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Is a quantifier mismatch a problem for L1 Japanese learners of English?

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Abstract
After identifying a linguistic difference between the English quantifier *most* and the Japanese quantifier *hotondo* 'most' we set out to find if the semantic difference between the two would constitute a learning problem for Japanese second language (L2) learners of English. The difference we hypothesized between the two is that English *most* is considered "more than half," while *hotondo* is "nearly all." As this semantic difference is not explicitly taught in a classroom environment, acquisition by learners would need to take place through experiencing *most* in contexts where they might receive contextual clues. An examination of a corpus indicated that contextual clues towards such a semantic difference would be unavailable or rarely available. Two sets of experiments (Experiments 1 and 2) were conducted using the Truth Value Judgment Task methodology. The results of Experiment 1 showed that L2 speakers treated *most* as meaning "nearly all" but that the level of learner proficiency has an effect. The upper intermediate L2 learner group (Experiment 1a) behaved more like the L1 English speaker group (Experiment 1b) than the lower proficiency L2 group (Experiment 1c). Experiment 2, testing Japanese L1 speakers on their interpretation of Japanese *hotondo* 'most,' revealed that while a majority of participants treated *hotondo* as "almost all," there was, somewhat unexpectedly, a group of speakers who interpreted *hotondo* to mean "more than half." Therefore, although the possibility cannot completely be eliminated that the result of Experiment 1a is due to L1 transfer, if some Japanese learners of English can unlearn the incorrect meaning, then some prior, if not innate, knowledge that makes the process possible must be available to them.

Keywords: quantifier, learning problem, L2 acquisition, semantic mismatch, truth value judgement task

1. Introduction

It has been observed that second language (L2) acquisition of a linguistic property P that involves a mismatch between the first and target language succeeds even when learners have not received explicit instruction or direct evidence for P from the input (Dekydtspotter, Sprouse and Anderson 1997; Slabakova 2001, 2003, 2006, 2012; Song and Schwartz 2009; among many others). Here are two possible learning situations.

(1) Type 1: A mismatch occurs, and direct evidence for P is available.
Type 2: A mismatch occurs, and no direct evidence for P is available.

It is sometimes suggested that successful learning is possible in learning situations of Type 2 because some other properties tied to P and a prior meaning computation mechanism can be leveraged.

As an illustration of the latter kind of situation, take Slabakova's (2001) study on Bulgarian learners' acquisition of grammatical aspect in English. The mismatch between English and some other languages including Bulgarian under consideration is that in English, unlike in Bulgarian, simple present sentences like (2a) and bare infinitive complements like the one found in (3a) never have the on-going-event readings that their b-counterparts have.

(2)
a. *Mary eats a tomato* (**right now*).
b. *Mary is eating a tomato* (*right now*).

(3)
a. *John saw Mary eat a tomato.*
b. *John saw Mary eating a tomato.*

Slabakova observed that the lack of the on-going event reading in (2a) is explicitly taught in language classrooms while entailment of event completion in (3a) is not likely to be: Thus, a Type 1 situation in (1) is likely to take place for the former property while a Type 2 situation in (1) is likely to take place for the acquisition of the latter. The Bulgarian learners, nevertheless, showed English L1-speaker-like behavior when tested on the property of bare infinitives illustrated in (3a). Building on the results, Slabakova proposed that by internalizing more abstract knowledge that governs the two phenomena, the learner is capable of inferring the contrast shown in (3) through knowing the one shown in (2) and other characteristics of the language.

The present study explores an instance of Type 2 mismatch that at least initially appears slightly different from Slabakova's bare infinitive case. If property P is hard to infer from other characteristics of the L2 grammar and overt instruction is not provided, we predict P to be difficult to acquire. The instance of mismatch under investigation here concerns the acquisition of the semantics of the English quantifier *most* by Japanese L2 learners. The semantic properties of *most* have drawn non-trivial attention in theoretical and psycholinguistic literature partly due to its characteristics unique in comparison to *some* and other English quantifiers (Ariel 2004; Barwise and Cooper 1981; Hackl 2009; Horn 2006; Hunter and Lidz 2013; Papafragou and Schwartz 2006). The property of the meaning of *most* that concerns us primarily is what *lower-bounded semantics* it has. As Barwise and Cooper and other scholars note, *Most A B* means:

(4) $|B| > 1/2^*|A|$, where $|X|$ stands for the number of the elements of set X.

The sentence *most of the tomatoes are rotten*, for example, has the following meaning: $|\{x: x \text{ is rotten}\}| > 1/2^* |\{x: x \text{ is a tomato}\}|$.[1]

[1] We are not suggesting that *most* is synonymous with *more than half*. See the references cited above.

From the perspective of the acquisition of *most* by Japanese EFL learners, this lower-bounded semantics of the quantifier can be thought to cause a learning problem. Our starting point is the following intuition: *hotondo* 'most' in Japanese, is one of the immediately available translations of English *most* and the one found used in explicit classroom instruction. *Hotonodo* seems to have the meaning that can be better paraphrased as *nearly all with a few exceptions,* not *more than half.* [2] If Japanese speakers assigned to *most* the meaning of *hotondo* 'most,' and they were not exposed to the positive evidence that enables them to correct their initial hypothesis, then they would interpret *most* on a par with *hotondo*. To unpack our reasoning, there are three empirical hypotheses to support this.

(5)

i. The meaning of *hotondo* 'most' in Japanese is "nearly all," not "more than half."
ii. No positive evidence is found in the input for L2 speakers that *most* means "more than half."
iii. Japanese EFL learners, unlike their L1 counterparts, do interpret *most* to mean "nearly all."

We acknowledge that quantifier acquisition has been a hot issue in recent L2 literature. Such studies include Dupuy, Stateva, Andreetta, Reboul and Stepanov (2018), Snape and Hosoi (2018), Zhang and Wu, (2022), Feng and Cho (2019). Many of these studies are concerned with scalar implicature (SI) acquisition and explore asymmetries between L1 and L2 speaker treatment of SI. The current study's focus, however, is not on L2 acquisition of pragmatic properties of *most* such as scalar implicature, but rather a certain semantic property of it.

Unlike these studies our primary query is whether prior knowledge is needed for L2 speakers to acquire *most,* the question of whether or not Universal Grammar is fundamental to this logically follows after this query (cf. Slabakova 2001, 2003).

In what follows in this paper, we report the results of the corpus study and the experiments we conducted. They suggest that the propositions given in (5i-iii) are by and large empirically supported. The paper is therefore structured as follows. Section 2 will address in more depth the nature of the potential learning problem. Section 3 will present the experiment designed to test the quantifier *most* with Japanese EFL participants and L1 English speakers. This is followed by Section 4, which addresses the experiment for *hotondo* 'most' involving Japanese L1 speakers. Section 5 is devoted to a discussion, followed by a conclusion.

2. The learning problem

The problem we are addressing in what follows is a potential case of Poverty of the Stimulus (Chomsky 1975), a learning situation in which multiple hypotheses are consistent with the input available to the learner. PoS may occur in the L2 acquisition of *most* if the input data available to learners is consistent with the wrong hypothesis that *most* cannot mean "more than

[2] We have not been able to find a theoretical paper that directly backs up our claim on *most* and *hotondo*. Tancredi Hoshi and Grosu's (2021) denotation of *hotondo*, however, is suggestive: They proposed that the meaning of the quantifier involves the 'far greater than' relation. That is, when a girl ate most of the tomatoes under discussion, the number of those she ate is far greater than that of those she did not. Their proposal seems perfectly consistent with our intuition. We also note that Koichi Otaki is the first person to point out to us that *most* and *hotondo* likely differ in the way we argue they do.

half." Also crucial to note is that while many PoS considerations involve a lack of negative evidence (such as the fact that *Is the man who over there is happy?* is ungrammatical), our case is different: the crucial evidence would be positive. If the learner hears someone say *Most of the students hate syntax* when five out of nine students hate the subject, she can figure out "nearly all" is not the lower bound interpretation of the quantifier.

Our hypothesis regards roughly-but-not-equivalent quantifiers. Specifically, we posit that the Japanese *hotondo* 'most' and the English *most* are not treated the same, namely, *hotondo* is not considered to mean "more than half." The semantic mismatch of the two quantifiers, which we show exists below, represents a minimal, but very real, difference in an interpretive sense. In order to successfully acquire the meaning, i.e. recognize the semantic difference of supposedly equivalent lexical items, the literature suggests that Japanese EFL students will either need to be explicitly taught the form, or be able to infer the meaning difference from other contextual or linguistic clues.

As for explicit instruction, when taught English quantifiers, Japanese students are introduced to the vocabulary and taught their Japanese language equivalents. However, as it has not been adequately identified, the semantic mismatch between *most* and its Japanese counterpart is not explicitly taught in the classroom. In our fieldwork with Japanese teachers of English, they expressed surprise as they had never considered the difference between *hotondo* and *most,* some admitting they had not been aware of the difference themselves.

So, it then falls to Japanese learners of English to realize the language mismatch exists from experiencing a multitude of utterances in order to encounter contextual and/or other linguistic clues and adjust accordingly.

To determine the possibility of learners acquiring the "more than half" meaning of *most* from contextual clues we used an L2 corpus by Barraja-Rohan (2013), which was selected from the TalkBank second language acquisition corpora because it contains speech from an L1 English speaker, "Jon," directed to adult EFL learners who are L1 speakers of Japanese (and of other languages such as Cantonese and Vietnamese). For example, a situation where *most* is used to indicate three out of five, i.e. just above 50% rather than requiring a situation of 90% or more, would be indicative of a contextual clue for L2 Japanese learners to infer the difference in quantifier meaning. From a total number of 2182 utterances by Jon we find the use of the quantifier *most* used nine times. See below for representative examples. In the transcription ⌈ indicates a conversation overlap, ↘ indicates falling to mid vocal pitch, and ↘ indicates falling to low pitch.

(6)

i. JON: ⌈*most people have that problem I think*↘

ii. JON: *you speak English yeah* ↘*most* ⌈*people said yes*

iii. JON: *et most universities* ⌈*in Germany* ⌈*I think so*

It is difficult to conclude from utterances of *most* like these that they could provide sufficient context or clues as to the mismatch between *most* and *hotondo.* The learner would be able to learn the meaning of *most* without positive evidence if the following inferential system and data D were available to them: If you find (a set of) positive data D in the input of your target language, hypothesize that proportional quantifier Q in the language means "more than half,"

not "nearly all." However, to the best of our knowledge, there is no theory as to what the nature of such an inference might be like and what data D might be, so there is no reason to think that the learning situation under consideration here falls under the same mismatch type as found in the work of Slabakova and others'.

The lack of either linguistic or contextual clues surrounding *most* presents the possibility of a real learning problem for Japanese learners of English. Therefore, the purpose of this paper is to try to discover if L2 learners behave differently than L1 speakers in an experimental setting.

3. Experiment 1

Experiment 1 sets out to answer two questions about the potential learning problem created by a semantic mismatch of *hotondo* 'most' and *most* where the former means "nearly all" whilst the latter means "more than half." First, this experiment will see whether Japanese learners of English treat English *most* differently than L1 English speakers. Second, the experiment will compare a possible difference in treatment of *most* due to the proficiency level of the learners. If the former is the case, we have potentially identified a genuine learning problem. If L2 proficiency does have an effect, that would indicate that despite lacking formal instruction of the semantic difference it is possible to acquire the semantic difference through advanced exposure and experience with the language.

We divided Experiment 1 into three sections based on the proficiency levels of the participants. Experiment 1a was of lower-level Japanese learners of English, Experiment 1b was of higher proficiency learners and Experiment 1c was of L1 English speakers. More details about the participants are provided in the subsections below.

3.1. Experiment 1a

As the difference between *most* and *hotondo* is a subtle semantic mismatch it is possible that the acquisition of the meaning of *most* is affected by proficiency in the English language. In the reviews of several studies done by Slabakova (2001, 2003, 2006, 2012), we see higher proficiency learners were more likely to have acquired more obscure or L1-mismatched forms compared to lower proficiency learners. To control for this factor, we divided two groups of Japanese learner of English participants based on their proficiency. The learner's proficiency was determined according to mapping their TOEFL ITP scores to the Common European Framework of Reference for Languages (CEFR). The lower proficiency group of participants were 20 Japanese learners English currently attending Yokohama City University, Japan. Their TOEFL ITP scores ranged from 390 to 460, placing them in the A2 (Basic) level.

3.1.1. Materials and procedures

The procedure for experiment 1 is a between-subjects design utilizing the Truth Value Judgment Task (TVJT) (Crain and Thornton 1998). Participants viewed a series of photos and listened to the experimenter tell the story of what was happening in each scene. Listening to each story along with the participants was the puppet of a monkey named Coco. At the end of

each story, the experimenter turned to the puppet and asked a question. Participants were asked to judge whether or not the puppet had "answered well." This particular phrase was adopted from Papafragou and Musolino (2003) to see if participants found the puppet's answer felicitous. Participants marked their answers privately on an answer sheet indicating yes or no.

Participants were tested in small groups to help maximize the attention of participants. The trials were done with the experimenter delivering the stories 'live' rather than pre-recorded. This follows the precedent set by previous TVJT studies (e.g., Papafragou and Musolino 2003; Guasti et al. 2005). Also, a direct connection between the experimenter and participants was determined to lead to greater attention/effort by participants than if they were alone listening to a recording. Participants also received a small compensation to help ensure the task was taken seriously.

To test if the quantifier *most* would be judged as "nearly all" or "more than half," participants were exposed to two slightly different photo series, a factor which we will refer to as *trial type* (Papafragou and Schwarz 2006). Four critical trials were obfuscated by six filler stories. See a sample of an English script in Figure 1. The filler stories were similar to the critical trials featuring a similar level of English complexity but did not include the quantifier *most.* An example of a filler utterance by the puppet is, "The baker didn't sell all of the donuts." In addition to fillers preventing participants from guessing the nature of the critical trials, they also served as an additional way to ascertain the participants' L2 ability level. Any participant failing to answer a number of fillers correctly would be removed from the data pool due to the possibility they had not been paying attention, or their listening proficiency was not sufficient for the task. This precaution proved unnecessary however and no participant data was omitted.

In both trial types, participants received almost exactly the same script and sets of photos.[3] One script difference occurs in scene 3, and in scene 4 the number of empty plates remaining in the photo would be 3 or 4 depending on whether the participant is undergoing the 3/5 or 4/5 trial type. Because between-subjects design was adopted, no participants experienced both 3/5 and 4/5 conditions. Nine and eleven participants were tested on the 3/5 and 4/5 conditions, respectively.

	Scene	Storyline
1.		**Experimenter:** Girl and her mother are talking. A puppet watching their conversation. **Experimenter:** Mother says, "Please eat tomatoes if you'd like."

[3] A reviewer observed a potential limitation with the materials of this study. As can be seen in Figure 1, the main character hesitates to continue before eating her last tomato in the 4/5 condition while that does not happen in the 3/5 condition. According to the reviewer, the Condition of Plausible Dissent might not be satisfied in the latter condition. That is, the possibility that the girl eats only two of the tomatoes was not hinted at as a possible outcome of the story. While we have not been able to decide whether this potential problem of the current materials affected the participants' performance in a crucial manner, we concur with the reviewer's point that the pragmatic felicity condition would have better to have been met.

2.		**Experimenter:** Girl tries to eat tomatoes.
3.		**3 of 5 Experimenter:** She feels full and has stopped eating. OR **4 of 5 Experimenter:** She feels full but decides to eat one more.
4.	 (for the 3/5 trial type) OR  (for the 4/5 trial type)	**Experimenter:** Mother says, "Are you done?" **Experimenter to Puppet**: Coco, Mother gave the girl tomatoes. What happened? **Puppet**: The girl ate most of the tomatoes.

Figure 1: *English Experiment Sample Script*

3.1.2. Results

Experiment 1a iinvolved basic level L2 learners. The actual participant distribution as to how many "yes" responses were given in the four trials can be found in Table 1. The results showed significantly different rates of acceptance for the two trial types (Mann-Whitney U test: $Z = 3.42$, one-tailed $p = .0003$). More acceptance occurred in the 4/5 trial type, with the learners accepting the puppet's statement 92% of the time, while in the 3/5 trial type the acceptance rate was 39%.

Table 1: *Basic Japanese EFL Learners – Individual Distribution*

Acceptance	4/5 Trial Type	3/5 Trial Type
4 times	7	0
3 times	4	2
2 times	0	2
1 time	0	4
0 times	0	1

From the table we see a clear difference in this breakdown by individual. There was more consistent acceptance of the puppet's statement in the 4/5 trial type, with all 11 individuals accepting the statement at least 3 times and 7 participants accepting it every time. In the 3/5 trial type, however, only 2 participants accepted the puppet's statement 3 times, while the rest mostly accepted the statement once or twice. Only one participant was completely consistent, in this case rejecting the puppet's statement every time.

3.2. Experiment 1b

The higher proficiency group was made up of 18 Japanese learners of English currently attending or recently graduated from Yokohama City University, Japan. Participants scored between 510 to 620, which places them at the upper Independent User B1 (Threshold) to B2 (Vantage) level on the CEFR. Materials and procedures were exactly the same as in experiment 1a.

3.2.1. Results

Experiment 1b is involved L2 learners at the upper (intermediate) level. For this group, an approaching significant difference is found in the participant acceptance of the puppet's statements by trial type (Mann-Whitney U test: Z = −1.51, one-tailed p=.0655). The upper intermediate group accepted the puppet's statement 54% of the time in the 3/5 trial type and 86% of the time in the 4/5 trial type (Table 2). As a raw percentage the upper intermediate learners appear to have not answered so very differently from the basic learners. The reason statistical analysis did not reveal significance is likely to be because five participants behaved L1-like in the 3/5 condition.[4]

The individual breakdown for the upper intermediate learners looks different from that of the basic learners in one important respect. In the upper intermediate group, five of the eleven participants accepted the puppet's statement in every instance in the 3/5 trial type, whereas no single participant in the basic group accepted the puppet's statement every time.

Table 2: *Upper Intermediate Japanese EFL Learners – Individual Distribution*

Acceptance	4/5 Trial Type	3/5 Trial Type
4 times	6	5
3 times	0	0
2 times	0	1
1 time	0	2
0 times	1	3

[4] There was one participant in the 4/5 trial type who behaved unexpectedly by rejecting all critical trial utterances by the puppet. When these data points are not included the p value achieves significance. Ideally it would have been better to have more participants in the 4/5 trial type group.

3.3. Experiment 1c

The final group of participants were 13 first language (L1) English speakers from the United States who reside in Japan. The same materials and procedure from the previous participant groups were used.

3.3.1. Results

Experiment 1c is involved L1 speakers of English. Results show that this group also does not exhibit a significant difference in the treatment of trial type (Mann-Whitney U test: Z=-1.02, one-tailed p=.15386). L1 speakers accepted the puppet's statements nearly identically across the trial types, with 88% in the 3/5 trial type and 100% in the 4/5 trial type (Table 3).

A breakdown of this group shows that the distribution of the upper intermediate English learners also bears greater resemblance to the L1 English speakers than the basic-level participant group in terms of overall acceptance of the puppet's utterance in the 3/5 trial.

Table 3: *L1 English Speakers – Individual Distribution*

Acceptance	4/5 Trial Type	3/5 Trial Type
4 times	5	5
3 times	0	2
2 times	0	1
1 time	0	0
0 times	0	0

When looking at the individual results across all three groups, in the upper intermediate English learner group we see a confirmation of the statistical analysis that there was no significant effect in trial type. The upper intermediate learner group's proficiency level appears to have had some effect with 5 of 10 subjects having fully acquired the form *most* as meaning "more than half." This is while the basic learner group's answer distribution appears more fragmented with, at best, two subjects accepting the puppet's answer 3 out of 4 times, with the remaining seven participants having accepted half or less.

These results suggest a possibility that proficiency level may have had some effect for Japanese learners of English to acquire the meaning of *most* through greater exposure to the language and contextual clues. However, there is another possibility that must be addressed before this conclusion can be drawn. That is, is it possible that there is differential treatment of Japanese *hotondo* among Japanese speakers which led to this difference? With this possibility in mind, we conducted Experiment 2.

4. Experiment 2

In order to ascertain whether L2 speakers' non-L1-like treatment of *most* originates in their L1 Japanese, it was necessary to also check the Japanese treatment of *hotondo* 'most'. We conducted a control experiment with Japanese participants to confirm our intuition was correct that they actually do treat *hotondo* as meaning "nearly all with a few exceptions."

4.1. Participants

Our participants were 22 L1 Japanese speakers attending Yokohama National University, Japan. Participants were volunteers who received a small compensation for participation, as was the case with experiment 1.

4.2. Materials and procedures

The procedure for experiment 2 was the same as in experiment 1 except for the language of the trials. Experiment 2 was conducted in Japanese, using the same stories and photos for critical trials and fillers from experiment 1.

(7) Scene 1
Experimenter: *Okaasan-wa onnanoko-ni yokattara tomato-o tabe-tene-to iimasu.*
mother-top girl-dat if.you.like tomato-acc eat-please-comp say
'Mother says to Girl, "Please eat tomatoes."'

Scene 2
Experimenter: *Onnanoko-wa tomato-o tabe-yoo-to simasu.*
girl-TOP tomato-ACC eat-will-COMP do
'Girl tries to eat tomatoes."

Scene 3
3/5 Experimenter: *Onnanoko-wa onakaippai-ni nari, taberu-no-o yamemasu.*
girl-TOP full-COP become eat-comp-ACC stop
'Girl has become full. She stops eating.'
4/5 Experimenter: *Onnanoko-wa onakaippai-ni narimasu-ga,*
girl-TOP full-COP become-BUT
moo hito-tu taberu-koto-ni simasu.
another one-CL eat-COMP-COP do
'Girl has become full, but she decides to eat one more."

Scene 4
Experimenter: *Okaasan-wa "Moo ii?" to iimasu. Kore-de*
mother-TOP already good COMP say this-with
ohanasi-wa owari desu.
story-TOP end COP
'Mother says, "Are you done?" This is the end of the story.'
Experimenter: *Nee, Coco. Okaasan-wa onnnanoko-ni tomato-o ageta-ne.*
(to Puppet) hey Coco mother-TOP girl-DAT tomato-ACC gave-part
Sono ato doo natta kana?
that after how became Q
'We have seen Mother gave Girl tomatoes. What happened then?"
Puppet: *Onnanoko-wa tomato-o hotondo tabeta-yo.*
girl-TOP tomato-ACC most ate-PART
'The girl ate most tomatoes.'

As with experiment 1 the first trial type was a story in which 3 of 5 items were completed. The second trial type found 4 of 5 items completed. If *hotondo* 'most' is indeed treated as "nearly all with few exceptions" we expect to find that participants more likely reject the puppet's utterance in the 3/5 trial type and accept the puppet's utterance in the 4/5 trial type.

4.3. Results

The results show that there is indeed a preference to accept *hotondo* as meaning "nearly all." The analysis showed statistical significance in the treatment of trial type (Mann-Whitney U test: Z=1.80579, one-tailed *p*=.03515). Japanese speakers accepted the puppet's answer only 45% of the time in the 3/5 trial type, while accepting them 93% in the 4/5 trial type.

The results of the individual breakdown are potentially interesting and can be seen as follows. While "yes" responses were shown as significantly reduced in the 3/5 trial type we see firmly consistent acceptance or rejection between individuals. This answer consistency has interesting implications.

Table 4: *L1 Japanese Speakers – Individual Distribution*

Acceptance	4/5 Trial Type	3/5 Trial Type
4 times	9	5
3 times	1	0
2 times	1	0
1 time	0	0
0 times	0	6

The complete acceptance or rejection of the puppet's utterance seems to suggest the possibility of some sort of interspeaker variation amongst the Japanese participants.[5] If this is the case, it is certainly an issue which is worth further study.

5. Discussion

The results of experiment 1 suggested that learner proficiency level may have some effect in acquiring the meaning of *most* as "more than half." Upper intermediate learners were more likely to accept the puppet's statements in the 3/5 trial type, and five of the eleven participants acted native-like by accepting the statement all four times. By contrast the lower proficiency learners accepted the puppet's statements in the 3/5 trial type considerably less, and no one performed in the same native-like manner. The results of experiment 2 raise another possibility, however. Though this is unexpected according to our initial intuition, in the 3/5 trial type in Japanese, five of the eleven participants accepted the puppet's statement using *hotondo* 'most' every time. Because of this result we cannot decisively conclude that the higher proficiency learners have managed to acquire the "more than half" meaning of *most.* They might instead be part of a population of L1 Japanese speakers who treat *hotondo* as having that same meaning.

[5] A reviewer observed that the L1 Japanese result may not have come from interspeaker variation but the variability of the meaning of *hotondo* from context to context, mentioning the possibility that the "more than half" interpretation is easier to obtain when the cardinality of the set of objects under discussion (e.g., tomatoes) is larger than five. Whereas this conceivable effect of set size may be proven to be real (cf. Degen and Tanenhaus 2015), it is not incompatible with the idea of speaker variation put forward in the text. It may be the case, for instance, that while a two-way split of participants like the one found in Experient 3 is observed in the 3/5 condition, no such split is in, say, a 6/10 condition. It is a future task to take into account factors left untouched such as the set cardinality issue above.

At the same time, though, this conjecture is not supported by the proficiency effect. This is because it still remains the case that the lower proficiency learners did not have any participants who behaved in this manner, and amongst this group the difference between *hotondo* and *most* still has the appearance of a learning problem.

6. Conclusion

We began by trying to identify a linguistic difference between the English quantifier *most* and the Japanese quantifier *hotondo* 'most', which are largely regarded on the surface as equivalent to each other. The working hypothesis was that while *most* means "more than half" as previous studies showed, *hotondo* means "nearly all." We set out to find whether the semantic difference — if it existed at all — would constitute a learning problem for Japanese EFL learners. As the difference is not explicitly taught in a classroom environment, this would leave acquisition by learners to take place through experience of *most* in contexts where they might receive contextual clues. An examination of a corpus indicated that this would be anything but easy as most utterances of *most* were not providing much in the way of contextual clues towards the semantic difference.

The results of the two TVJT experiments revealed two findings: (i) a population of Japanese speakers understand *hotondo* to mean "nearly all" while another understand the quantifier to mean "more than half"; and (ii) while some upper intermediate Japanese EFL learners perform on a par with L1 speakers with regard to the interpretation of *most*, basic learners use it to mean "nearly all."

If it is, in fact, possible for upper intermediate learners of English to acquire native-like usage of *most,* the way in which they do so is not clear and deserves further research. As the common use of *most* in the corpus gave little in the way of clues, at least as far as we could ascertain, the question of how upper intermediate learners 'figure it out,' so to speak, is of interest. Also of interest is the apparent bifurcation of Japanese L1 participants' interpretation of *hotondo.* A look into the semantic nature of *hotondo* and the possibility of a dialectic difference in its treatment is also a topic for further study. Another point to consider is that the quantifier *most* is semantically both upper and lower bounded, something Papafragou and Schwarz (2006) tested on English speaking adults to confirm their intuitions about these boundaries. In one of their experiments they tested participants who judged the acceptability of *most*-statements in conditions of 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, and 6/6. They found that when there are no specific contextual expectations participants did not accept ratios of 50% or lower, as one might suspect. We did not try 50% or lower trial types to avoid complicating our experimental design. However, in the interest of being thorough a similar study should be conducted to also firmly establish the lower boundary for *most* in the Japanese EFL learner context as well as for *hotondo* in the Japanese L1 context.

The primary limitation of the current study is the number of participants. Having a greater number of participants would create more robust statistical results. Also, having a more even distribution in the number of participants across trial types would be desirable, a case in point being the lower number of participants in the 4 of 5 groups in experiment 1b. As a between-

subjects design was used, this makes the possibility of adding more participants in the future to create a more robust statistical profile is encouraging and may serve to clear up the question of results being due to the level of acquisition versus participant variability. A further point was brought up by a reviewer of the paper who noted our scripts for the 3/5 and 4/5 conditions varied in that we used the line that the girl "feels full" in the 4/5 condition and not in the 3/5. They suggest that it would have been better to make the two conditions parallel, noting that if the 3/5 trial contains the situation where the girl feels full, but decides to eat the third one, it becomes easier to accept the target item.

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