

## Korean *lul* and *nun* markers and exhaustivity implicatures in discourse

Hagyeong Shin, Victor Ferreira ({hashin,vferreira}@ucsd.edu) University of California San Diego

**Introduction** In Korean, both the *lul* and *nun* markers can appear after objects and indicate Information Structure (IS) with contrastiveness. The *lul* marker indicates Contrastive Focus (CF) status, which is established when one element from a contextualized set of alternatives is presented as an answer to a *wh*-question (e.g., *pizza* in 1A from {*pizza*, *cake*}; H. Lee, 2006). The *nun* marker is associated with Contrastive Topic (CT) status, which is established when there is some unanswered portion of a Question Under Discussion (e.g., 1B-B'; Büring, 2003). Both CF-marking *lul* and CT-marking *nun* convey exhaustivity implicatures (e.g., *Mina didn't bring anything else.* in 1).

- (1) Q. What did Mina bring? (Context: Guests were invited to bring a pizza and a cake.)
- A. Pizza-***lul*** brought. (→ Mina didn't bring anything else.)  
Cake-*to*("also") brought. (→ ~~Mina didn't bring anything else.~~)  
'Mina brought the pizza. Mina also brought the cake.' [Canceled implicature]
- B. Pizza-***nun*** brought. (→ Mina didn't bring anything else.)  
#Cake-*to*("also") brought. (↔ Mina didn't bring anything else.)  
'Mina brought the pizza. #Mina also brought the cake.' [Non-cancelable implicature]
- B'. Pizza-***nun*** brought. (→ Mina didn't bring anything else.) Cake-*nun* didn't bring.  
'Mina brought the pizza. Mina didn't bring the cake.' [Implicature is held]

**Objectives** We investigate whether the two markers' seemingly identical implicatures exhibit different characteristics, and whether those characteristics manifest as different patterns in processing. We first test the cancelability of each marker's exhaustivity implicatures, illustrated in (1) and C. Lee (2017). Next, we test whether each marker requires a set of alternatives in the discourse context to license the exhaustivity implicature. Despite much discussion (Horn, 1981; Rooth, 1992) and experimental results about English (Washburn, Kaiser, & Zubizarreta, 2014), more empirical data is needed for Korean to confirm the patterns described in C. Lee (2017).

**Experiment 1** (N=38) tested the cancelability of the two markers' implicatures. 24 pairs of sentences such as (1A)-(1B') appeared as subjects of evaluation in 4 conditions (total 96 stimuli), having *lul* or *nun* in the first sentence and either a repeated or negated verb in the second sentence (Table 1). The *nun* marker's exhaustivity implicature was perceived as non-cancelable ( $p = 0.001$ ), but *lul* marker's as cancelable (Figure 1). **Experiment 2** (N=49) was conducted to observe the association with the exhaustivity implicature and the *lul* marker, which wasn't directly explored in the Experiment 1. 24 forced-choice questions (96 stimuli) were presented with or without the exclusive status of the object and with or without the *lul* marker in the leading question (e.g., 1Q). The response options included sentences with *lul*-marked and null-marked objects (Table 2). The *lul* marker was more likely to be used when exhaustivity needed to be conveyed in the message ( $p < 0.001$ ; Figure 2). **Experiment 3** (N=56) measured the extent to which the exhaustivity implicature is derived by *lul* and *nun* markers when the discourse context varies. 24 sentences with *lul* or *nun* marked objects appeared in the answer to the *wh*-question, in a context with or without a set of alternatives. Participants were asked to evaluate the newness of an exhaustivity implicature presented as an explicit utterance (Table 3). The *lul* marker was more likely to evoke exhaustivity without a set of alternatives in the context, compared to the *nun* marker ( $p = 0.003$ ; Figure 3).

**Discussion** The *lul* marker conveys a cancelable exhaustivity implicature (Exp1, 2), even when the discourse context does not specify a set of alternatives (Exp3). The *nun* marker conveys an exhaustivity implicature that is not cancelable (Exp1), only when there is a set of alternatives in the discourse context (Exp3). This suggests that different object markings in Korean (*lul* vs. *nun*) achieve distinct discourse functions that extend beyond indicating different IS types. Each marker requires discourse context to a varying degree to convey exhaustivity with different cancelability.

**NOTE: All materials illustrated in Table 1-3 are presented in Korean.**

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|---|
| [Preamble] Sohee, Mina, Yuna planned to attend the marathon race together. The race had <i>medals</i> and <i>trophies</i> for winners. Mina and Yuna attended the race together. Sohee didn't keep the promise, so she doesn't know who won what in the race. Later, Sohee and Mina exchanged the text messages shown in the next page. |
| Sohee: What did Yuna receive?<br>Mina: Receive a <i>medal</i> -{ <i>lul/nun</i> }.<br><b>{Received/Didn't receive} a trophy.</b>  |
| How appropriate is it that Mina sent the second sentence after the first one as a response to Mina's question? (1=not at all, 7=highly)   |

Table 1: An example item from Experiment 1.

|  |
|--|
| [Preamble] id. as in Table 1.  |
| Sohee: Yuna { <b>what-lul</b> }/{ <b>medal or trophy</b> } received?   |
| Mina intends to say that Yuna received { <b>only the medal</b> }/{ <b>both the medal and the trophy</b> }.   |
| Among the sentences below, which one is the best for Mina to send as a response? Sentences below may not include everything that Mina has to say. Regardless, please select the option that you think is the best.<br><input type="checkbox"/> Medal- <i>lul</i> received. <input type="checkbox"/> Medal- $\emptyset$ received. |

Table 2: An example item from Experiment 2.

|  |
|--|
| To Sohee: { <b>You and Yuna attended the marathon race that gave out medals and trophies.</b> $\emptyset$ } What did Yuna receive? |
| Sohee: Trophy-{ <i>lul/nun</i> } received.<br>Didn't receive anything else.  |
| Do you think Sohee's second message conveys new meaning that wasn't expressed in the first message? (1=repetitive, 7=new)          |

Table 3: An example item from Experiment 3.

**References** Buring, D. (2003). On D-Trees, Beans, And B-Accents. *Linguistics and Philosophy*, 26, 511–545. Horn, L. R. (1981). Exhaustiveness and the Semantics of Clefts. In *NELS*. Lee, C. (2017). Contrastive Topic, Contrastive Focus, Alternatives, and Scalar Implicatures. Springer. Lee, H. (2006). Iconicity and Variation in the Choice of Object Forms in Korean. *Language Research* 42(2), 323–355. Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics*, 75–116. Washburn, M. B., Kaiser, E. & Zubizarreta, M. L. (2014). The English It-Cleft: No Need to Get Exhausted. In *Proceedings of the Questions in Discourse Conference*.

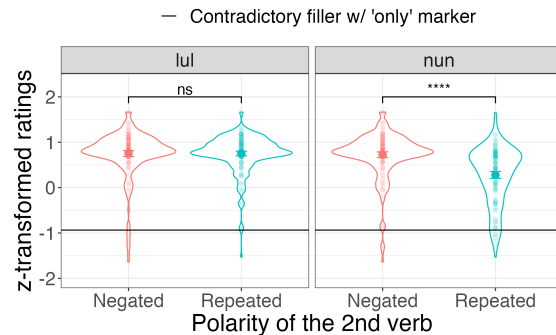


Figure 1: Mean z-transformed (per participant) ratings and distributions from Experiment 1. Participants gave negative ratings to the second sentence if the exhaustivity of only the *nun*-marked objects established in the first sentence was contradicted with the repeated verbs.

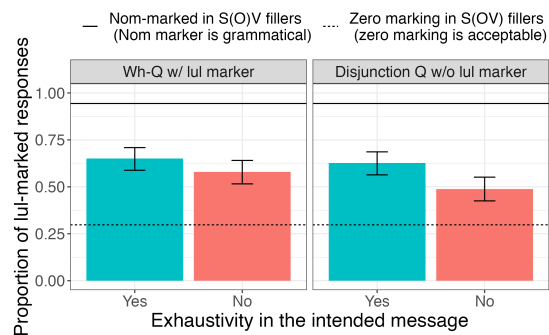


Figure 2: Proportion of *lul*-marked responses and 95% CIs from Experiment 2. Participants chose *lul*-marked objects more often when needed to express the exhaustivity of the object.

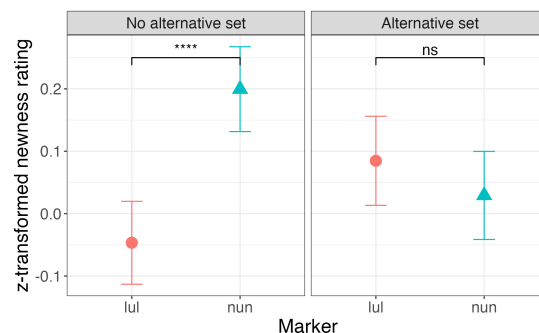


Figure 3: Mean z-transformed ratings from Experiment 3. Lower ratings mean that participants perceived the exhaustivity implicature.