

# English-dominant Korean-speakers show reduced flexibility in constituent order

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## 1 Introduction

Constituent order systems have been shown to reduce in flexibility due to language contact (Heine 2008). However, a causal link between contact and reduced flexibility has not yet been established experimentally, and the effect of contact on syntax is underexplored. Using an acceptability judgment experiment as a global measure of processing difficulty, we compare Korean-speakers who grew up in Korea with two groups of English-dominant Korean-speakers and find that contact is associated with reduced flexibility (defined as lowered acceptability for non-canonical orders relative to canonical order, e.g. Namboodiripad 2017) in constituent order. In Section 2, we outline some basic facts about Korean constituent order and motivate our experiment by discussing flexibility in constituent order in relation to acceptability and contact. We discuss our methods and predictions in Sections 3 and 4, present our results, which show that increased dominance in English corresponds to reduced flexibility in Korean, in Section 5, and conclude with a short discussion in Section 6.

## 2 Motivation

How and why do languages change due to contact? Here, we investigate a well-described domain of variation within and across languages: the order of major constituents (SUBJECT, OBJECT, and VERB), and consider how experience with a relatively ‘rigid’ language like English, in which SVO is the canonical (discourse-neutral, intonationally unmarked) order, OSV can be derived through topicalization, and all other orders are ungrammatical can affect speakers’ processing of a ‘flexible’ language like Korean, in which SOV is the canonical order and all other orders are grammatical and have the same truth-conditional meaning.

### 2.1 Constituent order in Korean

Typologically, Korean is usually classified as SOV language which allows relative freedom of constituent order. In addition to the verb-final constituent orders, it is known that Korean allows postverbal arguments (Ko 2014) and, though syntactic accounts vary, all six logical orders of constituents are possible (see also Nam & Ko 1986 and Huh 1988).

(1) shows six sentences in each of the six logical orders of constituents; each of these orders is grammatical and has the same truth-conditional meaning:

- (1) ‘The girl drank green tea’

- a. sonyeo-ka nokcha-lul masi-ess-ta  
girl-nom green tea-acc drink-pst-decl  
SOV
- b. nokcha-lul sonyeo-ka masi-ess-ta  
green tea-acc girl-nom drink-pst-decl  
OSV
- c. sonyeo-ka masi-ess-ta nokcha-lul  
girl-nom drink-pst-decl green tea-acc  
SVO
- d. nokcha-lul masi-ess-ta sonyeo-ka  
green tea-acc drink-pst-decl girl-nom  
OVS
- e. masi-ess-ta sonyeo-ka nokcha-lul  
drink-pst-decl girl-nom green tea-acc  
VSO
- f. masi-ess-ta nokcha-lul sonyeo-ka  
drink-pst-decl green tea-acc girl-nom  
VOS

The degree of freedom in constituent order largely depends on the style of speech. Non-canonical orders are more acceptable in the context of informal speech, and non-canonical constituent orders are associated with particular pragmatic contexts (Kim 1997). Although verb-final and verb-medial orders are used often, verb initial orders such as VSO and VOS are rarely used compared to other orders. This is predominantly a spoken language phenomenon, as, in written context, verb-final orders are predominant, and verb-medial orders are quite rare.

## 2.2 Non-canonical orders and reduced acceptability

Non-canonical constituent orders are usually associated with different syntactic representations than those associated with canonical orders. In many syntactic theories, these representations include dependencies analogous to long-distance dependencies, which are well-studied and have been shown to result in reduced acceptability (Cowart 1997) and increased processing difficulty (Kluender & Kutas 1993). In fact, psycholinguistic measures have consistently shown that speakers incur some amount of processing difficulty or reduced acceptability associated with non-canonical orders (Kwon et al. 2013 in Korean, Kaiser & Trueswell 2004 in Finnish, Miyamoto & Takahashi 2001 in Japanese).

Not only are there detectable differences between canonical and non-canonical orders, formal acceptability experiments can detect differences between non-canonical orders. Weiskott & Fanselow (2011) find a relationship between acceptability and what they call markedness: increased markedness corresponds to decreased acceptability. In German, they compare two sets of sentences which differ only

in the order of arguments in the embedded clause: SUBJECT-OBJECT versus OBJECT-SUBJECT order and SUBJECT-INDIRECT OBJECT versus INDIRECT OBJECT-SUBJECT order. Example stimuli from their paper are in (2) and (3):

- (2) ‘Peter has reported that the president has received the sheik.’
- a. Peter hat erzählt, dass der Präsident den Scheich empfangen  
Peter has reported that the<sub>NOM</sub> president the<sub>ACC</sub> sheik received  
hat  
has  
CANONICAL ORDER
- b. Peter hat erzählt, dass den Scheich der Präsident empfangen  
Peter has reported that the<sub>ACC</sub> sheik the<sub>NOM</sub> president received  
hat  
has  
NON-CANONICAL ORDER
- (3) ‘Peter has reported that the monk has helped the hunter.’
- a. Peter hat erzählt, dass der Mönch dem Jäger geholfen hat  
Peter has reported that the<sub>NOM</sub> monk the<sub>DAT</sub> hunter helped has  
CANONICAL ORDER
- b. Peter hat erzählt, dass dem Jäger der Mönch geholfen hat  
Peter has reported that the<sub>DAT</sub> hunter the<sub>NOM</sub> monk received has  
NON-CANONICAL ORDER

The (a) sentences have the canonical order of arguments in a German embedded clause, SOV, while the (b) sentences have non-canonical orders, OSV and IOSV. All of these sentences are grammatical, but the non-canonical orders are expected to be less acceptable than the canonical orders. In addition, the INDIRECT OBJECT-SUBJECT order is claimed to be less marked than the OBJECT-SUBJECT order. As such, if acceptability can yield gradient results and distinguish between different grammatical non-canonical orders, the difference in acceptability between the sentences in (2) should be greater than the difference in acceptability between the sentences in (3), which is exactly what they found.

So, we expect that non-canonical orders should result in reduced acceptability, which also corresponds to processing difficulty, and, among non-canonical grammatical orders, more marked (syntactically complex, discourse bound) orders should have lower acceptability than less marked orders. In the context of Korean, this leads us to expect that non-canonical grammatical orders should result in lowered acceptability as compared to canonical SOV. Furthermore, verb-medial orders, being less frequent, more discourse-specific, and more syntactically complex, should be less acceptable than verb-final non-canonical OSV, and verb-initial orders, being the most marked, should have the lowest acceptability of all.

### 2.3 Contact and constituent order

Given the above observations about markedness and acceptability, how should experience with English affect constituent order in Korean? In the literature on contact-

induced change, two types of outcomes have been described when speakers of flexible languages like Korean come into contact with a language like English. Either (a) flexible-language speakers start to use the canonical order in the contact language, as that order is grammatical although non-canonical in the flexible language, or (b) flexible-language speakers start to rely more on the canonical order in their language.

Perhaps the most studied example of (a) is the case of English, which went from being a canonically SOV language in which many grammatical non-canonical orders were attested to a canonically SVO language with only grammatical non-canonical order. Kroch et al. 2000 describe how contact with Norse-speakers facilitated the change from SOV to SVO in English, as Norse was a V2 language. In a more modern example, Onar Valk (2013) studied Turkish immigrants communities in the Netherlands, and shows evidence that for the use of Dutch order in the Turkish, which is canonically SOV, though all six logical orders of constituents are attested. As an example of (b), Campbell (1980) describes an immigrant variety of Finnish spoken in the United States, American Finnish, as being rigidly SVO, unlike Standard Finnish, which makes wide use of several non-canonical orders.

In the context of acceptability, we can likewise make two types of predictions. First, it could be that speakers who are more dominant in English have access to their representation of English constituent order when they encounter Korean sentences. In this case, when they hear SVO in Korean, they might treat this order differently because it is the canonical order in English. So, while SVO is a non-canonical order in Korean and should result in lower acceptability, perhaps this lowering could be mitigated by speakers' experience with English SVO.

Second, research on non-dominant speakers has shown that these speakers encounter increased difficulty relative to dominant speakers (Scontras et al. 2015). Similar to work on proficient L2 speakers (Sorace & Filiaci 2006) and older individuals (Waters & Caplan 2001), constructions which incur relative processing difficulty for dominant and/or monolingual speakers incur even more difficulty for non-dominant and/or L2 speakers. This suggests that non-canonical orders, which are expected to be lower in acceptability for all speakers, should be even less acceptable for those who are not dominant in the language. Thus, while a Korean monolingual is predicted to experience some degradation when encountering a non-canonical sentence in Korean, this degradation should be greater for Korean-speakers who are dominant in English.

A greater degradation for non-canonical orders corresponds in effect to reduced flexibility; if speakers have a greater relative preference for canonical order as compared to non-canonical orders, this would show that they are becoming more English-like in their reliance on a single order, if not borrowing the English surface order outright. Regardless, we expect that comparing speakers who vary in their dominance in Korean can shed light on what is and is not shared across languages, and potentially make predictions about the direction of contact-induced change more generally.

### 3 Methods

In order to understand how experience with English might affect constituent order in Korean, we conducted a formal acceptability judgment experiment.

#### 3.1 Participants

We recruited three groups of participants; all groups had some knowledge of English and Korean, and they differed in the degree to which they were dominant in either language.

The first group were 30 Korean-dominant participants, recruited in Korea by the second and third author of this study. All participants in this group grew up in Korea; 20/30 reported that they had no experience of living in non-Korean speaking countries and the other 10 reported that the length of the stay in foreign country did not exceed 12 months (mean=9.1 months, SD=2.39). The average age for the participants was 23.0 (SD=3.0). These speakers all have some knowledge of English; they started learning English in elementary school and can speak, read, and write it. However, their writing and reading is more fluent than their speaking, and use of English is mostly limited to educational contexts. They voluntarily participated in this study without any compensation.

27 English-dominant participants were recruited in the United States. These participants were undergraduate students in the Korean Heritage Language Program at UC San Diego, and were evaluated by one of the two instructors (one of whom is the second author of this study) as part of their placement into the class. 13/27 participants were categorized as active bilinguals, as they were judged by their instructor to be relatively fluent both in comprehension and production of spoken Korean. 14 participants were grouped as passive bilinguals. The participants in this group showed a discrepancy in their comprehension and production, as they were far more proficient in comprehension of spoken Korean than they were in production. Participants from both English-dominant groups grew up in the United States, being exposed to Korean at home, and learning English from school and the ambient environment. The English-dominant participants received course credit for their participation.

#### 3.2 Materials

Experimental stimuli consisted of animate subjects, inanimate objects, and transitive verbs. Subjects were always marked with nominative case marker *-i* or *-ka* and objects were marked with accusative case marker *-ul* or *-lul* (These case markers are phonologically conditioned). For the experimental stimuli, 11 subjects out of 30 were marked with *-i* and 14 out of 30 objects were marked with *-ul*.

Participants saw five items from each of the six conditions (SOV, OSV, SVO, OVS, VSO, VOS), for a total of 30 experimental items. Six lexicalization sets were created, and items were counterbalanced and distributed among six lists using a Latin Square. Table 3.2 shows some sample experimental stimuli.

There was no discourse context included for any of these sentences, as we were specifically interested in the acceptability of these sentences outside of context. Furthermore, this allowed for more variation in the filler items.

Condition	Sample sentence
SOV	sonyeo-ka nokcha-lul masi-ess-ta girl-nom green tea-acc drink-pst-decl
OSV	nokcha-lul sonyeo-ka masi-ess-ta green tea-acc girl-nom drink-pst-decl
SVO	sonyeo-ka masi-ess-ta nokcha-lul girl-nom drink-pst-decl green tea-acc
OVS	nokcha-lul masi-ess-ta sonyeo-ka green tea-acc drink-pst-decl girl-nom
VSO	masi-ess-ta sonyeo-ka nokcha-lul drink-pst-decl girl-nom green tea-acc
VOS	masi-ess-ta nokcha-lul sonyeo-ka drink-pst-decl green tea-acc girl-nom

**Table 1:** Sample stimuli

There were 56 fillers (resulting in a 1:1.87 experimental item to filler ratio); 27 of these fillers were ungrammatical sentences. 11 of the ungrammatical filler items had a syntactic violation (e.g., direct objects in a sentence with an intransitive verb). 16 of the ungrammatical sentences included semantic anomalies, and 9 of those 16 semantically anomalous fillers were incomplete sentences. In addition, we included 29 grammatical fillers of varying lengths.

As previously mentioned, the use of flexible word order in Korean is more prevalent in the spoken context than in writing. In addition, not all English-dominant speakers were fluent in reading Korean. As such, the stimuli were presented auditorily. Stimuli were recorded in a soundproof booth by a native speaker of Korean (the second author of this study). The appropriate intonation associated with each order was used, so each condition had a slightly different intonational contour. This was done in order to avoid the possibility that participants would view non-canonical orders as less acceptable due to inappropriate intonation. Care was taken to ensure uniformity within conditions by spot-checking intonational contours in Praat.

### 3.3 Procedure

The procedure was relatively similar for all groups. The experiment was run on a laptop using a built-in rating program in Praat (Boersma & Weenink 2013). The experiment began with three filler items which served as practice items to familiarize participants with the task. Participants heard the sentences one-by-one, and were asked to rate each sentence on a 1 to 7 scale (one being not acceptable and 7 being acceptable). They could only listen to each sentence once.

For Korean-dominant participants, the experiment was conducted in a quiet place of their choosing, and the participants listened to the stimuli using earphones. Participants completed a short background survey on age, gender and their experience in foreign countries before participating in the experiment. The English-dominant participants did the experiment in a lab at UC San Diego. Their language background information was collected up to three months prior the experiment, upon their enrolling in the Heritage Language program.

## 4 Predictions

In this section, we outline our predictions for the relative acceptability of the constituent orders in Korean, as well as our predictions about how dominance in English should affect the relative acceptability of constituent order in Korean.

Based on the findings from previous acceptability judgment experiments, we expect that SOV should have the highest acceptability in Korean, followed by OSV. Verb-medial orders are relatively more frequent and are less complex syntactically than verb-initial orders, so we expect that verb-medial orders should have higher acceptability than verb-initial orders.

As motivated in Section 2.3, we consider two hypotheses about how experience with a canonical SVO language, English, should affect acceptability of Korean constituent order. First, if a representation of English SVO is accessed while hearing Korean, experience with English should correspond to decreased difficulty associated with SVO in Korean, and SVO should be more acceptable for English-dominant participants than for Korean-dominant speakers. Second, because non-dominant speakers have been found to show lowered acceptability for difficult constructions (e.g., Polinsky 2009), all non-canonical orders should be less acceptable for English-dominant participants, which corresponds to lower flexibility (Namboodiripad 2017). Note that these hypotheses are not mutually exclusive; it could be that SVO is more acceptable for the English-dominant groups, but they find the other non-canonical orders to be very low in acceptability, resulting in a higher relative acceptability for canonical SOV. In other words, any general difficulty associated with non-canonical orders could be ameliorated specifically for SVO order, due to participants' experience with English.

This is summarized below:

- H1: Shared representation of SVO order: the English-dominant groups should find SVO order more acceptable as compared to the Korean-dominant group.
- H2: Increased difficulty associated with non-canonical orders: the English-dominant groups should find non-canonical orders to be less acceptable overall as compared to the Korean-dominant group.

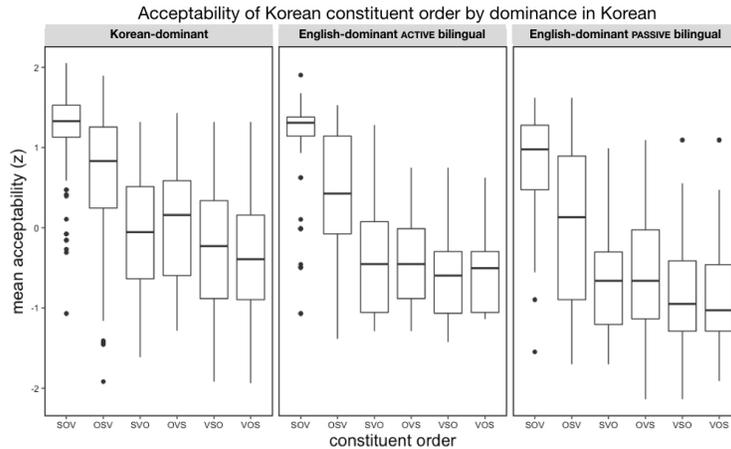
In addition, we consider a third question about the nature of these potential between-group differences. We compare three different groups here, Korean-dominant individuals who grew up in Korea and have some experience with English (KOREAN-DOMINANT), English-dominant individuals who grew up in the United States and speak Korean with fluency (ACTIVE BILINGUALS), and English-dominant individuals who grew up in the United States and have a good understanding of Korean, though they have difficulty speaking it (PASSIVE BILINGUALS). The differences between the Korean-dominant and passive bilinguals are evident, but the active bilinguals could pattern with the Korean-dominant group, as both groups speak the language, they could pattern with the passive bilinguals, as both groups are dominant in English, or this group could pattern somewhere in between both groups, indicating a gradient pattern in which the active bilinguals have an intermediate status.

## 5 Results

Responses were transformed into by-subject z-scores to account for individual variation in how the scale was used<sup>1</sup>. We first present plots showing the acceptability of all orders for each group. Following Namboodiripad (2017), we call this the ACCEPTABILITY PROFILE of each group. Then, we consider our predictions following each hypothesis individually, first, comparing SVO across groups, then comparing the relative acceptability of canonical SOV across groups. All models were run in R using the `lme4` statistics package (Bates et al. 2015) and all plots were created using `ggplot2` (Wickham 2009).

### 5.1 Acceptability profiles for each group

Results are plotted as box-and-whisker plots in Figure 1 using the `ggplot2` package in R. Each panel represents one group, in descending order of dominance in Korean. The y-axis represents the average acceptability for a given constituent order. The dark horizontal bar represents the mean acceptability per condition (labeled along the x-axis); the lower end of the box represents the 25th percentile of z-scored responses, and the upper end represents the 75th percentile. The upper and lower whiskers extend to 1.5 times the distance between the first and third quartiles (interquartile range, or IQR). The dots are outliers.



**Figure 1:** Acceptability of constituent order for three groups of Korean speakers.

The pattern of acceptability is similar for all groups. As expected, sentences in canonical SOV order had the highest acceptability, followed by OSV. The verb-medial orders are next, followed by verb-initial orders.

The mean z-scored acceptability for each order by group is summarized in Table 2.

While the acceptability of each order is similar across groups from a qualitative perspective, there are differences in degree of acceptability across groups. In order

<sup>1</sup>z-scores were calculated using all of the ratings given by a participant, including fillers.

Order	Korean-Dominant	English-Dominant Active	English-Dominant Passive
SOV	1.27	1.07	0.77
OSV	0.60	0.36	0.00
SVO	-0.05	-0.39	-0.66
OVS	0.04	-0.39	-0.59
VSO	-0.23	-0.60	-0.79
VOS	-0.37	-0.54	-0.86

**Table 2:** Mean z-scored acceptability for all orders by group.

to see whether group membership was a significant predictor of acceptability above and beyond individual variance, we conducted a linear mixed-effects model. We compared a model with z-scored RESPONSE and ORDER as fixed effects and PARTICIPANT, STIMULUS, and GROUP as random effects to a model without GROUP as a random effect and found that the model with GROUP predicted the data significantly better ( $p < 0.001$ ,  $\chi^2 = 116.93$ ). However, due to there being 6 conditions, this analysis was not informative about the direction in which each group differed, and there could be multiple loci of between-group differences. As such, we address our specific hypotheses in the following sections.

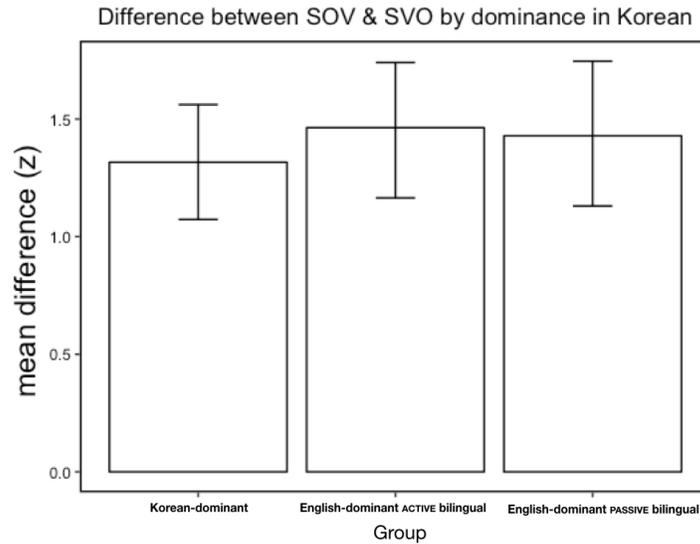
## 5.2 Acceptability of SVO

We presented two predictions about how the groups could differ: either increased dominance in English leads to higher acceptability for SVO order, or it leads to increased relative acceptability for canonical SOV order. We consider the first prediction in this section.

Looking back at Figure 1, the relative acceptability of SVO does not appear to be higher for the English-dominant participants. However, previous research has found that non-dominant speakers are more likely to accept ungrammatical sentences as acceptable than are dominant speakers (Birdsong 1989, Montrul & Bowles 2009). If this is the case, we would expect it to affect their z-scores, as the ungrammatical fillers were included at the time of calculation. In order to account for this, we compared the relative acceptability of SVO for each group, using each group's average rating of canonical SOV as a baseline. Figure 1 shows that canonical SOV had the highest acceptability for all groups. If it is the case that English-dominant speakers show higher acceptability for SVO, then the difference between their rating of SOV and SVO should be smaller than for Korean-dominant speakers.

Figure 2 plots the average difference between SOV and SVO for each group. The error bars represent standard error.

Figure 2 shows that the relative acceptability of SVO does not appear to be different across groups; if anything, there seems to be a very slight decrease in relative acceptability of SVO for the English-dominant groups, as the higher bars represent a greater difference. Indeed, there was no significant difference between a model with RELATIVE SVO RATING and GROUP as fixed effects and PARTICIPANT and STIMULUS as random effects to a model without GROUP ( $p > 0.7$ ,  $\chi^2 = 0.6039$ ). In addition, pairwise t-tests did not show there to be any significant difference in the relative acceptability of SVO between these three groups ( $p > 0.4$  for all comparisons).



**Figure 2:** Difference between SVO and SOV orders for three groups of Korean speakers.

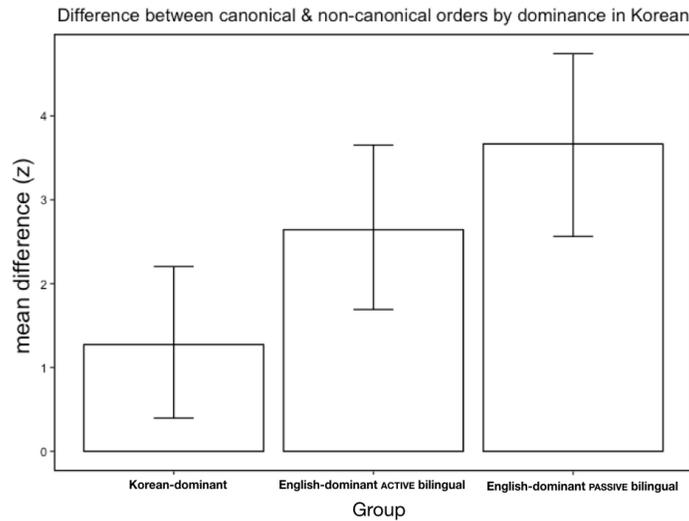
### 5.3 Relative acceptability of canonical SOV

Moving to our second prediction, we expected that SOV would have a higher relative acceptability for the English-dominant groups as compared to the Korean-dominant group. To calculate this for each participant, we summed the average rating for each non-canonical order and subtracted it from the rating for canonical SOV. This measure, the global preference for canonical SOV, was then averaged within groups, and it is plotted in Figure 3. The bar represents the average difference between canonical and non-canonical orders, and the error bars represent standard error.

The larger the bar, the greater the preference for SOV. Unlike Figure 2, here, we see a pattern: the preference for SOV is lowest for the Korean-dominant group, and highest for the group that is passive in Korean, with the active bilinguals in between. In order to ensure that GROUP was a significant predictor above and beyond individual variation, we compared a model with RELATIVE SOV RATING and GROUP as fixed effects and PARTICIPANT and STIMULUS as random effects to a model without GROUP. We found that the model with GROUP predicted the data significantly better ( $p < 0.007$ ,  $\chi^2 = 10.021$ ). In addition, pairwise t-tests showed a significant difference between the Korean-dominant and passive bilinguals ( $p > 0.004$ ), and no significant difference between the active bilinguals and either group ( $p < 0.2$  when compared to passive bilinguals and  $p < 0.7$  when compared to the Korean-dominant group). This suggests that the active bilinguals have an intermediate status, addressing our third prediction, about gradient results.

## 6 Discussion

We found a greater preference for canonical SOV corresponding to increased dominance in English and decreased dominance in Korean. Our results align with H2:



**Figure 3:** Difference between canonical and non-canonical orders for three groups of Korean speakers.

English-dominant participants differ from Korean-dominant participants in degree not kind, showing lower acceptability for non-canonical orders. This indicates that increased contact with English corresponds to decreased flexibility in Korean.

We discussed in Section 2.3 that non-dominant participants might show reduced flexibility because they experience more degradation with non-canonical orders as compared to those who are dominant in the language. This is one potential explanation for this pattern. Another potential explanation comes from work on non-dominant speakers of Norwegian who grew up in the United States. Anderssen & Westergaard (*in press*) found a pattern akin to hypercorrection: these speakers avoided English-like orders in their Norwegian, even though those orders are grammatical in Norwegian. In our study, it could be that English-dominant speakers rated SOV relatively higher because it is Korean-like, though we would also expect them to rate SVO relatively lower because it is English-like. We do not see evidence for this, but more implicit measures could help avoid these potential metalinguistic confounds.

Another potential explanation for our results comes from frequency of input. Cho (1982) conducted a corpus study of the infant directed speech of three Korean-speaking mothers. The mothers produced overwhelmingly more sentences with canonical SOV order than any other order. This is relevant for our English-dominant participants, who grew up hearing and/or speaking Korean at home and were introduced to English in school. The early input of these participants could have been very heavily SOV, and they might not have had very much exposure to the non-canonical orders. The very constructions we referred to as being more marked are also less frequent. We cannot disentangle these potential sources of reduced acceptability here, nor might it be possible to do so for constituent order in Korean.

Though we found reduced flexibility in this study, reduction of flexibility is not the only possible outcome of contact. It could be that a production study might show

increased use of SVO in Korean by English-dominant speakers, which would indicate that acceptability judgment experiments cannot tell the whole story of how experience with English affects constituent order in Korean, as well as raising interesting questions about the relationship between production and acceptability. However, this is an early step toward applying an approach which assumes that understanding learning and use in multilingual contexts can help explain how and why languages change due to contact.

## References

- Anderssen, M., & M. Westergaard. Accepted. Crosslinguistic similarities and differences in bilingual acquisition and attrition: Possessives and double definiteness in norwegian heritage language. *Bilingualism: Language and Cognition* .
- Bates, D., M. Mächler, B. Bolker, & S. Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67.1–48.
- Birdsong, D. 1989. Introduction. In *Metalinguistic Performance and Interlinguistic Competence*, 1–9. Springer.
- Boersma, P., & D. Weenink. 2013. Praat: doing phonetics by computer. 2013.
- Campbell, L. 1980. Towards new perspectives on American Finnish. *Central problems of bilingualism* .
- Cho, S. W. 1982. The acquisition of word order in korean.
- Cowart, W. 1997. *Experimental syntax: applying objective methods to sentence judgements*. Sage Publications.
- Fortescue, M. 1993. Eskimo word order variation and its contact-induced perturbation. *Journal of Linguistics* 29.1–24.
- Heine, B. 2008. Contact-induced word order change without word order change. In *Language Contact and Contact Languages*, ed. by P. Siemund & N. Kintana, 33–60. John Benjamins.
- Huh, W. 1988. Kwukehak'korean grammar'. *Seoul, Korea: Saymmunhwasa* .
- Kaiser, E., & J. C. Trueswell. 2004. The role of discourse context in the processing of a flexible word-order language. *Cognition* 94.113–147.
- Kluender, R., & M. Kutas. 1993. Bridging the gap: Evidence from erps on the processing of unbounded dependencies. *Journal of Cognitive Neuroscience* 5.196–214.
- Ko, H. 2014. Remarks on right dislocation construction in korean: Challenges to bi-clausal analyses.
- Kroch, A., A. Taylor, & D. Ringe. 2000. The Middle English verb-second constraint: a case study in language contact and language change. In *Textual Parameters in Older Language*, ed. by S. Herring, L. Schoesler, & P. van Reenen, 1–27. Philadelphia: John Benjamins.
- Kwon, N., R. Kluender, M. Kutas, & M. Polinsky. 2013. Subject/object processing asymmetries in korean relative clauses: Evidence from erp data. *Language* 89.537.
- Miyamoto, E. T., & S. Takahashi. 2001. Sources of Difficulty in Processing Scrambling in Japanese. In *Sentence Processing in East Asian Languages*, ed. by M. Nakayama, 1–21. CSLI.
- Montrul, S., & M. Bowles. 2009. Back to basics: Incomplete knowledge of differential object marking in spanish heritage speakers. *Bilingualism: Language and Cognition* 12.363–383.
- Nam, K.-S., & Y.-K. Ko. 1986. Phycowun kwuke munpeplon'standard korean grammar'. *seoul. Korea: Thap Press* .
- Namboodiripad, S. *An Experimental Approach to Variation and Variability in Constituent Order*. UC San Diego dissertation.
- Onar Valk, P. 2014. Convergent developments in dutch turkish word order—a comparative study using ?elicited production?and ?judgment?data: Converging evidence? *Applied Linguistics Review* 5.353–374.

- Polinsky, M. 2009. What breaks in a-and a-bar chains under incomplete acquisition. In *22nd Annual CUNY Conference on Human Sentence Processing*. University of California, Davis.
- Scontras, G., Z. Fuchs, & M. Polinsky. 2015. Heritage language and linguistic theory. *Frontiers in psychology* 6.
- Sorace, A., & F. Filiaci. 2006. Anaphora resolution in near-native speakers of Italian. *Second Language Research* 22.339–368.
- Waters, G. S., & D. Caplan. 2001. Age, Working Memory, and On-Line Syntactic Processing in Sentence Comprehension. *Psychology and Aging* 16.128–144.
- Weskott, T., & G. Fanselow. 2011. On the Informativity of Different Measures of Linguistic Acceptability. *Language* 87.1–61.
- Wickham, H. 2009. *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York.