L1 Processing and L2 Acquisition of noncanonical OSV order in Korean

Jina Song (University of Southern California) and Elsi Kaiser (University of Southern California)
jinas@usc.edu, emkaiser@usc.edu

According to the Interface Hypothesis (IH), even advanced second-language (L2) learners find it harder to attain native-like representations at *grammar-external* interfaces, e.g. the syntax-discourse interface, than grammar-internal interfaces [11]. Although the IH attributes this difficulty to the computational effort involved in linking two domains, *independently* of L1-L2 similarity [9], recent studies suggest native-like attainment even at grammar-external interfaces may be possible for L2'ers if L1 representations match the L2, due to L1 transfer (e.g. [8,9]).

Our **primary aim** is to contribute this discussion by investigating how L1 English speakers learning Korean (n=13) process Korean SOV (canonical) and OSV (noncanonical/ shifted) word orders, relative to L1 Korean speakers (n=40). Broadly speaking, noncanonical O-before-S orders in both Korean and English are (i) influenced by a syntax/discourse Given-before-new constraint (e.g. [2,5]), and (ii) involve syntax-level movement of O over S (e.g. [3,4]). (Though OSV is rarer in English, it's fine in the right context, see [2]) Thus, word order processing provides a test case to assess whether L1 transfer facilitates L2 performance at the syntax-discourse interface, contra the IH. Our **secondary aim**, with L1 speakers, is to test whether the context-sensitive *online* processing penalty for Korean OSV observed in L1'ers ([7]) is only a transient processing load increase that the parser successfully recovers from, or whether it is detected even in off-line measures, suggesting a lingering processing cost.

Our **design** manipulated word order (SOV/OSV) and noun givenness (given/new) in Korean (ex.1). Each item consisted of a pair of sentences: a context and a target sentence (24 targets, 36 fillers). Givenness was manipulated by introducing the subject or object of the target sentence in the context. S and O were matched for length and animacy to avoid confounds.

Method. Exp.1 tested L1 Korean speakers, **Exp.2** tested L1 English-L2 Korean speakers. People did 2 tasks per trial (Fig.1): (i) judged how naturally each sentence pair is connected (1=very unnatural, 7=very natural) and (ii) typed each stick figure's number in its box so that the picture and sentence match (this checks if people recognize SOV/OSV).

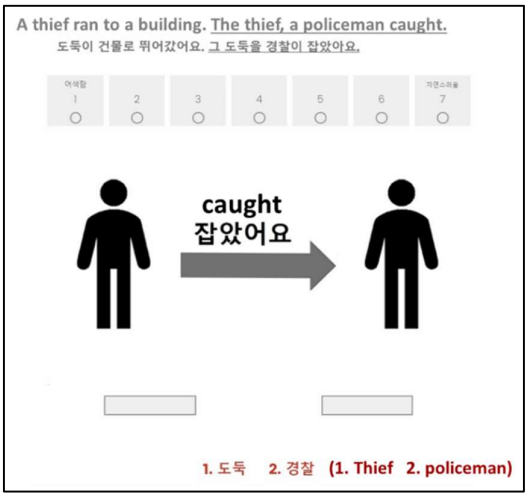
Exp1 predictions/L1-Korean speakers: Reading times ([7]) show that SOV is read faster than OSV, but the given-new facilitates OSV more than SOV. We test whether these effects are short-lived (i.e. parser recovers quickly, so effects only detectable online, not in our study), or whether one or both persist, and influence naturalness ratings.

Exp2/L2 Korean learners: ***The IH (without L1 transfer)*** predicts that (i) L2'ers and L1'ers pattern alike with respect to *word order* effects on naturalness ratings, because L2'ers can attain native-like grammar-internal knowledge, but that (ii) L2'ers and L1'ers will differ in their sensitivity to given-new, because grammar-external knowledge requires extra processing cost. Indeed, we may find L2'ers patterning like another group with limited processing resources: children. Prior work has found a new-given preference in children (e.g. [1]; see also Principle of Task Urgency [6]). But if **L1 transfer facilitates grammar-external interface** performance, we expect *both* L1'ers and L2'ers to rate (i) S-before-O and (ii) given-new as more natural than O-before-S or new-given. This is because English and Korean share the same basic patterns.

Results/Exp1. (L1): Fig.2a and Table 1 show a clear interaction: SOV orders are rated equally natural regardless of context (planned comparison $p=.719$), but OSV given-new is more natural than new-given (planned comparison $p<.003$). This suggests the processor does *not* recover fully from the processing cost incurred by $O_{new}S_{given}V$: it persists in offline ratings.

Results/Exp2 (L2): The L2 results support IH with no evidence of L1 transfer: we found (i) main effects of order (SOV $>_{natural}$ OSV), (ii) main effects of givenness (new-given $>_{natural}$ given-new, like children, *unlike English adults*), and (iii) an interaction (Table 2). (Analyses by proficiency level showed the same results). We assume that higher processing load for OSV compared to SOV may hinder integrating discourse-level knowledge into syntax.

Our results show that (i) even in the presence of L1-L2 similarities, grammar-external interface phenomena pose challenges for L2'ers and that (ii) processing consequences, when grammar-external interface phenomena are violated, are severe enough even for L1'ers to be detectable in offline ratings.



(1) a. {kyengchal-i/ totwuk-i} kenmwul-lo
{policeman-Nom/ thief-Nom} building-to
ttwiekasseyo.
ran **[Context sentence]**

b. (Ku) kyengchal-i (ku) totwuk-ul
(the).policeman-Nom (the).thief-Acc
capasseyo.
caught **[Target: SOV-Canonical]**

b'. (ku) totwuk-ul (Ku) kyengchal-i
(the).thief-Acc (the).policeman-Nom
capasseyo.
caught **[Target: OSV-Shifted]**

'A policeman/ a thief ran to a building.
The/A policeman caught a/the thief.'

Figure 1. Sample target stimuli used in this experiment (with English translation)

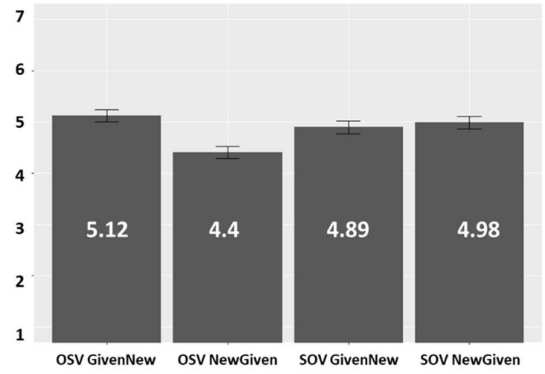


Figure 2a. Exp1: Average scores of naturalness ratings (7-pt scale: 1=very unnatural, 7=very natural) in all conditions by **L1 Korean speakers**

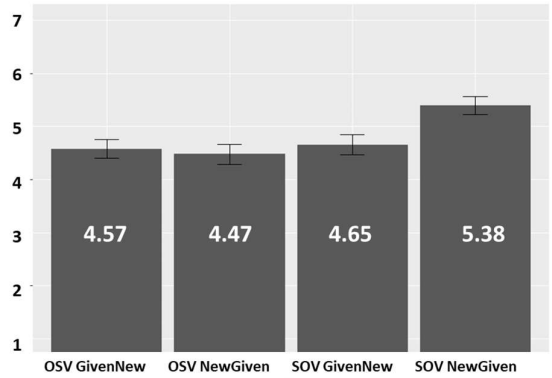


Figure 2b. Exp2: Average scores of naturalness ratings (same 7-pt scale) in all conditions by **L2 Korean learners (L1 English)**

	Estimate	**Std. error**	**Df**	***t*-value**	**Pr(>|t|)**	
Givenness	0.167	0.07839	30.399	2.132	0.0412	*
Word_order	0.0941	0.07360	21.8	1.279	0.2145	
GivennessXorder	−0.4273	0.0940	779	−4.548	0.00000628	***

Table 1. Exp1 results for givenness and word order effects: L1 Korean speakers (lmer)

	Estimate	**Std. error**	**Df**	***t*-value**	**Pr(>|t|)**	
Givenness	-0.208510	0.104406	264.45104	-1.997	0.0468	*
Word_order	0.303821	0.104344	261.73263	2.912	0.0039	**
GivennessXorder	-0.503454	0.207895	258.86580	-2.422	0.0161	*

Table 2. Exp2 results for givenness and word order effects: L2 Korean learners (lmer)

[1] Bates 1976 *Language and context* [2] Birner/Ward 1998 *Information Status and Noncanonical Word Order in English* [3] Cho 1994 *Scrambling in Korean* [4] Chomsky 1965 *Aspects of the theory of syntax*. [5] Clark/Clark 1977 *Psychology and language* [6] Givón, 1988. The pragmatics of word-order. [7] Jackson 2008 *The effect of information structure on Korean scrambling* [8] Kraš 2008 Anaphora resolution in near-native Italian grammars [9] Smeets 2019 Acquisition of object movement [10] Sorace 2011 Pinning down the concept of 'interface' in bilingualism [11] Sorace/Filiaci 2006 Anaphora resolution in near-native speakers of Italian