On Mandarin-Speaking Children's Acquisition of *De*P Recursion

Children's acquisition of recursion has been extensively studied recently. The classic types of recursion under research include PP recursion, possessive recursion, and embedding of clauses. In fact, a language does not necessarily contain all types of recursion, and might exist various unusual types which have not been investigated. To our knowledge, *De*P recursion in Mandarin would be of that kind.

A major research perspective in the acquisition of recursion is the step-by-step development. Results in Fujimori (2010) demonstrated that children's generation of 2-to-4-level possessive recursion was not step-wise, but achieved all at once at age 4. Terunuma & Nakato (2013) found three stages in the acquisition of possessive recursion - 1-level recursion, 2-level recursion, and then 3-and-4 level recursion. Terunuma et al. (2017) observed the developmental stages that 3-and-4-level locative recursion was not necessarily available at the same time as 2-level recursion acquired by children around age 4. These studies on 4-level recursion seem to be less convincing, on the account that no absolute consensus on the developmental stage issue has been achieved by merely exploring classic recursion types. Our experiment espouses the step-by-step development of children's acquisition of *De*P recursion, but how the steps are divided differs from the conclusion of previous studies.

The current study investigates the developmental stages of Mandarin-speaking children's acquisition of 2-to-4-level *De*P recursion [1]. The semantic function of *De*P recursion is to illustrate the logical location of the referents within *De*Ps. However, we refer to locative *De*P recursion as *De*P recursion, considering that *De*P node dominates *Loc*P whether head *de* of *De*P is overt or not (see Figure 1).

Eighty-four Mandarin-speaking children (20 three-year olds, M=3;09, SD=0.166; 20 four-year olds, M=4;03, SD=0.270; 23 five-year olds, M=5;05, SD=0.302; 21 six-year olds, M=6;03, SD=0.210) and 21 adults participated in the experiment. They performed a pointing task after hearing the prompts, and were asked why the referent was pointed out.

Non-parametric Test (Kruskal-Wallis Test) indicated a statistically significant difference between the age groups on 2-to-4 level *De*P recursion (p=0.000; p=0.000; p=0.000). Specifically, children acquired genuine recursive power of 2-level *De*P recursion at age 4 (3-year olds vs. adults *adjusted* p<0.001; 4-year olds vs. adults *adjusted* p=1.000). On 3-level *De*P recursion, children have an adult-like comprehending performance at age 4 (3-year olds vs. adults *adjusted* p<0.001; 4-year olds vs. adults *adjusted* p=0.226). Meanwhile, children's performance on 4-level *De*P recursion did not converge with that of adults until the age of 5 (4-year olds vs. adults *adjusted* p<0.001; 5-year olds vs. adults *adjusted* p=1.000). In general, children first acquire 2-and-3-level *De*P recursion at the age of 4, while 4-level *De*P recursion can only be fully acquired by the 5-year-old. At the age of 5, children's comprehension ability of 2-to-4 *De*P recursion is initially stable and mature.

(478 words)

Figure

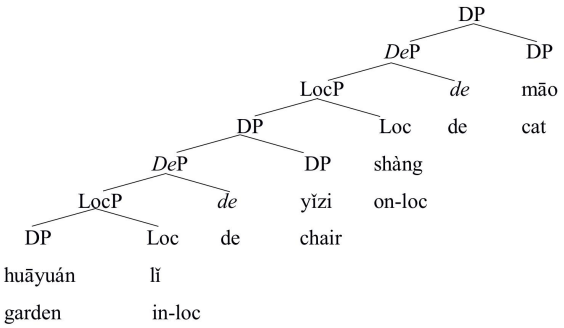

Figure 1. Tree diagram of one example of 2-level *De*P recursion.

[1] One example of 2-level *De*P recursion

huāyuán	lǐ	de	yǐzi	shàng	de	māo
garden	in-loc	de	chair	on-loc	de	cat

the cat on the chair in the garden

One example of 3-level *De*P recursion

chuáng	shàng	de	pánzi	lǐ	de	píngzi	lǐ	de	huā
bed	on-loc	de	plate	on-loc	de	bottle	in-loc	de	flower

the flower in the bottle on the plate on the bed

One example of 4-level *De*P recursion

zhuōzi	shàng	de	shūběn	shàng	de	xiǎoxióng	shàng	de	lízi	shàng	de	máomaochóng
table	on-loc	de	book	on-loc	de	bear	on-loc	de	pear	on-loc	de	caterpillar

the caterpillar on the pear on the bear on the book on the table

References

Fujimuri, C. 2010. Acquisition of recursive possessives in Japanese (Unpublished manuscript). University of Massachusetts, Amherst.

Terunuma, A., & Nakato, T. 2013. Recursive possessives in child Japanese. *Paper presented at Recursion in Brazilian Languages and Beyond 2013.* Federal University of Rio de Janeiro.

Terunuma, A., Isobe, M., Nakajima, M., Okabe, R., Inada, S., Inokuma, S., & Nakato, T. 2017. Acquisition of recursive possessives and locatives within DPs in Japanese. In M. LaMendola & J. Scott (Eds.), *Proceedings of the 41st annual Boston University Conference on Language Development* (pp. 626-637). Somerville: Cascadilla Press