and other research on reference suggest that making appropriate, explicit reference is a challenging task for young children. Managing reference requires not only linguistic knowledge to fill in slots for referents at the local level but also the ability to monitor the entire nar-

[9] Although subjects are deletable in Japanese and in Mandarin Chinese, an ellipsis is not used so often for "given information" in Mandarin as it is in Japanese. Third-person pronouns are another option besides nominals and ellipses for successive mentions in Mandarin narration. But in Japanese, "the major referential choice is between ellipsis versus nominal reference, without the option of third person pronouns" (Clancy, 1992, p. 444).

rative discourse to successively signal switches of point of view. This of course depends on children's competence at evaluating the listener's need for information (Berman & Slobin, 1994; Clancy, 1992; Hemphill, Picardi & Tager-Flusberg, 1991). In replica play where a number of types of talk occur, the ability to mark switches of perspective to maintain referential clarity is particularly important.

CONCLUSIONS

As predicted, a number of types of talk occur in the replica play of the four- and six-year-old Mandarin Chinese-speaking children, and both groups of children produce narrative talk in their replica play. The mean lengths of narrative talk in the two groups, however, are very different. The six-year-olds produce significantly longer narrative talk than the four-year-olds. Relying heavily on scaffolding from the experimenter and easily distracted by intrusion from the immediate physical and social context, the four-year-olds move between the story realm and the real world frequently without being able to sustain their narrative talk for long periods of time. In addition, due to their lack of ability to fully make use of the temporal devices and to manage reference in their replica play, the four-year-olds exhibit a greater difficulty establishing and maintaining a coherent, autonomous play narrative.

In contrast, the six-year-olds produce much longer narrative talk with less reliance on the experimenter and contextual support. They use clearer reference and more temporal connectives and sequencers to sustain their narrative talk and to mark shifts between narrative and non-narrative talk. Their play narratives, therefore, are more coherent and organized. However, the six-year-olds overuse sequencers *then* and *and ... then* and they also depend on deictic expressions to make reference in some cases. This suggests that the six-year-olds have not yet achieved high levels of narrative cohesion in replica play. They still have difficulty producing an autonomous play narrative.

The results of this study suggest that although the actual linguistic devices Mandarin Chinese-speaking children use to tell a coherent play narrative vary from those used by Japanese-, English-, or other European language-speaking children, their developmental progression, in general, is similar. The absence of tense markers and gender pronouns in Mandarin does not lead to developmental delay of Mandarin Chinese-speaking children. No evidence in this study shows that Mandarin Chinese-speaking children try to use temporal expressions in every clause in order to "compensate for" the "lack" of tense and to use nominal reference rather than pronouns in order to make explicit reference to gender.

This study sheds light on developmental shifts in the ability of preschool Mandarin Chinese-speaking children to establish and maintain a coherent narrative. Given that so little research has been done on Mandarin-speaking children's narratives, this knowledge is important for understanding cross-cultural differences in language and narrative development of non-English speaking children. For educators and teachers, such information is also crucial in understanding the language skills children bring to school, in predicting their academic and literacy performance, and in detecting delay in some children's language and narrative development.

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