

Children's interpretations of quantifier scope interactions in Japanese

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In a quantifier scope interaction with *some* and *every* in Japanese, when *some* and *every* are in a canonical order SOV such as *Dareka-ga dono-neko-mo tukamaeta* 'Someone caught every cat', it has been said that *some* can take scope over *every*, but *every* cannot take scope over *some*. In contrast, when the sentence is scrambled as OSV such as *Dono-neko-mo dareka-ga tukamaeta* 'Every cat, someone caught', *every* can take scope over *some* (Hoji 1985.) Sano (2004) tested Japanese children's interpretations and found that, unlike adults, the children accepted both readings (i.e., *some*>*every* and *every*>*some*) for canonical and scrambled sentences.

Unlike Japanese, English allows both *some*>*every* and *every*>*some* readings for the *some/every* interaction such as 'Someone caught every cat' and it has been explained by Quantifier Raising (QR) (May 1977). However, when the negation intervenes between *some* and *every* such as 'Someone did not catch every cat,' the distributive readings (*every*>*some*) become unavailable like Japanese (Aoun and Li 1993, Hornstein 1995.) Based on Sano's (2004) results, we conducted an experiment to examine whether Japanese children reject the distributive readings (*every*>*some*) for the *some/every* interaction with negation and whether they change the scope interpretations for the scrambled version.

In our experiment, we tested 28 children acquiring Japanese (4;2–6;7; 12 four-year-olds, 7 five-year-olds, 9 six-year-olds). The method was the Truth Value Judgment Task (Crain and Thornton 1998). The children were told stories of 3 elephants coloring pictures and asked to judge whether what the puppet said about the colored pictures was right or wrong. The test sentences included 1 matched (*some*>*every*) and 2 mismatched (*every*>*some*) canonical sentences such as *Dareka-ga dono-ie-mo nuranakatta* 'Someone did not color every house', and 1 matched (*some*>*every*) and 1 mismatched (*every*>*some*) scrambled sentences such as *Dono-ie-mo dareka-ga nuranakatta* 'Every house, someone did not color.'

The results are as follows. Regarding the canonical sentences, the children accepted *some*>*every* readings 88.9% (24/27) of the time, whereas they rejected *every*>*some* readings for only 25.0% (14/56) of the time. Regarding the scrambled sentences, they accepted *some*>*every* readings 81.5% (22/27) of the time and accepted *every*>*some* readings 85.7% (48/56) of the time. These results show that the children accepted both *some*>*every* readings and *every*>*some* readings for canonical and scrambled sentences more than 75% of the time. (See the details in Table 1.) Our results and Sano's (2004) results both show that the children acquiring Japanese accepted *every*>*some* readings for both the *some/every* interaction and the *some/every* interaction with negation in canonical and scrambled orders.

These results suggest that the children acquiring Japanese accept *every*>*some* readings because, unlike adults, they allow Quantifier Raising (QR) in the *some/every* interaction and its interaction with negation. Miyagawa (to appear) suggests that both QR and scrambling are scope shifting operations and the difference is that QR is covert whereas scrambling is overt. It is possible that children acquiring Japanese first use QR to interpret quantifier scope interactions and thus they accept both *some*>*every* and *every*>*some* readings. In contrast, Japanese adults use scrambling but not QR to change quantifier scope interactions, and thus the difference between adults and children acquiring Japanese are observed regarding the interpretations of quantifier scope interactions.

Table 1: Correct response rates by age group

Word order	Canonical (SOV)		Scrambled (OSV)	
	Some>every	Every>some	Some>every	Every>some
Correct answer	accept	reject	accept	accept
4 year olds (N=12)	90.9% (10/11)	25.0% (6/24)	81.8% (9/11)	83.3% (20/24)
5 year olds (N=7)	85.7% (6/7)	21.4% (3/14)	85.7% (6/7)	100% (14/14)
6 year olds (N=9)	88.9% (8/9)	27.8% (5/18)	77.8% (7/9)	77.8% (14/18)
Total (N=28)	88.9% (24/27)	25.0% (14/56)	81.5% (22/27)	85.7% (48/56)

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