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*First Language* 2003; 23; 147

DOI: 10.1177/01427237030232001

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## **Mandarin temporality inference in child, maternal and adult speech\***

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### ABSTRACT

Previous studies on child language acquisition of temporality have focused primarily on linguistic devices such as tense and aspect markers; this study, however, adopts a different approach. By examining discourse-pragmatic resources, it investigates how implicit past reference was inferred in Mandarin child speech, maternal speech and adult speech. This approach is especially suitable for studying Mandarin Chinese, a tenseless language. The analysis shows that in three-year-old children's speech, situational context and background knowledge were the major resources for temporality inference. In maternal speech, temporal reference was inferred mainly from situational context. In adult speech, on the other hand, it was discourse context that played the major role. The results revealed three-year-old children's heavy reliance on the situational 'here-and-now' to express temporal relations and their limited abilities to assess the new/old information status of temporality. In addition, maternal speech adjustments in temporality inference were also evident in the data.

### KEYWORDS

Acquisition of aspect; acquisition of tense; discourse developments; parental speech; pragmatic development

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\* I would like to express my appreciation to the participants of the study for their kind support. An earlier version of this paper was presented at the 13th Annual International Conference on Pragmatics and Language Learning, and appeared in the proceedings (Huang 2000). Address for correspondence: Graduate Institute of Linguistics, National Chengchi University, 64, Sec. 2, Chih-nan Rd, Taipei 11623, Taiwan. E-mail: cchuang@nccu.edu.tw

## INTRODUCTION

Any stretch of conversation discourse requires that the interlocutors share a common temporal frame of event. In young children's conversation with adults, the temporal frame is usually the speech time. As noted by many studies, early child language is highly restricted to the 'here-and-now' (Brown 1973, Eisenberg 1985, Minami 2002, Sachs 1983, Weist 1989). The contextual information constitutes an important support for successful child-adult communication. However, the decontextualized use of language is the essential characteristic of language (Baron 1977). Thus, in language acquisition, children need to learn to decrease the reliance on contextual support in order to become competent speakers. Since such decontextualized use involves complex cognitive, linguistic and communicative skills (Eisenberg 1985, Lucariello & Nelson 1987), the acquisition of the ability to talk about the 'there-and-then' marks an important growing point in child language.

Previous studies on the acquisition of temporality have been primarily conducted in tensed languages, and have focused mostly on how temporal devices emerge and develop in child language; these devices include tense/aspect inflections, particles, prepositions and adverbials. In other words, the development of children's temporal systems has been studied mostly based on linguistic forms. For example, Weist (1986, 1989) suggested that children progress through a sequence of four temporal systems, and he characterized these systems by children's use of temporal devices. The first system (the speech time system) is primarily a here-and-now communication system. In the second system (the event time system), children begin to use tense/aspect inflections to mark past/nonpast, continuative/noncontinuative, and complete/incomplete distinctions. In the third system (the restricted reference time system), children begin to use temporal adverbs and temporal adverbial clauses to anchor reference time. In the fourth system (the free reference time system), children begin to use past perfect and the temporal prepositions 'before' and 'after'. The proposed four systems have been investigated cross-linguistically in Polish, American and Finnish children's speech (Weist, Wysocka & Lyytinen 1991); it has been demonstrated how conceptual development and the specific features of different languages interact with the development of temporal systems.

Other studies, on the other hand, have focused particularly on the acquisition of temporal adverbs (e.g., Weist & Buczowska 1987), or the acquisition of the prepositions 'before' and 'after' (e.g., Stevenson & Pollitt 1987). As for tense/aspect inflections, extensive studies have

been conducted. Researchers have been debating whether children's early tensed utterances express aspectual or deictic relations, and whether children's tense/aspect marking is influenced by the inherent semantic aspect of verbs/predicates (Antinucci & Miller 1976, Bloom, Lifter & Hafitz 1980, Bronckart & Sinclair 1973, Li 1990, Li & Bowerman 1998, Shirai 1991, Shirai & Andersen 1995, Weist, Wysocka, Witkowska-Stadnik, Buczowska & Konieczna 1984).

Previous studies on Mandarin children's acquisition of temporality have also concentrated mainly on linguistic forms. In the studies of Mandarin aspect markers, it has been found that the perfective marker *le* emerges before the imperfective markers *zai* (progressive) and *zhe* (durative), which in turn appear before the experiential marker *guo* (Erbaugh 1978, 1992, Lin 1986). As for the relationship between aspect marking and inherent lexical aspect, a strong association has been found between perfective aspect and resultative/telic verbs and between imperfective aspect and atelic verbs (Li 1990, Li & Bowerman 1998). In the research on Mandarin time adverbs, on the other hand, it has been found that children four to five years old can comprehend *jintian* ('today'), *zuotian* ('yesterday') and *mingtian* ('tomorrow'); children five to six years old can understand adverbs denoting parts of a day, such as *shangwu* ('morning') and *xiawu* ('afternoon'); it is not until they are six years old that children comprehend words denoting longer periods of time, such as *jinnian* ('this year'), *qunian* ('last year') (Zhu, Wu, Ying, Zhu & Zhang 1986). Erbaugh (1992) further suggested that Mandarin-speaking children progress through three stages for time adverbs: the prototemporal stage, the early temporal stage, and the sequenced temporal relations stage. In the prototemporal stage, only a few connectives emerge. In the early temporal stage, children begin to use temporal reference adverbs. In the sequenced temporal relations stage, children increasingly discuss three or more events in sequence. In another study (Chang 1998), preschool Mandarin Chinese-speaking children's play narratives were studied. It was found that four-year-olds have great difficulty making use of temporal devices to maintain story lines. While six-year-olds demonstrate the ability to use more temporal and causal connectives, they still have difficulty achieving high levels of narrative cohesion.

As seen above, previous studies of child language acquisition of temporality have focused primarily on linguistic forms. Thus, we know very little about other means, especially discourse-pragmatic resources, available to children to express temporality. As noted by Weist (1989), the use of temporal devices provides a sufficient but not a necessary condition for inferring the child's conceptual framework. It

was the purpose of this study to demonstrate that it is important to take into account discourse-pragmatic resources in investigating temporality in child language. Rather than examining how linguistic forms are acquired, this study adopted a different approach to explore how communicative intents are accomplished. That is, it investigated how the communicative intents of establishing past reference are accomplished by children through implicit discourse-pragmatic resources. The significances of such approach are as follows. First, since Mandarin is a tenseless language, successful communication of temporal reference often depends on exploitation of discourse-pragmatic features. This approach thus gives a broader perspective that can encompass not only morpho-syntactic but also discourse-pragmatic resources in investigating temporal systems. Second, previous research has pointed out that children demonstrate their memory and understanding of past events before they acquire the linguistic abilities to talk about them (Eisenberg 1985, Harner 1982). Thus, this approach allows us to examine how the communicative intents of referring to the past are accomplished by children with limited linguistic abilities. Furthermore, since children's communicative intents are accomplished interactively in conversation, successful communication relies on both the child's work in providing information and the mother's work in interpreting the information. By adopting this approach, we can examine both the child's and the mother's roles in conversational interaction, and investigate how the child and the mother contribute to the communication of temporal reference.

Another characteristic of the study is the inclusion of adult data: analyses were conducted to examine not only child speech but also maternal speech and adult speech. The purpose for examining the three types of speech is to interpret and understand child data better: children's language can be interpreted in the light of not only the language in which they are directly addressed but also the language with the fully developed system. In this way, we can obtain a more complete picture of what children are learning and how far they have to advance in order to become competent speakers.

## METHOD

### *Participants and data*

The participants of this study were two Mandarin-speaking children and their mothers, who lived in Taiwan. The data analysed included conversations between the children and their mothers, and conversations between the mothers and their friends. Thus, the data consisted of both mother-child and adult-adult conversations.

The children's pseudonyms were Weiwei and Tingting. At the time of data collection, Weiwei, a boy, was aged 3;3, and Tingting, a girl, was 3;2. Weiwei was a second-born child, and he had a 5-year-old sister. Tingting was a third-born child, who had two older sisters aged 5 years and 7 years. Weiwei's and Tingting's parents had high school or college education.

Natural child-mother conversations were audio- and video-taped at the participants' homes or in the nearby neighbourhood. Sometimes other family members were also present during the data collection sessions and participated in the conversations. The researcher occasionally also took part in the conversations when it seemed natural and appropriate. Each mother-child dyad was recorded for 6 hours within a two-week period. Thus, a total of 12 hours of mother-child conversation data were collected.

In addition to the mother-child conversation data, adult-adult conversation data were collected. These data consisted of conversations between the mothers and their friends. Each mother-friend dyad was audio-taped for 1.5 hours at the participants' homes or their workplaces. Thus, a total of 3 hours of adult-adult conversation data were collected.

The data were transcribed using the Pinyin system of romanization, and the transcript followed the CHAT conventions (MacWhinney 1994).

### *Research questions*

The research questions of the study are as follows: How are past references established in the children's speech, the mothers' child-directed speech and the mothers' adult-directed speech? What temporal devices do the children and the mothers use to establish past reference? Most importantly, what discourse-pragmatic resources are employed to express implicit past reference when no overt temporal markers are used?

### *Procedure*

In the three types of speech, utterances that established past references were identified. These utterances were then examined and classified into three categories, according to the kinds of temporal devices used to establish past references.

1. *Aspect markers*: utterances which contain overt aspect markers, such as the perfective marker *-le* or the experiential marker *-guo*.
2. *Temporal adverbials*: utterances which contain overt temporal adverbials such as *temporal adverbs* (e.g., *zuotian* 'yesterday') or *temporal adverbial clauses* (e.g., *shihou*-clause 'when-clause').

3. *Unmarked initiations*: utterances which do not contain any overt temporal/aspect markers. The sense of pastness in the utterances is inferred from discourse-pragmatic resources.

In addition to quantitative analysis for analysing the three categories, qualitative analysis was also conducted to examine the discourse-pragmatic resources used for the unmarked initiations.

## RESULTS

Figures 1 and 2 show the distributions of the three categories in the children's speech, the mothers' child-directed speech and the mothers' adult-directed speech. They indicate a sharp contrast in distribution patterns among the three types of speech. While aspect markers were the most frequently used device for the children (61% for Weiwei, 57% for Tingting), they were rarely used by the mothers in adult-directed

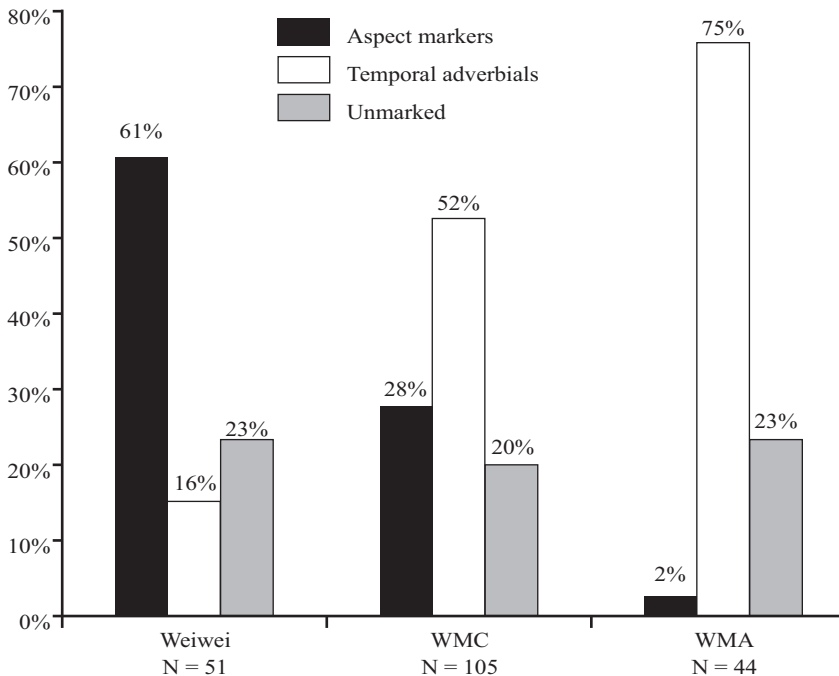


Fig. 1. Temporal devices for past reference initiations in Weiwei's speech, mother's child-directed speech (WMC) and mother's adult-directed speech (WMA)

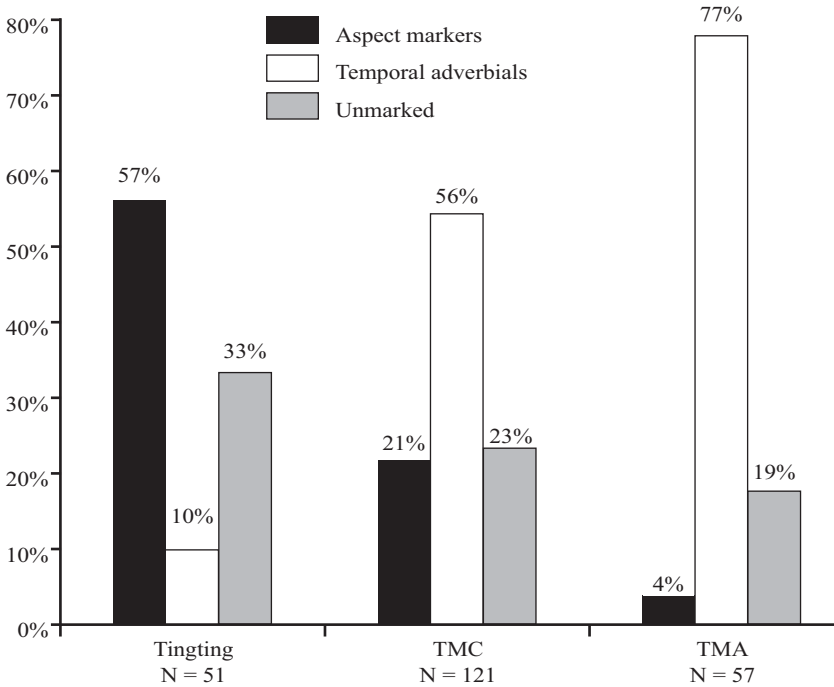


Fig. 2. Temporal devices for past reference initiations in Tingting’s speech, mother’s child-directed speech (TMC) and mother’s adult-directed speech (TMA)

speech (2% for Weiwei’s mother, 4% for Tingting’s mother); in the mothers’ child-directed speech, on the other hand, the percentages were somewhere in the middle of the two extremes (28% for Weiwei’s mother, 21% for Tingting’s mother). Interestingly, we observed that the distribution of temporal adverbials shows the opposite pattern: high percentages in the adult speech (75%, 77%), middle percentages in the maternal speech (52%, 56%), and low percentages in the child speech (16%, 10%). Therefore, the results show that when explicitly marking past references, the children and the mothers tend to rely on different devices in the three types of speech. In addition, we observed that the mothers appear to adjust their speech when addressing the children.

In addition to aspect markers and temporal adverbials, the figures also show notable portions of unmarked initiations in the three types of speech (around 20% or above). That is, in these cases, past references



were not explicitly marked by temporal devices, but were inferred implicitly from discourse-pragmatic resources, such as situational context, discourse context and shared background knowledge. Further analysis was conducted to investigate how the different discourse-pragmatic resources contribute to the establishment of implicit past reference in the three types of speech.

### *Child speech*

In the analysis of the children's speech to the mothers, it is found that most of the children's unmarked initiations of past references were related to the immediate situational concern. That is, the situation in the here-and-now provided the resource for temporality inference.

Example 1, from Tingting's data, illustrates an example of unmarked initiations in the children's speech.<sup>1</sup>

### *Example 1*

1. MOT: ni kan nide jiao a.  
you look your foot PRT  
Look at your feet.
2. MOT: zenme zheme zang a?  
how come so dirty PRT  
How come they are so dirty?
3. TIN: wo pa diban a. ←  
I crawl ground PRT  
I crawled on the ground.

In lines 1 and 2, the mother commented on an immediate concern in the here-and-now: Tingting's feet were very dirty. In line 3, Tingting switched the time frame from the present to the past by describing a past situation related to the present concern: she crawled. Note that no temporal device was used in line 3. However, line 3 was interpreted as a past situation because of the inferred causal relationship: Tingting's crawling caused Tingting's feet to be dirty.

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[1] *Transcription symbols* -: Previous word lengthened, +/. Interruption, ← Transcription line for special attention.

*Abbreviations for glosses* AUX Auxiliary, CL Classifier, GEN Genitive, NOM Nominalizer, PRT Particle, PSV Passive, Q Question marker, 3sg third person singular.

Example 2 demonstrates that Weiwei's initiation of implicit past reference was also related to the situational concern.

*Example 2*

1. MOT: na shi shenme?  
that be what  
What is that?
2. CHI: qiqiu.  
balloon  
Balloon.
3. MOT: ni zenme you?  
you how come have  
How come you have it?
4. CHI: jiejie gei wo de. ←  
sister give I DE  
Sister gave it to me.

In line 4, Weiwei switched the time frame from the present to the past. Although the utterance in line 4 did not contain any temporal device, it could be inferred as referring to the past because of the situational information. That is, the past reference in line 4 could be inferred from the causal relationship between the event mentioned in line 4 and the present concern in the situational context.

As seen in the above examples, the children's referring to the there-and-then was evoked by something in the here-and-now, and their establishing implicit past reference relied heavily on the situational context. In addition to situational context, another important resource for the mothers to interpret the children's unmarked initiations was background knowledge, as seen in Example 3.

*Example 3*

1. WEI: shushu dai wo qu kan hudie ye. ←  
uncle take me go see butterfly PRT  
Uncle took me to see butterflies.
2. MOT: qu nabian zhua hudie ?  
go where catch butterfly  
Where did (you) go to catch butterflies?
3. WEI: qu -: zoulu qu zhua de shihou.  
go walk go catch NOM when  
Went, the time when (we) walked there to catch (butterflies).

4. MOT: qu nabian zhua hudie?  
go where catch butterfly  
Where did (you) go to catch butterflies?
5. WEI: shushu gen wo qu.  
Uncle with I go  
Uncle went with me.
6. MOT: na ge shushu gen ni qu.  
which CL uncle with you go  
Which uncle went with you?
7. WEI: jiali de shushu.  
home NOM uncle  
The uncle at home.
8. MOT: jiali de na yi ge shushu dai ni qu zhua  
home NOM which one CL uncle take you go catch  
hudie?  
butterfly  
Which uncle at home took you to catch butterflies?
9. MOT: en?  
PRT  
Hunh?
10. WEI: bu zhidao.  
not know  
(I) don't know.
11. MOT: bu zhidao ou.  
not know PRT  
(You) don't know.
12. MOT: Judong shushu shi bu shi?  
Judong uncle be not be  
Uncle Judong, right?
13. WEI: shi a.  
yes PRT  
Yes.
14. MOT: ou.  
PRT  
Oh.

15. WEI: Judong shushu dai wo qu zhua hudie.  
 Judong uncle take I go catch butterfly  
 Uncle Judong took me to catch butterflies.
16. MOT: na youmeiyou zhua-dao hudie? ←  
 then Q catch-arrive butterfly  
 Then did (you) catch any butterflies?
17. WEI: meiyou.  
 no  
 No.

In the above example, temporal reference was not explicitly marked by Weiwei in line 1 as he was introducing a new topic. Since the event mentioned in line 1 was not related to the situational context, it appears that Weiwei was not referring to the here-and-now. The mother might resort to background knowledge and/or guessing to infer the time frame. If the mother had in fact known about the event, then this specific shared background information can serve as the resource for inferring the past reference. If the mother did not know about the event, the mother might simply guess the time frame by determining how plausible it was for the event in question to have taken place in the past, based on her general background knowledge. A clear indication of the mother's interpretation of the past reference was the A-not-A question asked by the mother in line 16, where the mother asked the child '*na youmeiyou zhuadao hudie?*'. This sentence can only be interpreted as asking about the past 'Then did you catch any butterflies?' According to Li & Thompson (1981), the A-not-A question form *youmeiyou* and the negator *meiyou* concern the completion of the action denoted by the verb. The mother used *youmeiyou* to ask whether the action *zhuadao hudie* ('to catch butterflies') was completed or not, and the child replied *meiyou* ('no') to deny the completion of the action, i.e., he didn't catch any butterflies. Although the question form *youmeiyou* and the negator *meiyou* are not past tense markers, they are usually interpreted as referring to the past unless the interpretation is overruled by explicit temporal devices denoting other time frames.

In Example 4, from Tingting's data, the mother's background knowledge also played a crucial role in inferring the past time reference. In this example, the mother was telling Tingting that it would be good for her to go to school because she would become smarter after going to school and would earn her mother's affection.

*Example 4*

1. MOT: ni xihuan shang ke ma?  
you like take class Q  
Do you like going to school?
2. TIN: xihuan.  
like  
(I) like (going to school).
3. MOT: xihuan ni jiu bian hao bang hao bang ou.  
like you then become very excellent very excellent PRT  
If you like (going to school), then you will become excellent.
4. MOT: zhi bu zhidao?  
understand not understand  
Understand?
5. TIN: zhidao.  
understand  
(I) understand.
6. MOT: xihuan shang ke mama jiu hui xihuan ni.  
like take class mommy then will like you  
If you like going to school, then Mommy will like you.
7. MOT: bu xihuan shang ke mama jiu bu xihuan ni.  
not like take class mommy then not like you  
If you do not like going to school, then Mommy won't  
like you.
8. MOT: zhidao ma?  
understand Q  
Understand?
9. TIN: er jie hou. ←  
second older sister PRT  
Second Older Sister.
10. MOT: xiang er jie jintian zaoshang zhe yangzi  
like second older sister today morning this way  
mama jiu bu xihuan ta.  
mommy then not like 3sg

Like the way Second Older Sister (behaved) this morning,  
then Mommy didn't like her.

11. TIN: yizhi        ku.  
          ceaselessly cry  
          (She) cried ceaselessly.
12. MOT: yizhi        ku.  
          ceaselessly cry  
          (She) cried ceaselessly.

In the above example, Tingting's utterance *er jie* ('Second Older Sister') in line 9 established a past time reference. However, in this utterance, Tingting did not supply any temporal device. In fact, she only offered a nominal. The mother thus had to infer not only what the time frame was but also what the utterance was about. As Tingting's utterance was considered as a response to the mother's preceding utterances, it could thus be interpreted in relation to the topic of the preceding discourse. That is, Tingting's utterance *er jie* contributed to the ongoing topic about the mother's evaluation of going to school. In addition to the preceding discourse, the mother had to rely heavily on her background knowledge to interpret the utterance. Her background knowledge about what had happened earlier that day not only enabled her to clarify the time frame and supply the temporal adverb *jintian zaoshang* ('this morning') in line 10, but also enabled her to elaborate and upgrade Tingting's simple nominal by mentioning the undesirable behaviour of Tingting's sister.

As seen in the above example, background knowledge played a crucial role in the mother-child communication. Since the children often produced incomplete utterances and supplied insufficient information, the mothers had to rely heavily on shared background knowledge to interpret the children's utterances.

### *Maternal speech*

As for the mothers' child-directed speech in the mother-child conversation, the analysis reveals that the mothers relied mainly on situational context to convey implicit temporal reference. Example 5 is an unmarked initiation used by Weiwei's mother.

### *Example 5*

(Weiwei is singing a nursery rhyme)

1. MOT: shei jiao ni de? ←  
           who teach you NOM  
           Who taught you (that)?
2. WEI: ap.  
           grandma  
           Grandma.
3. MOT: apo       ou.  
           grandma PRT  
           Grandma.

In this example, the mother established a past time reference in line 1 without using a temporal device. However, the past reference could be inferred from the situational context. The mother's utterance was associated with the immediate concern of the conversational situation, i.e., Weiwei's singing the nursery rhyme at the time of speech. A causal and sequential relationship could be inferred between Weiwei's being able to sing the nursery rhyme and his grandmother's teaching him that song. That is, his grandmother taught him the song before he could sing it. Therefore, it could be inferred that the mother's utterance in line 1 referred to an event happening before the time of speech.

Example 6 gives an example of unmarked initiations in the speech of Tingting's mother.

*Example 6*

1. MOT: shei kai       lengqi       de? ←  
           who turn on air conditioner PRT  
           Who turned on the air conditioner?
2. TIN: baba.  
           daddy  
           Daddy
3. MOT: ni   jiao baba kai   ou.  
           you ask daddy turn on PRT  
           You asked Daddy to turn (it) on.
4. TIN: bu shi.  
           no  
           No

5. TIN: baba ziji kai de.  
 daddy himself turn on NOM  
 Daddy turned (it) on himself.

In line 1, the mother asked Tingting who turned on the air conditioner. The mother established a past reference in line 1 without using a temporal marker. The question in line 1 involved the situational context: the air conditioner was on at the time of speech. It also involved a pragmatic causal relation. That is, someone had to turn on the air conditioner before it was on. Therefore, although without an overt temporal marker, line 1 could be inferred as referring to an event that had occurred before the time of speech.

In contrast with the children, the mothers did not resort to background knowledge very often in the mother-child conversation. As the children had limited linguistic and cognitive capabilities, we may posit that the mothers would not put a heavy inferencing burden on the children. It appears that situational context was the most accessible resource for the children to infer implicit temporal reference.

Interestingly, the data did show one case of unmarked initiation in which Tingting's mother resorted to shared background knowledge for temporality inference. However, in this particular case, the event mentioned was a routine event rather than a unique event. In other words, the mother did not demand that Tingting recall the time frame of a unique event, but called on Tingting's shared background knowledge of a routine event.

*Example 7*

1. MOT: ni qu youzhiyuan wan ma? ←  
 you go kindergarten play PRT  
 Did you go to the kindergarten to play?
2. TIN: meiyou.  
 no  
 No.
3. TIN: ba men suo qilai le.  
 BA door lock rise up PRT  
 (They) locked the door.

In Example 7, the mother initiated a new topic and an implicit past reference in line 1. Since Tingting played in the playground of a kindergarten in the neighbourhood almost every day, the routine event



was shared background knowledge. Therefore, the inferred past reference in line 1 appears to be 'today'. In other words, the past reference was inferred from the shared background knowledge about the routine event. We may posit that knowledge of routine events may be more accessible to children than memory of unique events (see Eisenberg 1985, Lucariello & Nelson 1987).

### *Adult speech*

Instead of situational context and background knowledge, the mothers mainly relied on discourse context in adult-directed speech. That is, the implicit reference was inferred largely from what had been said up to the point in discourse, as in Example 8.

Prior to Example 8, Weiwei's mother (MOT<sub>w</sub>) told her friend that she was thinking of opening a beauty salon. The friend was surprised to know that MOT<sub>w</sub> had a beautician's license.

### *Example 8*

1. MOT<sub>w</sub>: wo you zhizhao a.  
I have licence PRT  
I have a licence.
2. FRI: ni you zhizhao?  
you have licence  
You have a licence?
3. FRI: ni you meirong de zhizhao?  
you have cosmetic NOM licence  
You have a beautician's licence?
4. MOT<sub>w</sub>: dui ya, wo qu xue a. ←  
yes PRT, I go learn PRT  
Yes, I went and got trained.

In line 2 and line 3, the friend asked about MOT<sub>w</sub>'s licence. MOT<sub>w</sub> in line 4 confirmed that she did have a beautician's licence, and explained that she had taken some training classes. Line 4 initiated a past reference without the presence of any overt temporal marker. However, since line 4 was related to the preceding discourse, the past reference could be inferred from the discourse context. From the preceding discourse, the speakers shared the information that MOT<sub>w</sub> had a beautician's license at the time of speech. Furthermore, from pragmatic knowledge, it can be assumed that one usually takes training classes

before getting a licence. Therefore, from these discourse-pragmatic resources, MOT<sub>w</sub>'s taking the training classes was inferred as happening before the time of speech.

Prior to Example 9, MOT<sub>w</sub> told her friend that her son Weiwei did not like watching TV. Instead, he liked drawing and reading picture books. Her friend replied that it was good for him that he liked these educational activities, because most children spent too much time watching TV.

*Example 9*

1. FRI: zhe yang keyi ziji xuexi.  
this way can self learn  
This way, he can learn on his own.
  
2. MOT<sub>w</sub>: na Nanxin na ge Lin laoshi jiu shuo ta  
that Nanxin that CL Lin teacher exactly say 3sg  
xiangxiangli hen hao. ←  
creativity very good  
Teacher Lin in the Nanxin (Kindergarten) did say that  
he has a high level of creativity.

In line 1, the friend said that through reading and drawing, Weiwei could learn on his own. Note that line 1 was not only a comment but also a compliment, implying that Weiwei's intellectual development might be better than other children because of those educational activities. MOT<sub>w</sub> appeared to be pleased with the compliment, and mentioned that her son's teacher did say that he was very creative. MOT<sub>w</sub>'s utterance in line 2 was not marked with a temporal device. However, the utterance was interpreted as referring to a past event. The interpretation was inferred from the discourse context and the semantic relation between line 1 and line 2. That is, in support of her friend's comment about her child in line 1, MOT<sub>w</sub> in line 2 referred to a past event, i.e., the teacher's compliment, as evidence for her child's advantage.

In the above examples, we observe that unmarked initiations usually establish deictic past relations. That is, the focus of an unmarked initiation is usually to indicate that the event mentioned has occurred prior to the speech time. However, in some cases unmarked initiations can convey referential values. A referential past relation anchors the event specifically at a past time point, as in Example 10. MOT<sub>t</sub> was talking to her colleague in their work place.

*Example 10*

1. MOT: jintian mei faku hao dai.  
today not headband able wear  
(I) don't have a headband to wear today.
2. COL: zenme?  
how come  
How come?
3. MOT: dai wo nuer de faku.  
wear I daughter GEN headband  
I am wearing my daughter's headband.
4. COL: ni de faku ne?  
you GEN headband PRT  
Where is your headband?
5. MOT: wo qichuang ta jiu gen wo qiang a. ←  
I get up 3sg then with me snatch PRT  
I got up and then she snatched (it) from me.
6. MOT: wo na xiao nuer a.  
I that young daughter PRT  
My youngest daughter.
7. MOT: wo yao ni de faku.  
I want you GEN headband  
'I want your headband.'
8. MOT: wo shuo ni qu dai na yi ge.  
I say you go put on that one CL  
I said, 'You go and put that one on.'
9. MOT: ta shuo na ge hao jin.  
3sg say that CL so tight  
She said, 'That one is so tight.'
10. MOT: wo bu yao.  
I not want  
'I don't want (it).'

In line 5, MOT<sub>t</sub> answered her colleague's question about her headband. She mentioned a past event that resulted in the present concern that she wasn't wearing her headband. Her reply was interpreted as referring to

the past, although without using an overt temporal marker. Note that the verb *qichuang* ('get up') in line 5 not only referred to an event in the past but also conveyed a referential value. From our pragmatic knowledge, we know that the action of getting up usually occurs in the morning, especially for people with a regular daytime working schedule. Since MOT<sub>i</sub> had established a present time frame of 'today' in line 1, the temporal reference in line 5 could be inferred as 'this morning', which thus set a referential past relation.

In Example 11, the unmarked initiation also established a referential past relation. However, the inference is of a different kind. MOT<sub>w</sub> had just moved into an apartment in a newly developed community and MOT<sub>w</sub>'s friend was asking her how many people were living in the new community.

*Example 11*

1. FRI: xianzai zhu jinlai you +/-  
           now live in there be  
           (How many) people are living (here)?
  
2. MOT<sub>w</sub>: ban jinlai, wo ban na ge zhuhu dengji  
           move in I handle that CL residence registration  
           shi dijiushi hu. ←  
           be ninetieth household  
           (When) we moved in, we were registered as the 90th  
           household.

In line 2, we observe an unmarked initiation of past reference. The inferred time frame was '(when) we moved in'. That is, the first clause in line 2 was interpreted as setting the time frame for the event mentioned in the second clause. The relation between the two clauses, however, was inferred because the first clause was not an explicit when-clause. Li & Thompson (1981) pointed out that Mandarin clauses can be linked by linking elements such as *de hua* ('if'), *yihou* ('after'), and *de shihou* ('when') explicitly to signal the relationships between clauses. However, as also suggested by Li & Thompson, linking relationships between Mandarin clauses sometimes need not be overtly marked at all, but can occur simply by virtue of the speaker's intention that the clauses be related. In such cases, the particular relationship between the two clauses is not signalled explicitly and must be inferred by the hearer from his/her knowledge of the situation and of what has been said to that point. Therefore, the unmarked initiation in

Example 11 provides an example of such implicit linking relationships. In other words, although the two clauses in line 2 were not linked by the linking element *de shihou* ('when'), the relationship between the two clauses could be inferred from the discourse context.

#### DISCUSSION AND CONCLUSION

As Mandarin Chinese is a tenseless language, implicit inference represents an important characteristic of the Mandarin temporal system. When temporal reference is not explicitly marked by overt temporal markers, the speaker and the listener rely on inferencing to communicate implicit temporal reference. Thus, to master the Mandarin temporal system, Mandarin-speaking children need to learn not only how to use formal temporal devices but also how to convey implicit reference. Since previous studies have focused mostly on tensed languages, this study offers a new perspective and contributes to our understanding of the acquisition of temporal reference in tenseless languages.

As seen in the analysis, various discourse-pragmatic resources contributed to temporality inference in the children's speech, the mothers' child-directed speech, and the mothers' adult-directed speech. However, the analysis also reveals that the relative weights imposed on these devices were different in the three types of speech. In the child speech, we observed that situational context and background knowledge were the major resources for temporality inference. In the maternal speech, the mothers tended to rely on situational context. In the adult speech, however, it was discourse context that played the major role. Thus, by comparing the child speech with the adult mature speech, the analysis reveals what three-year-olds can and cannot accomplish with their developing temporal systems. It appears that the children's abilities to use discourse-pragmatic resources were still rather limited. In the children's temporal systems, the here-and-now still played an important role even when referring to the there-and-then. That is, the speech time still functioned as the main reference time for the children to express implicit past relations. By comparing the mothers' child-directed and adult-directed speech, on the other hand, it is evident that the mothers were sensitive to the children's restricted temporal systems, as shown in the adjustments made in their child-directed speech. It is suggested that maternal adjustments were motivated by the mothers' attempt to involve the children in conversational interaction (Brown 1977, Snow 1977).

Successful communication of implicit temporal reference is essentially related to the speaker's capacities for assessing the listener's

perspectives and the new/given information status. According to Chafe (1976: 30), 'given (or old) information is that knowledge which the speaker assumes to be in the consciousness of the addressee at the time of the utterance. So-called new information is what the speaker assumes he is introducing into the addressee's consciousness by what he says'. When establishing implicit past reference, the time frame is usually 'new' in conversation. The various discourse-pragmatic resources thus provide the 'given' information that is necessary for inferring the time frame. As discussed above, situational context plays an important role in mother-child conversation for temporality inference. Situational information can often be easily accessed by the speakers to gain the 'given' information status. In mother-child conversation, the child's eye gaze or gesture can cue in the mother what information is to be evoked in her consciousness. Thus it is easier for the mother to infer the child's contextually related utterances. In contrast, when the child relies on background knowledge to establish past time references, the utterances can sometimes seem to be out of the blue because the background information may not be in the forefront of the mother's mind, i.e., not in the consciousness of the mother at the time of the utterances (Chafe 1970). Thus, the success of the communication may rely heavily on the mother's inferencing and guessing skills.

Given that so little research has been done on the Mandarin temporal system and its acquisition, it is hoped that this study has shed some light on our understanding of the language. Some limitations to this study, however, should be noted. First, the data used in the study consist of the speech of only two children and their mothers. Further studies of more participants would be beneficial to understand whether the findings observed in this study also hold for other participants. Another limitation is that speech was investigated only in three-year-old children; longitudinal studies are needed in order to discover the developmental course. Furthermore, future research should investigate other tenseless languages. By studying different tenseless languages, we can gain a more complete picture of how discourse-pragmatic resources contribute to the communication of temporality.

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