Recalling adjective-noun order in Tagalog is sensitive to phonological markedness constraints

Introduction. Tagalog adjective-noun word order is variable, as in (1) and (2). Both word orders are interchangeable and have no apparent difference in meaning (Schachter & Otanes, 1972).

(1) **Adjective-Linker-Noun**
maganda-ng lalaki
beautiful-LNK man
'beautiful man'

(2) **Noun-Linker-Adjective**
lalaki-ng maganda
man-LNK beautiful
'beautiful man'

A linker morpheme (glossed as LNK above) is flanked by the adjective and the noun. This morpheme has two phonologically conditioned allomorphs: a free form realized as [na], and an enclitcized form realized as [ŋ], written as <ng>. The more frequent encliticized form is used when the first word of the pair, irrespective of the order, ends in a vowel, a glottal stop, or a coronal nasal.

Shih and Zuraw (2017; SZ17) presented an analysis of this word order variation using a written corpus and found that phonological markedness influenced word order. For example, their corpus showed that a sequence of adjacent nasals was disfavored (e.g., *itim na peluka* 'black wig'*)*; the alternative word order that avoided a sequence of adjacent nasals was favored (e.g., *pelukang itim*). SZ17 argued that nasal-OCP, a phonological markedness constraint that disprefers consecutive nasals, underlies the preference for the alternative order. They also found that *NC, a markedness constraint that disprefers nasals to be followed by voiceless obstruents, influenced word order.

The extent to which the alternative word order is favored may be confounded by the general preference for the encliticized form of the linker. A stronger case could be made if the form of the linker is kept constant: both alternatives use *na* (e.g., *itim na itik* 'black duck' *vs itik na itim*) or both use *-ng* (e.g., *puting martilyo* 'white hammer' vs *martilyong puti*). However, this precise level of control over the alternatives is difficult to achieve in corpus studies. Thus, we approach the question of whether and how phonological markedness influences word order experimentally. We discuss other potential confounds and control for them in our study.

The present study. We aim to deconfound SZ17's corpus findings. We investigated OCP-effects in Exp1A and *NC-effects in Exp1B. We used a recall paradigm as a probe to determine the extent to which Tagalog speakers alter the order to repair a markedness violation during recall. Figure 1 schematizes a typical trial. We manipulated the order of the combined form, (ORDER: AdjN, NAdj), and whether the combined form satisfied or violated their respective markedness constraint (PHONOLOGY: Satisfy, Violate). **We hypothesized (i) that participants would misremember NAdj more as AdjN due to the frequency of AdjN in the input; and (ii) that they would misremember forms that violated the markedness constraint more, especially when it was NAdj.** In other words, we predicted a main effect of Order and an Order-Phonology interaction.

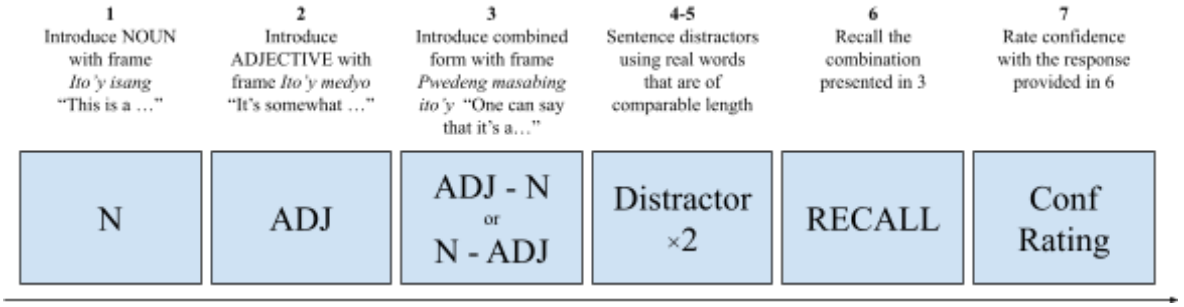

Figure 1. Schematization of a trial. Manipulations of word order and phonology introduced in 3.

Exp1A: Nasal OCP (N_{subj}=40, N_{item}=48). Provided in Table 2 is a sample item and in Figure 1A is the breakdown of the results. Participants were more accurate in the NAdj-order (β=.41, z=2.35, p=.02).

There was no evidence for markedness affecting accuracy and confidence in the NAdj-order (β=-.04, z=-.17, p=.87), but they were more accurate and confident when the form violated OCP than when it satisfied OCP in AdjN-order (β=.92, z=2.17, p=.03).

Exp1B: *NC (N_{subj}=41, N_{item}=48). Provided in Table 2 is a sample item and in Figure 1B is the breakdown of the results. Participants were more accurate in the NAdj-order (β=.67, z=2.84, p=.004). There was no evidence for markedness affecting accuracy and confidence in either NAdj-order (β=.17, z=.60, p=.55) or AdjN-order (β=.46, z=1.13, p=.26).

Conditions		**Exp1A: Nasal-OCP**			**Exp1B: *NC**		
Order	Phono	Adj	N	Combination	Adj	N	Combination
AdjN	Violate	pisom	takis	pisom na takis	bido	tuma	bidong tuma
AdjN	Satisfy	pisob	takis	pisob na takis	bido	duma	bidong duma
NAdj	Violate	pisob	takim	takim na pisob	pido	tuma	tumang pido
NAdj	Satisfy	pisob	takis	takis na pisob	bido	tuma	tumang bido

Table 2. Sample item for Exp1A and Exp1B

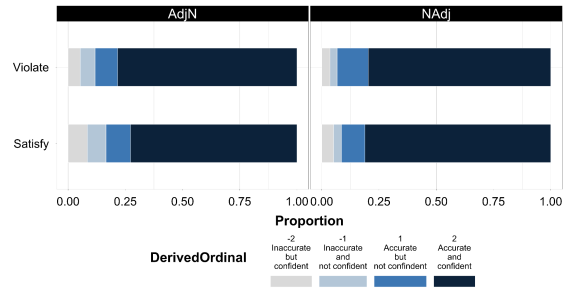

Figure 1A. Breakdown of results in Exp1A

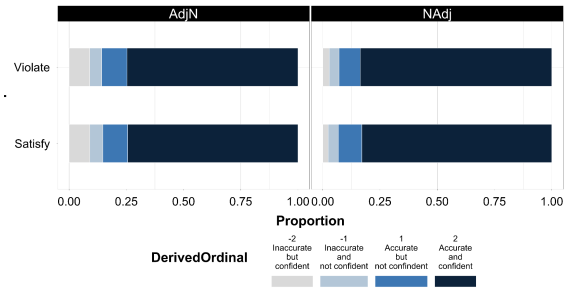

Figure 1B. Breakdown of results in Exp1B

Discussion. While the results deviated from our predictions, they did so in a very systematic way. We argue that our results are consistent with an account where markedness led to deeper processing, in the sense of Craik & Lockhart (1972). This, in turn, made recall easier. This has two welcome consequences: (i) it accounts for the higher accuracy and confidence in NAdj-conditions more generally; and (ii) it also accounts for the higher accuracy and confidence in the Violate-condition, relative to the Satisfy-condition in AdjN order in Exp1A. **Our study demonstrates that participants were, at the very least, sensitive to these markedness constraints in recall.** This modest position is congruent with the Breiss & Hayes' claims (2020): there are greater effects of phonological markedness in written corpora than in spoken corpora. We will discuss a potential confound in our current study and talk about a way we are addressing this in an ongoing follow-up experiment.

REFERENCES

Breiss, C., & Hayes, B. (2020). Phonological markedness effects in sentence formation. *Language, 96*(2), 338-370. **Craik, F. I., & Lockhart, R. S. (1972).** Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, *11*(6), 671-684. **Schachter, P. & Otanes, F.T. (1972).** *Tagalog reference grammar.* Berkeley, CA: University of California Press. **Shih, S. & Zuraw, K. (2017).** Phonological conditions on variable adjective and noun word order in Tagalog. *Language, 9*(4), e317–e352.