The role of Tagalog verbal agreement in processing WH-dependencies
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A-bar dependencies challenge parsers to associate a displaced phrase (the FILLER) with an empty category (the GAP), whose position is not unambiguously indicated by the evidence in the input. Parsers attempt to establish this link even before there is any direct evidence, and they predictively posit a gap at each available position that would allow this syntactic dependency to be resolved. Most of these experiments, however, have been conducted in languages like English, Dutch, or Japanese—verb-medial and verb-final languages that are well-characterized in the psycholinguistics literature.

Recent evidence from Chamorro, a verb-initial Austronesian language, has demonstrated that verbal morphology modulates parsing, such that predictive identification of the gap only occurs with disambiguating WH-agreement (Wagers, Borja, & Chung, 2015). Here we ask how speakers of Tagalog, another verb-initial Austronesian language, process A-bar dependencies. More specifically, we investigate how they use morphological cues (i.e., verbal agreement) to interpret WH-questions in real-time. Like Chamorro, Tagalog verbs exhibit rich morphology that reflects the mapping between the verb’s arguments and syntactic positions; unlike Chamorro, this morphology is not only implicated in A-bar dependencies.

To isolate the contribution of agreement morphology in processing A-bar dependencies, we compared the time-course of dependency resolution in WH-questions when verbs exhibit agreement (see Fact #1) and when they do not (see Fact #2). We found that at the verb-region, implausible sentences were rejected more than plausible sentences—especially when the verb bears agreement. Thus, Tagalog verbal agreement facilitates the processing of A-bar dependencies. We maintain that agreement strengthens the parser’s commitment to a hypothesis by providing indefeasible evidence about the gap’s location.

**Fact #1:** Generally, Tagalog verbs agree with the subject (S) or the object (O). When the verb agrees with S, the verb bears the affix -um-. When the verb agrees with O, the verb bears the affix -in-. Agreement morphology interacts with A-bar movement in that the only extractable argument is the one with which the verb agrees. When the verb bears S-agreement (-um-), only S-extraction is licit, as in (1a). When the verb bears O-agreement (-in-), only O-extraction is licit, as in (1b). Illicit extractions are not provided for reasons of space.

(1) (a.) Aling babae ang=s<um>ipa ng=bata which woman kick<AGR:S> child 'Which woman kicked the child?' S-extraction with S-agreement

(b.) Aling bata ang=s<in>ipa ng=babae which child kick<AGR:O> woman 'Which child did the woman kick?' O-extraction with O-agreement

**Fact #2:** Verbs in the iterative and recent perfective aspects do not exhibit agreement (Kroeger, 1993; Schachter & Otanes, 1983). Nevertheless, verbs in these aspects impose comparable restrictions on A-bar dependencies: -um-marked verbs and iteratives are restricted to S-extraction, and -in-marked verbs and recent perfectives are restricted to O-extraction. These facts are schematized below in Table 1 and they allow us isolate the contribution of Tagalog agreement morphology in WH-processing.
To compare how quickly readers distinguish plausible sentences from implausible ones, we used the STOPs-MAKing-SENSe TASK (Boland et al., 1995). Sentences were presented phrase-by-phrase in a self-paced moving-window paradigm. Participants were trained to terminate the presentation after any phrase if the sentence no longer made sense. We crossed the factors AGREEMENT (+AGR, -AGR) and FILLER PLASIBILITY to create two 12-item sets (one for the S-extraction contrast, and one for O-extraction). 80 participants were recruited at the University of Philippines–Diliman. An example item set is given in (2) and (3) for S- and O-extraction, respectively. Note that “|” represents regions of presentation and “#” represents implausible fillers.

(2)  (a.) Aling | {dalaga/tubig} | ang | umiinom parati | ng {tubig/dalaga} ...?
    ‘Which young girl/#water always drinks water/a young girl ...?’  [S, +AGR]
  (b.) Aling | {dalaga/tubig} | ang | inom nang inom | ng {tubig/dalaga} ...?
    ‘Which young girl/#water keeps drinking water/a young girl ...?’  [S, -AGR]

(3)  (a.) Aling | {alak/babae} | ang | ininom | niya ...
    ‘Which wine/#woman did he/she (just) drink to relax...?’  [O, +AGR]
  (b.) Aling | {alak/babae} | ang | kakainom lang | niya ...
    ‘Which wine/#woman did he/she just drink to relax...?’  [O, -AGR]

We analyzed the cumulative rejection rates in each region to determine when participants could discriminate plausible sentences from implausible ones. This would indicate the time-course of when the WH-dependency was formed. When the verb bore agreement, participants began discriminating plausible sentences from implausible ones at the verb-region. When the verb did not, only when the co-argument was processed did the rejection rates converge. In both cases, participants interpreted the dependency only when disambiguating information was made available (i.e., via agreement morphology or the co-argument).

To conclude, we found that Tagalog agreement morphology has a facilitatory effect on the processing of WH-dependencies by providing speakers unambiguous information about the gap’s location.

REFERENCES: