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Cross-Linguistic Form-Meaning Mismatches in L2 Korean Polysemy: A Pilot Study of Sentence-Level Likelihood-of-Use Judgments

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Abstract

Developing depth of vocabulary knowledge in a second language (L2) is challenging, especially when a single lexical form encodes multiple related senses (Qu, 2023; Türker, 2022). Offline tasks have shown that first language (L1) semantic representations influence L2 lexical processing in word-level relatedness judgments when form-meaning mappings differ across languages (Baek et al., 2023; Jiang, 2002, 2004; Zeng et al., 2022). However, it remains underexplored whether such effects extend to sentence-level semantic processing when supported by contextual information (Norman & Degani, 2024). This pilot study investigated the effect of L1 transfer on L2 polysemy in a sentence-level task, which involves cross-linguistic mismatches in form-meaning mappings. Instead of relatedness judgment tasks (e.g., Crossley & Skalicky, 2019; Degani & Tokowicz, 2013; Jiang, 2002), this study employed likelihood-of-use rating tasks. L1 English learners of Korean rated 20 English sentences containing 10 target adjectives, each used in its primary and secondary senses. They also judged 20 Korean sentences containing translations of the English primary senses, half congruent and half incongruent in Korean. A cumulative link mixed model revealed a significant interaction between language and meaning. Primary senses received significantly lower ratings in Korean than in English, whereas ratings for secondary senses did not differ between the two languages. The findings suggest that contextual information alone may not eliminate differences in ratings between primary and secondary senses. This

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study calls for future research with systematic design in manipulating contextual information, highlighting that a sentence-level task requires more than adding context.

Keywords: polysemy, cross-linguistic influence, lexical-semantic knowledge, sentence-level judgments, L2 Korean

Introduction

Depth of vocabulary knowledge is considered to be an effective indicator of language proficiency as it demonstrates that a learner has internalized lexical information (Crossley & Skalicky, 2019). Polysemy has been a robust resource for exploring depth of vocabulary knowledge because understanding polysemous extensions of words often requires accurate and immediate contextual interpretation (Nerlich & Clarke, 2003; Türker, 2022). Previous studies have demonstrated that L2 learners are often hindered from associating an L2 word to its intended meaning when meanings of a polysemous word in one language map onto different lexical forms in another (Jarvis, 2009). Such cross-linguistic form-meaning mismatches seem to be attributed to L2 learners' mapping of L2 word forms onto semantic specifications of their corresponding L1 translations (Degani et al., 2011; Elston-Güttler & Williams, 2008; Jiang, 2002, 2004; Türker, 2022).

Previous research has examined cross-linguistic form-meaning mismatches using both word-level judgments (e.g., Degani & Tokowicz, 2013; Jiang, 2004) and sentence-level measures (e.g., Elston-Güttler & Williams, 2008). However, less is known about how L2 learners evaluate the likelihood of using primary and secondary meanings in sentential contexts. Assessing likelihood of use may offer a different perspective on cross-linguistic form-meaning mismatches by examining the extent to which meaning extensions are accepted in context rather than the perceived similarity between meanings. Thus, this pilot study investigates how L2 Korean learners evaluate primary and secondary meanings in sentential contexts.

Method

Participants

Ten L1 English speakers were recruited through the Korean Program of the University of Iowa. Participants were recruited from second- and third-year Korean courses. All 10 participants self-rated their English proficiency as 5,

whereas their mean self-reported Korean proficiency was 2.6 on a scale of 1 to 5. Korean learning experience ranged from less than one year to four years.

Materials

Ten English adjectives whose Korean translation equivalents had incongruent secondary senses were selected. For each adjective, one sentence was constructed for each meaning condition (primary and secondary) in each language condition (English and Korean), yielding 40 sentences: 10 English-primary, 10 English-secondary, 10 Korean-primary, and 10 Korean-incongruent-secondary sentences (sample stimuli are found in the Appendix section).

The Korean primary-sense sentences were reviewed by the researcher, an L1 Korean speaker. The 10 Korean incongruent-secondary-sense sentences were evaluated by 10 L1 Korean speakers for contextual naturalness on a 1-to-5 scale (1 = least natural, 5 = most natural). These sentences received a mean rating of 1.39. The English primary- and secondary-sense sentences were evaluated for acceptability by six L1 English speakers on a 1-to-5 scale, receiving mean ratings of 4.97 and 4.27, respectively. These baseline ratings served as stimulus validation, confirming the intended cross-linguistic contrast: the Korean incongruent-secondary sentences were judged as highly unnatural by L1 Korean speakers, whereas both English primary- and secondary-sense sentences were judged as acceptable by L1 English speakers.

Procedures

Korean and English stimuli were provided through an online survey using Qualtrics. Each Korean sentence was followed by a yes-or-no comprehension question to assess whether participants understood the sentence before providing a rating. After responding to the comprehension question, participants rated each sentence on a 0-to-7 scale in response to the question, "How likely are you to say this sentence?" (0 = least likely, 7 = most likely). All participants completed the Korean block first, followed by a self-timed 10-minute break and then the English block. The order was fixed to prevent prior exposure to the English secondary senses from priming the corresponding meanings during the Korean judgments.

Analysis

Since each participant rated multiple adjectives and each adjective was rated by multiple participants, the observations were not independent. Therefore, a mixed-effects structure was employed to account for the non-independence of the repeated observations. As the ratings were collected based on the eight-point 0-to-7 scale, a cumulative link mixed model (CLMM) with a logit link

was fitted to analyze differences in ratings across sentence conditions. The fixed effects included language (English vs. Korean), meaning (primary vs. secondary), and their interaction. Random intercepts were included for both participants (ID) and adjectives to account for differences in baseline ratings across participants and individual adjectives. The model was fitted using the Laplace approximation. Wald *z*-tests with an alpha level of .05 were used to evaluate statistical significance of the model coefficients. The effect of the language × meaning interaction was evaluated by comparing the full model with a reduced model without the interaction using a likelihood-ratio test (LRT).

Pairwise comparisons were conducted to examine the difference between English and Korean within each meaning condition and primary and secondary meanings within each language. The *p*-values for the pairwise comparisons were adjusted using the Holm method to control for multiple comparisons. All statistical analyses were conducted in *R*.

Ratings from trials with incorrect comprehension responses were retained in the CLMM analysis.

Results

As shown in Figure 1, primary-sense sentences descriptively received higher ratings than secondary-sense sentences across English and Korean. The raw mean difference between primary-secondary-sense ratings was larger in English (3.42) than in Korean (1.99). The CLMM revealed a significant interaction of language × meaning, with the inclusion of this interaction significantly improving model fit, $\chi^2(1) = 19.74$, $p < .001$.

Follow-up pairwise comparisons showed that primary-sense sentences received significantly higher ratings than secondary-sense sentences in English ($b = 3.39$, $SE = 0.30$, $z = 11.33$, $p < .001$) and Korean ($b = 1.78$, $SE = 0.26$, $z = 6.79$, $p < .001$). For primary-sense sentences, ratings were significantly higher in English than in Korean ($b = 1.10$, $SE = 0.26$, $z = 4.31$, $p < .001$). On the other hand, there was no significant difference between English and Korean for secondary-sense sentences ($b = -0.50$, $SE = 0.26$, $z = -1.95$, $p = .051$).

Overall, the primary-secondary contrast was significant in both languages but was larger in English, while the cross-linguistic difference was significant for primary-sense sentences but not for secondary-sense sentences.

The overall accuracy rate for the comprehension questions following the Korean sentences was 75.5%, with higher accuracy for primary-sense sentences (80.0%) than for secondary-sense sentences (71.0%).

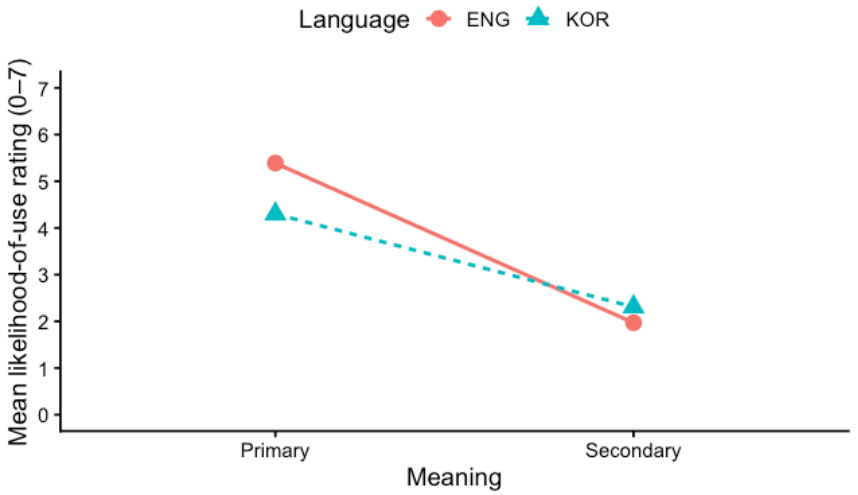

Figure 1. Mean Ratings by Language and Meaning

Table 1. Pairwise Comparisons from the CLMM

Conditions	*b*[1]	SE	*z*	*p*
Within language				
English: Primary − Secondary	3.39	0.30	11.33	< .001
Korean: Primary − Secondary	1.78	0.26	6.79	< .001
Within meaning				
Primary: English − Korean	1.10	0.26	4.31	< .001
Secondary: English − Korean	−0.50	0.26	−1.95	.051

[1] *b* represents the estimated contrast on the log-odds scale. *p*-values were adjusted using the Holm method.

Discussion

The results provide preliminary evidence regarding how L2 Korean learners evaluate primary and secondary meanings of polysemous words when those meanings are presented in sentential contexts. Primary senses received higher ratings than secondary senses regardless of language, possibly reflecting differences in meaning dominance (Foraker & Murphy, 2012). Primary senses are generally more frequent and salient than secondary senses and may therefore

be more accessible in the mental lexicon even with contextual information. However, the low rating for English secondary senses (M = 1.97) contrasts with the L1 English baseline, in which both primary- and secondary-sense sentences received high ratings (M = 4.97 and 4.27, respectively, on a 1-to-5 scale). Given that the participants were L1 English speakers, this unexpected pattern is unlikely to reflect difficulty with the English secondary senses alone.

The wording of the rating question also needs to be considered when interpreting these findings. Participants were asked, "How likely are you to say this sentence?" Because participants were asked about their likelihood of saying each sentence, the ratings may reflect semantic acceptability as well as perceived naturalness, usage likelihood, or register preference. Therefore, the ratings should be interpreted as indirect rather than direct evidence of learners' semantic representations. This issue also illustrates a broader methodological challenge in moving from word-level measures of lexical depth to sentence-level judgments: sentence context provides additional information for interpreting a polysemous meaning, but judgments about a complete sentence may simultaneously draw on lexical knowledge, sentence comprehension, and perceptions of natural language use.

Several limitations should be acknowledged. The small sample, uncontrolled proficiency and meaning dominance, incomplete comprehension, and fixed block order may have limited the extent to which the rating differences could have been attributed specifically to cross-linguistic form-meaning mismatches. It is worth noting that different types of judgments, such as semantic acceptability and likelihood of use, could be elicited separately depending on the construct that the task is intended to measure.

Future research should therefore manipulate the richness of contextual information systematically, for example by comparing word-level judgments, minimally contextualized sentences, and strongly constraining sentence or discourse contexts. Such a design could clarify the extent to which sentence-level judgments provide evidence of L2 semantic representation rather than reflecting the combined effects of lexical knowledge, comprehension, meaning dominance, and perceived naturalness. In this sense, moving from word-level to sentence-level tasks is not simply a matter of adding context, but also requires reconsidering whether sentence-level judgments reflect lexical knowledge or other factors, such as comprehension and perceived naturalness.

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Appendix

Sample Stimuli

Adjectives	Language	Meaning	Sentence
big	Korean	Primary	chayksang-i-SUB khe-yo desk-SUB big-is The desk is big.
		Secondary	?yakwu-ka-SUB khe-yo baseball-SUB big-is Baseball is big.
	English	Primary	The house is big.
		Secondary	That song is big.
busy	Korean	Primary	tayhaksayng-i-SUB pappa-yo college student-SUB busy-is The college student is busy.
		Secondary	?ticain-i-SUB pappa-yo design-SUB busy-is The design is busy.
	English	Primary	That person is busy.
		Secondary	The pattern is busy.

Note. Korean words and sentences were Romanized using the Yale Romanization system.

Stimulus sentences were constructed to instantiate the target meanings naturally in each language rather than as direct translations of one another. SUB = subject particle; ? = semantically incongruent.