Distinct Developmental Patterns for Anaphoric vs Logophoric *Ziji*

Recent analyses of long-distance reflexives have tended to treat them as playing the roles of both anaphors and logophors (e.g., Huang & Liu 2001; Pollard & Xue 2001, among others), but different accounts have been proposed to draw the line between the two. Reinhart & Reuland's (1993) theory considers an anaphor as syntactically bound if its antecedent is the co-argument of the predicate, whereas Pollard & Xue (2001) takes anaphoric syntactic binding as including the cases where the element is contained within a constituent which is the antecedent's co-argument. On the other hand, the property of subject orientation is generally considered as due to parameter setting (hence a type of anaphoric binding).

This study reports findings from three experiments investigating the patterns of interpretations for reflexive *ziji* from Mandarin-speaking preschool children (4-7 year-old), school-age children (8-10 year-old) and adults. A truth value judgment task was employed using sentences like (1) and (3) for Experiment 1, (2) and (3) for Experiment 2, and (4) and (5) for Experiment 3. For sentences (1) and (2), Reinhart & Reuland's (1993) theory takes co-indexing with the non-local subject as logophoric binding, and hence predicts late and gradual development of this interpretation. However, Pollard & Xue (2001) considers co-indexing with either the local or the non-local subjects in the two sentences as anaphoric binding, and so predicts early mastery of the interpretation by children. For the sentence in (4), since the antecedent does not c-command *ziji*, it is logophoric binding regardless of the accounts, and thus will show late and gradual development. As for the sentence in (3) for subject orientation, since it has to do with parameter setting, it is predicted to show instantaneous development, even if it is not early acquired.

For sentences (1) and (2), the coreference reading of *ziji* and the non-local subject NP was made true and the coreference of *ziji* and the local subject NP false in the stories. For the sentence in (3), the coreference reading of *ziji* and the object NP was made true but the coreference of *ziji* and the subject NP false in the stories. For sentence (4), although the matrix predicate is true in the story (i.e., Mermaid was angry), the coreference of *ziji* and the referential NP was not true in the stories (i.e., Snow White lost her purse, not Mermaid). For sentence (5), although the coreference between *ziji* and the referential NP is true (i.e., the princess' cow won), the matrix predicate is not true in the story (i.e., the princess was not happy).

The results of the experiments are illustrated in Table 1, and the major findings are

(1) The fact that adults distinguish (1) from (2) supports Reinhart & Reuland's (1993) theory that an anaphor is syntactically bound if its antecedent is the co-argument of the predicate.
(2) Although preschool children showed non-adult-like interpretation for subject orientation sentence in (3), school-age 8-10 years old children have reached adult-like pattern, consistent with the prediction of the parameter setting anaphoric binding accounts.
(3) Preschool children had apparent difficulty interpreting sentences like (4), and although 8-10 years old school-age children performed better, their accuracy was still significantly lower than the adults', consistent with the prediction for logophoric binding.
(4) The fact that preschool children and even 8-10 years old children did not have adult-like interpretations for sentences like (2) suggests that it is a type of logophoric binding.

Types of sentences

(1) Laoshu shuo Tuzi zai ca ziji （老鼠說兔子在擦自己）
Mouse say Rabbit ASP wipe self
"Mouse said Rabbit was wiping SELF."

(2) Xiaoairen shuo nanhai zai ban ziji de shafa (小矮人說男孩在搬自己的沙發)
Dwarf say boy ASP carry self of sofa
"The dwarf said the boy was carrying SELF's sofa."

(3) Tuzi nagei Xiaoxiong yi-ben ziji de shu （兔子拿給小熊一本自己的書）
Rabbit hand Bear one-CL self of book
"Rabbit handed Bear a book of SELF."

(4) Ziji-de pibao bujian le rang meirenyu hen shengqi (自己的皮包不見了讓美人魚很生氣)
Self-Poss purse disappear ASP make Mermaid very angry
"The fact that her purse disappeared made Mermaid very angry."

(5) Gongzhu-de niu dejiang rang ziji hen kaixin (公主的牛得獎讓自己很開心)
Princess-Poss cow win make self very happy
"The fact that the princess' cow won made herself very happy."

Table 1. Results of the experiments (percentages of NO)

Experiment	Preschool children	School-age children	Adults
I			
Sentence (1)	81% (N=21, 34/42)	NA	88% (N=24, 42/48)
Sentence (3)	60% (N=21, 25/42)	NA	96% (N=24, 46/48)
II			
Sentence (2)	97% (N=18, 35/36)	71% (N=14, 20/28)	43% (N=14, 12/28)
Sentence (3)	50% (N=18, 18/36)	89% (N=14, 25/28)	96% (N=14, 27/28)
III			
Sentence (4)	27% (N=17, 9/34)	62% (N=17, 21/34)	100% (N=24, 48/48)
Sentence (5)	91% (N=17, 31/34)	97% (N=17, 33/34)	98% (N=24, 47/48)