**Quantifier scope ambiguities in native and heritage Korean speakers**

**Background.** English doubly-quantified sentences readily admit scope ambiguities wherein surface scope relations are optionally preserved at LF (May 1985, among others).

(1) A boy saw every girl. (*a>every, every>a*)

Contrasting with English, Korean is assumed to lack inverse scope. (Lee et al., 2009). The sentence in (2) should therefore only describe a situation with a single boy. Note that the verb precedes object.

(2) 한 남자아이가 모든 여자아이를 보았다 (*one>every, \*every>one*)

The current study tests the status of Korean inverse scope by focusing on the interpretations available for sentences like (2) where *one/a* scopes over *every* at surface structure. By comparing the responses from native and heritage speakers of Korean (N=#) and native speakers of English (N=#), we show that Korean in fact does not allow inverse scope in doubly-quantified sentences.

Further, our results suggest that Korean prohibition on inverse scope differs between native and heritage speakers.

**Experiment 1: English.** An auditory web-based experiment presented native English-speaking subjects with 18 sentence-picture pairs. All subjects evaluated whether or not the sentence was appropriately described in the scenario depicted by rating it on an adjustable slider. Sentences were recorded by an adult male speaker of English. Critical items featured doubly-quantified transitive sentences with the quantifiers *every* and *one/a* in the sentence. We manipulated two factors. The first, ORDER, corresponded to whether *every* preceded (EO) or followed (OE) *one/a* in the sentence. The second factor, INVERSE, corresponded to whether the picture co-occurring with the sentence matched an inverse or surface interpretation. We split Expt. 1 into 4 sub-experiments: English sentences featured either indefinite *a* (1a,c) or the numeral *one* (3b,d), and OE sentences optionally included existential constructions (1c,d).

(1) Sub-experiment Example OE sentence

1. PLAIN: A shark attacked every pirate.
2. ONE: One shark attacked every pirate.
3. THERE: There is a shark that attacked every pirate
4. THERE+ONE: There is one shark that attacked every pirate.

Results: Average responses by condition are presented in Table 1. Consistent with previous findings on English scope (Anderson, 2004), subjects demonstrated a dispreference for inverse interpretations and OE INVERSE sentences were judged particularly poorly. However, even still, in the corresponding English PLAIN condition (1a) subjects judged the sentence true 57% of the time. This 57% OE INVERSE acceptance rate characterizes the availability of inverse scope, a feature not present in Korean, as explained in Expt 2. In Experiment 2 we test the same materials in a language uncontroversially claimed to disallow inverse scope: Korean.

Table #: Percent TRUE answers averaged by condition for Expt. 1 (English), Expt. 2 (‘motun’) & Expt 3. (‘enu’)

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **ORDER** | **INVERSE** | **‘MOTUN’** | **‘ENU’** | **PLAIN** | **ONE** | **THERE** | **THERE+ONE** |
| EO | SURFACE | .95 | .30 | .85 | .88 |  |  |
| OE | SURFACE | .82 | .49 | .72 | .85 | .70 | .81 |
| EO | INVERSE | .78 | .51 | .64 | .74 |  |  |
| OE | INVERSE | .02 | .33 | .57 | .36 | .48 | .25 |

**Experiment 2: Korean ‘motun’.** We ran the Korean equivalent of Expt. 1 on native and heritage speakers of Korean. Sentences were recorded by an adult female speaker of Korean. Korean sentences were translations of the English and featured ORDER and INVERSE manipulations. However, unlike Expt. 1, Expt. 2 was not split up into 4 sub-experiments; subjects were only tested on default and scrambled sentences of *every>a/one* and *a/one>every*. We focus on responses to the OE INVERSE condition (Fig. 1). Subjects saw one version of each of the 8 critical items, together with 8 fillers. The quantifiers *motun* ‘every’ and *han* ‘one’ were used in their respective subject and object positions.



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‘One/a shark attacked every pirate.’

Fig 1. Example OE INVERSE stimulus.

Results: Average responses by condition are presented in Table 1. Responses were taken from both native and heritage speakers.Inverse conditions received fewer TRUE responses than surface; the OE INVERSE condition (Fig. 1) received fewer TRUE responses than each of the other 3 conditions and the fewest TRUE responses among the 3 experiments, which means that few subjects demonstrated the ability for inverse scope in Korean.

We also looked at whether there would be a difference in preference for interpretations in Korean native versus heritage speakers. Heritage speakers were chosen based on the criteria that \_\_\_\_\_\_\_\_\_; the rest of the qualified subjects were categorized as native speakers. Among native speakers, OE INVERSE sentences were judged particularly poorly, given an average rating of 0.09. While heritage speakers showed a dispreference for inverse interpretations, the average rating compared to that of native speakers was crucially higher at 0.30.

Compared to results of Expt. 1, the 57% OE INVERSE acceptance rate among English speakers characterizes the availability of inverse scope, a feature not present in Korean. But by comparing the drastically different results of native and heritage Korean speakers, we could also gain insight into the time or age period in which Korean prohibition on inverse scope arises. Perhaps, initial exposure to Korean interferes with interpreting inverse scope.

**Experiment 3: Korean ‘enu’.**

We ran the Korean equivalent of Expt. 2 on speakers of Korean. While keeping the same translation of *han* ‘one’, we used a different translation for the quantifier ‘every’ by using *enu* with the addition of *–(i)na* for ‘or’. ‘Enu’ which translates to ‘which’ displays characteristics with *every* in that it allows a distributive reading while lacking a collective reading (Marsden, 2009).

Results:

Average responses by condition are presented in Table 1. Responses were taken from native speakers.

According to the 2009 Marsden experiment, object-wide scope is not acceptable in Korean SOV sentences (Marsden, 2009), however these subjects were tested on sentences containing *enu* rather than *motun*. While, Expt 3. subjects showed a dispreference for inverse interpretations, the 33% OE INVERSE acceptance rate for *enu* sentences is comparably higher than the 2% rate for *motun* sentences.

**References.**