

Expressing ignorance in Japanese: contrastive *wa* vs. *at least*

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I. Phenomena and basic account. In Japanese, using *sukunakutomo* ‘at least’ or so-called contrastive *wa* with numerals can convey ignorance about the precise number under discussion in (1a-b). By contrast, using *ga* only yields exhaustive readings: (1c).

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- (1) a. **sukunakutomo** 10-nin kita. ‘At least 10 people came.’ \rightsquigarrow 10 or more, not sure of exact number
 b. [F10-nin] **wa** kita. ‘10 people-wa came’ \rightsquigarrow 10 or more, not sure of exact number
 c. 10-nin **ga** kita. ‘10 people-ga came’ \rightsquigarrow 10 or more, not sure of exact number
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In a series of 3 experiments, we investigate how *wa* and *sukunakutomo* are semantically and pragmatically different with respect to ignorance inferences. While contrastive *wa* have been extensively discussed (Hara 2006, Tomioka 2009), an explicit comparison of *wa* and *sukunakutomo* is still lacking. Experiment 1 showed that while ignorance inferences are always available with *sukunakutomo* irrespective of Question under Discussion (QuD), ignorance inferences with *wa* are not always available and generally weaker.

We account for these results by conjecturing that contrastive *wa* is interpreted by the hearer as that the speaker is making contrastive statements that are related to the QuD available in the context. On the other hand, *sukunakutomo* has semantics with disjunction as proposed for English superlatives (Büring 2007), which gives us stronger ignorance inferences in all contexts. Follow-up experiments 2 and 3 confirmed the hypothesis.

II. Experiments, results and analysis: Experiment 1 Experiment 1 investigated how contrastive *wa* and *sukunakutomo* ‘at least’ (and also *izyoo* ‘more than’, not discussed in this abstract) are sensitive to three kinds of QuDs, POLAR vs. HOW MANY vs. WHAT as in (2). It is predicted that HOW MANY induces strongest ignorance inferences while POLAR induces weaker inferences.

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- (2) a. POLAR: Did you see {10-*wa* / at least 10-*ga*} of the diamonds under the bed?
 b. HOW MANY: How many of the diamonds did you see under the bed?
 c. WHAT: What did you see under the bed?
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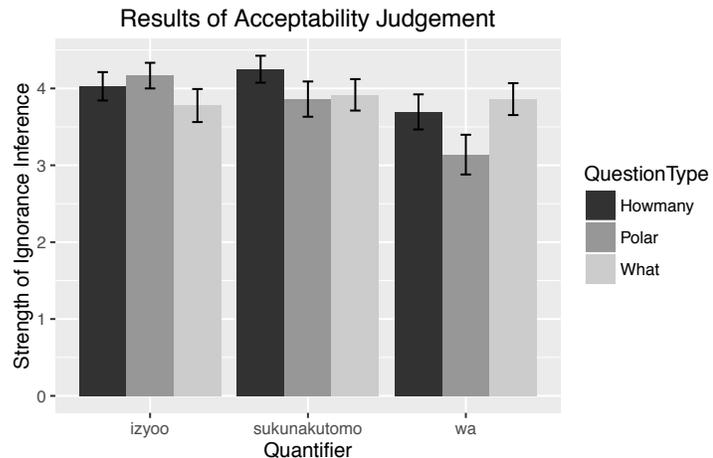
Experiment 1 investigated context sensitivity of ignorance inferences from *wa* and *sukunakutomo*. The task and experimental design were adapted from Westera and Brasoveanu (2014)’s experiment on English: three QuD types (see (2) above) are crossed with three quantifier types, *wa* vs. *sukunakutomo* vs. *more than*. The QuDs and quantifier types were presented as part of a conversation between a judge and a witness so that we could reinforce the fact that the witness is fully cooperative. Each item consisted of (i) a question posed by the judge, (ii) the answer provided by the witness (presented on a new screen; moving window self-paced reading), followed by (iii) an ignorance inference drawn by the judge that the participants rate on a 5-point Likert scale (on a third and final screen).

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- (3) **Exp. 1 example item:** POLAR & WA condition
 (i) Judge: Did you see 10-*wa* of the diamonds under the bed?
 (ii) Witness: I saw 10-*wa* of the diamonds under the bed.
 (iii) The judge concludes that the witness does not know the exact number of the diamonds.
 How justified is the judge’s conclusion?
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There were 18 items distributed according to a Latin Square design, combined with 36 fillers, and ordered randomly for each of 18 participants. Here, we report only the results for the final, ignorance-rating task. Average ratings are given in the figure below. Mixed-effects ordinal probit regression models were used; all models included crossed random intercepts for subjects and items. Overall, *wa* triggered weaker ignorance inferences than *sukunakutomo* ($\beta = -0.51$, $SE = 0.16$, $p < 0.01$). Within the

wa conditions, POLAR questions triggered significantly weaker ignorance inferences compared to WHAT ($\beta = -0.68$, $SE = 0.27$, $p < 0.05$), and there was no significant difference between WHAT and HOW MANY questions. Within the *sukunakutomo* conditions, HOW MANY triggered stronger ignorance inferences than WHAT ($\beta = 0.67$, $SE = 0.31$, $p < 0.05$), as expected based on previous work on English (e.g., Westera and Brasoveanu 2014).

We attribute the fact that *wa* induced weaker ignorance inferences than *sukunakutomo* to a competition between them: when a speaker expresses uncertainty, she prefers using *sukunakutomo* because this item unambiguously encodes that. In contrast, *wa* could convey (i) the speaker’s ignorance, or (ii) the speaker is making contrastive statements connected to QuDs. That is, focused *wa* requires the presence of alternatives, which can be other states of affairs that are possible as far as the speaker knows (ignorance) or contextually provided alternatives of a different nature.



Experiment 2-3: These follow-up experiments were conducted to check if Japanese speakers are sensitive to the meaning ‘flexibility’ of *wa* by forced binary choice tasks: participants were presented with one of 3 contexts, together with a *how many*-question, and had to select the best answer out of the two. In Experiment 2, the two possible answers were *wa* vs. *ga* – (1b) vs. (1c) above; in Experiment 3, the two possible answers were *wa* vs. *sukunakutomo* – (1b) vs. (1a).

Experiment 2 revealed that *wa* was preferred when the speaker was ignorant, and a subset of the participants preferred *wa* when the speaker is knowledgeable and there are salient contrasts in context (e.g. the speaker is making a list of attendees and absentees). In Experiment 3, *sukunakutomo* was preferred when the speaker is clearly ignorant, while *wa* is preferred when the speaker is knowledgeable and also there is a contrast. When there is no contrast in the context, there was no significant difference between the two.

III. Conclusion. The results of 3 experiments suggest Büring’s semantics for *at least* works the best to model Japanese counterpart, too, as shown in (4): Involving the disjunction, ignorance inferences can be obtained from the fact that the speaker thinks both conjuncts are possible answers in various kinds of QuDs. By contrast, *wa* needs to refer to the QuD, and it implicates that the speaker is making contrastive statements about other entities that are not denoted by whatever *wa* is attached to (boldfaced in (5)). This explains why we needed a contrast in the context to license *wa*. Ignorance inferences from *wa* are available only when they are licensed by the context that can establish the contrast between full knowledge vs. possibility.

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- (4) At least 10 people came.
= (Exactly 10 people came) \vee (more than 10 people came)
- (5) [_F10 people]-*wa came* **asserts** “10 people came” **AND implicates** :
(i) \square (10 people came) and \diamond (**more than 10** people came). **OR**
(ii) 10 people came and there are **other people** who did not.
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References: Büring (2007). The Least *at least* Can Do. *WCCFL 2007*. Hara (2006). *Japanese Discourse Items at Interfaces*. Ph.D. thesis, U of Delaware. Tomioka (2009). Contrastive topics operate on speech acts. In Zimmermann and Féry (Eds.), *Information Structure: Theoretical, Typological, and Experimental Perspectives*. Westera and Brasoveanu (2014). Ignorance in context: The interaction of modified numerals and QUDs. *SALT 24*.