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"Aboutness" Relation in Japanese Topicalization: An Analysis of the NP₁ wa NP₂ da Construction

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Abstract

This study investigates the comprehension of a Japanese topicalized construction with the structure NP₁ wa (topic) NP₂ da (copula) by native speakers of Japanese. The meaning of this kind of sentence can be extremely ambiguous when NP₁ and NP₂ do not refer to an identical referent. However, it is usually not considered ambiguous when used in a particular context since the context indicates how it is meant to be understood. This study examines the uses of this construction in experimentally controlled contexts. The results indicate the significant effects of the syntactic or semantic relation with the particular verb in the context and the NP₂ or information about a particular place presented by a locative frame. These results facilitate a new understanding of the "aboutness" relation, which is established through the process of interpreting an NP₁ wa NP₂ da sentence in the context.

Key words: Japanese Topicalization, Topic Marker wa, "Aboutness" Relation, Experimental Pragmatics

1. Introduction

Japanese sentences allow different omissions of predicate arguments. Because these arguments remain unarticulated, these sentences can be vague, and nonnative speakers of Japanese often wonder how the speaker and listener communicate in actual speaking contexts. One such example is a topicalized construction with the structure NP₁ wa NP₂ da.¹ In this sentence, the two Noun Phrases (NPs), NP₁ and NP₂, may or may not refer to the same referent. When they do refer to a semantically identical referent, as shown in (1), the interpretation is context independent, so one will naturally interpret example (1) as "Kagawa is a lawyer" when it is presented without context. However, when they do not refer to the same referent, as in (2), the sentence will be extremely vague because it can have many different interpretations.

- (1) *Kagawa-san wa bengosi da*
Kagawa-Mr./Ms. TOP lawyer COP

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1 The copula *da* can be omitted or replaced by a sentence final particle in this construction. These examples are all regarded as the same structure:

- (i) *Miyata-san wa misosiru*
Miyata-Mr./Ms. TOP miso soup
(ii) *Miyata-san wa misosiru yo*
Miyata-Mr./Ms. TOP miso soup FP
(iii) *Miyata-san wa misosiru da yo*
Miyata-Mr./Ms. TOP miso soup COP FP
(iv) *Miyata-san wa misosiru da*
Miyata-Mr./Ms. TOP miso soup COP

- (2) *Miyata-san wa misosiru da*
Miyata-Mr./Ms. TOP miso soup COP

While (2) could mean “Miyata is a miso soup,” this interpretation is unlikely. Rather, (2) tells something about the topic NP, *Miyata-san*. Concurrently, the NP’s referent in the predicate, *misosiru*, is not obvious, so the relation between the two NPs is unclear. The sentence would sound strange and be difficult to interpret if it is presented without context.

When this sentence is presented in particular contexts, it can be interpreted differently according to that context. Hence, when (2) is read in the context of (3), the meaning of the sentence would be clear.

- (3) *Sakurai-san wa syokutaku de gohan o okawari-si-ta*
Sakurai-Mr./Ms. TOP table at rice ACC another helping-did
“Sakurai had another bowl of rice at the table.”

Miyata-san wa misosiru da
Miyata-Mr./Ms. TOP miso soup COP
“Miyata had another bowl of miso soup.”

In (3), the referent of the NP₂, *misosiru*, is somehow more recognizable than in (2), and one may infer that the NP₂ refers to the miso soup that Miyata was eating. Now compare (3) with (4).

- (4) *Sakurai-san wa tyuui-si-ta*
Sakurai-Mr./Ms. TOP warned
“Sakurai warned.”

Miyata-san wa misosiru da
Miyata-Mr./Ms. TOP misosoup COP
“Miyata (?) miso soup.”

While (3) shows an example of a concrete context where (2) could be interpreted, the same sentence would be more difficult to interpret in (4). The preceding sentence in (4) provides some contextual information, but how it can be related to sentence (2) is not so clear. The context seems to allow for several different interpretations of sentence (2), such as “Miyata ate miso soup because Sakurai warned him/her to do so,” and “Miyata often spills his/her miso soup, and Sakurai warned about that.” One might infer the meaning of (2) in the context of (4), but that meaning would be more difficult to determine than in the context of (3). As these examples show, NP₁ *wa* NP₂ *da* sentences such as (2) can be somewhat difficult to understand when read in particular contexts.

Thus, NP₁ *wa* NP₂ *da* sentences can be interpreted differently when the two NPs do not refer to the same referent, and the easiness or difficulty is also affected by the context.² To determine how and why this is possible, this study examines the deductive process of its interpretation through an experimental investigation of NP₁ *wa* NP₂ *da* sentences. This investigation also reveals the meaning of the “aboutness”

² Even when the two NPs in an NP₁ *wa* NP₂ *da* sentence refer to a semantically identical referent, as in example (1), the sentence can have different meanings depending on the context. Context can also either facilitate or hinder the natural interpretation of these types of NP₁ *wa* NP₂ *da* sentences. For further discussion, see Yoshida (2019).

relation, a notion that accounts for the non-syntactic connections between the topic and the predicate.

2. Theoretical background

2.1. Studies of NP₁ wa NP₂ da sentences and their problems

NP₁ wa NP₂ da sentences have been studied for a long time in Japanese linguistics. Studies have been mainly concerned with explaining their structure syntactically or on other levels of linguistic structure, or examining their use in particular contexts to understand how they occur. The former group of studies includes transformational analyses and conceptual or semantic approach. Transformational studies suggested by Okutu (1978) and others (e.g., Inoue 1969, Kuno 1978, Muraki 1974, Kitahara 1984, Saeki 1989, Chen 1997) assume that the NP₁ wa NP₂ da construction contains syntactic ellipsis and attempt to demonstrate how the surface structure is achieved by showing the transformational derivation from the complete underlying structure. For example, Okutu claims that *da* in the target construction, NP₁ wa NP₂ da, functions as a proverb to replace an unexpressed predicate in the surface structure. However, as Seto (1984), Takamoto (1996), and Nishiyama (2001, 2003) also argue, it is not reasonable to assume a unifying syntactic structure underlying each sentence of this construction since the construction does not always depend on a case or argument relation. It also cannot have a single underlying structure because the same sentence uttered in the same context can have different interpretations.

Conceptual or semantic analyses are conducted by Ikegami (1981) and Sakahara (1990, 1996). Ikegami considers NP₁ wa NP₂ da sentences to be syntactically and conceptually non-elliptic. He asserts that some logical connection exists between the two NPs, which is established by *da* in NP₂ da. While assuming such a link seems plausible, the argument is not specific enough to analyze the specific interpretation of the sentence in various contexts. Sakahara (1990, 1996) applies the theory of mental space to explain the semantic structure of NP₁ wa NP₂ da sentences and attempts to provide a metonymical explanation. However, as Nishiyama (2001, 2003) also claims, NP₁ wa NP₂ da sentences do not result from the pragmatic operation of establishing a metonymical relation between the referent and the NP because some phenomena that should be applied to the metonymical relation do not correspond to this construction.

Some traditional Japanese linguists such as Kindaichi (1955) or Morioka (1980) argue that NP₁ wa NP₂ da sentences can mostly be answers to wh-questions. In this context, NP₂ in the NP₁ wa NP₂ da sentence expresses the "focus" or the core element in the meaning and functions to fill the gap created by a wh-question.

This function of NP₂ in the NP₁ wa NP₂ da sentence is also argued by Obana (2001), who claims that the construction can only occur in specific contexts in which NP₂ expresses a focus or "new" information in the context and that a certain "mutual knowledge" between the speaker and the listener is always required to understand the meaning of the NP₁ wa NP₂ da sentence. Other than filling a gap created by a wh-question, Obana claims that the NP₂ expresses further information in line with the presupposed "topic" in the context. Example (5) (Obana 2001:739–740) is an instance where the topic, a particular school subject that the speaker does not like, is provided in the context and categorizes the "focus" elements that should be expressed in NP₁ wa NP₂ da sentences according to general or cultural knowledge. The speakers of (5b) and (5c) must choose their "focus" elements from the school subject subcategories.

(5)

- a: *Boku wa suugaku ga kiraida*
 I TOP math NOM do not like
 "I do not like mathematics."

b: *Boku wa kagaku*

I TOP chemistry

“Chemistry for me.”

c: *Watasi wa eigo ne*

I TOP English FP

“English for me.”

While this seems to work, the provided explanation does not clarify when and how all NP₁ *wa* NP₂ *da* sentences can be used. Particularly, Obana’s claim about a presupposed “topic” is too general. In (5a), the speaker provides some possible “topics” other than the “school subject that the speaker dislikes”, and ‘new information’ can be added in line with these topics without using NP₁ *wa* NP₂ *da* sentences. For example, (6) can be a possible response to (5). It helps add “new information” in line with the likely topic provided by the speaker of (5), “likes and dislikes about mathematics”, and yet the NP₁ *wa* NP₂ *da* sentence is not used. The speakers of (5b) and (5c) choose not to talk about this topic but discussed “the school subject that they dislike” with the NP₁ *wa* NP₂ *da* sentence. There must be contextual factors other than a presupposed “topic” that would or would not elicit the use of NP₁ *wa* NP₂ *da* sentences.³

(6) *Watasi wa tokui yo*

I TOP good at FP

“I am good at (mathematics).”

Thus, these studies have not provided a general understanding of the NP₁ *wa* NP₂ *da* construction and have not addressed the fundamental questions why these sentences can occur in different contexts as well as how they can be interpreted. For an overall understanding of this construction, scholars must discuss how the sentence can be understandable rather than what qualifies as its “grammaticality”, and therefore examine the sentence in relation to the various kinds of context that contain the possible specific factors that can influence its comprehension.

2.2. The topic marker *wa* and “aboutness” relation

Another characteristic that studies of NP₁ *wa* NP₂ *da* sentences have not discussed much is that the sentence is an example of topicalization; therefore, it should possess the characteristics of topicalization in Japanese. According to studies, the topic marker *wa* functions in the sentence in at least two ways. One is that *wa* can mark an argument of the verb; that is, it can mark a subject or an object, and in such sentences, the topic has a syntactic connection with the rest of the sentence.⁴ When the two NPs in the NP₁ *wa* NP₂ *da* sentence refer to the same referent, the sentence is categorized in this way. Another way is the case in which the relation between the topic and the rest of the sentence is not obvious, and no syntactic connection seems to exist between them as shown in (7). In (7), the predicate appears to have something to do with the topic NP, but the kind of connection that works here remains unclear.

³ Obana also argues that the extralinguistic presupposition associated with the speaker’s and hearer’s roles in each context, such as shopkeeper–customer or student–teacher, provides enough constraint for the interpretation of the target construction.

⁴ Adjunct NPs with other particles, such as *de*, *to*, and *kara*, can be also topicalized by attaching *wa* to the particles.

(7) *Are wa zettaini Amerika ga warui*
 that TOP absolutely America NOM wrong

"Speaking of that matter, absolutely, America is to blame." (Mikami 1960:84)

This kind of relation between the topic NP and the predicate, which was first described by Kuno (1973), is called an "aboutness" relation, which means the proposition expressed by the predicate is "about" the topic NP. Example (2), an NP₁ wa NP₂ da sentence in which the two NPs do not refer to the same referent, is an extreme case of this kind of topicalization. Some researchers try to explain what makes an "aboutness" relation work by applying it as a condition to license the grammaticality of the topic construction. For example, Hasegawa (1986) and Haig (1996) argue that when the predicate of the topic construction is coherent as a whole, it creates an "aboutness" relation and makes the sentence grammatical. Shimojo (2002) explains that when a semantic link between the topic and the rest of the sentence is "inferable", the sentence becomes grammatical via an "aboutness" relation. However, these studies have not clarified when and how the relation between the topic and the rest of the sentence gains coherence or becomes inferable. This study aims to clarify the possible relations that *wa* can establish between the topic and the rest of the sentence. Through experimental studies of understanding and interpreting NP₁ wa NP₂ da sentences, this study helps identify the specific nature of the "aboutness" relation.

2.3. Pragmatic process in interpreting NP₁ wa NP₂ da sentences

Unlike example (7) discussed in section 2.2, the meaning of NP₁ wa NP₂ da sentences, as in example (2), is vague without context because the referent for NP₂ is indeterminable without context. One must assume that NP₁ wa NP₂ da sentences include what Huang (2017:71) calls an "unarticulated constituent", that is, "a propositional or conceptual element of a sentence that is not expressed linguistically" and that these unarticulated constituents must be determined from the context. On the assumption that NP₁ wa NP₂ da sentences are a specific kind of topicalized sentence, Nishiyama (2001, 2003) also claims that in its underlying logical form, the construction has an unexpressed element. According to Nishiyama, (2) must have an underlying logical form as in (8), and \emptyset shows a variable that is recovered from the context. How do listeners of the sentence obtain information about this unexpressed element from the context?⁵

(8) *Miyata-san wa \emptyset (no) wa misosiru da*

The unexpressed element of an NP₁ wa NP₂ da sentence takes the necessary information from the context to specify the nature of the property of NP₁. As Nishiyama (2003) also mentions, this pragmatic process is called "saturation", discussed by Recanati (2001, 2004, 2010). Saturation is a pragmatic process that operates when the interpretation of the sentence depends on the context. It completes the meaning of the sentence by assigning semantic values taken from the context to the unarticulated constituents of the sentence. Other examples that require the saturation process discussed by Recanati are genitives, pronouns, compounds, or a sentence with an unexpressed argument of the verb, such as "I heard." Saturation is assumed to operate in the interpretation of NP₁ wa NP₂ da sentences, and the analysis of such sentences in specific contexts will examine the concrete operation of this process.

5 Although assuming the unexpressed element in NP₁ wa NP₂ da sentences is believed to enable a single NP (NP₂) to express any property of the topic NP (NP₁), as Nishiyama argues, the notion that NP₁ wa NP₂ da sentences actually have an underlying logical form, as described in (8), is not obvious.

3. Research objectives and approach

As discussed previously, NP₁ *wa* NP₂ *da* sentences can be used in a wide variety of contexts, and interpreting these sentences can be easy or difficult depending on the context. This study seeks to investigate the deductive process of interpreting NP₁ *wa* NP₂ *da* sentences. To specify the possible contextual factors that affect the interpretation of NP₁ *wa* NP₂ *da* sentences and demonstrate how these sentences are actually used, this study adopts a quantitative approach and examines these sentences in controlled experimental contexts.

The quantitative approach in pragmatics has been developed in a field of study based on two disciplines, pragmatics and psycholinguistics, and is known as “experimental pragmatics”. This method of investigation combines the strengths of a theoretical framework based on pragmatic studies and experimental results gained from psycholinguistic analyses and has been adopted to explore various phenomena associated with the comprehension and production of sentences/utterances. This study examines NP₁ *wa* NP₂ *da* sentences in controlled experimental contexts, which can limit the type and amount of information that can be provided to readers of these target sentences. As will be described in section 4.1, the contexts are provided linguistically as a preceding context sentence with a unified designated form. While the individual reader may read and try to understand the context and the target NP₁ *wa* NP₂ *da* sentences through their own experiences and knowledge, such experiences and knowledge can most likely be evoked through the concepts of the linguistic expressions in the context and target sentences. Thus, analyzing the experimentally controlled and therefore much more simplified contexts allows us to specify the contextual factors that may affect the interpretation of such sentences and enables us to compare each factor’s specific effects. Such an analysis helps clarify what these specific factors are and how readers use them in the process of interpreting NP₁ *wa* NP₂ *da* sentences. It will also shed light on the nature of the “aboutness” relation by examining the relations between the topic and the rest of the sentence in one specific Japanese topicalized construction.

4. NP₁ *wa* NP₂ *da* sentences in experimental contexts

This research conducts two kinds of tests: understandability and interpretation. The understandability test evaluates the degree to which participants judged an NP₁ *wa* NP₂ *da* sentence as easy or difficult to understand when it follows a context sentence. Meanwhile, the interpretation test asks the participants to write down their interpretations of a given NP₁ *wa* NP₂ *da* sentence when it follows a context sentence. The understandability test measures each participant’s self-enumerated understandability of the target NP₁ *wa* NP₂ *da* sentence when it is read in the experimental context, and its understandability is expected to vary with the context. The participant’s self-enumerated understandability of the NP₁ *wa* NP₂ *da* sentence is also expected to be reflected in its interpretation; that is, the interpretations of an NP₁ *wa* NP₂ *da* sentence would be more consistent if it is judged as relatively easy to understand in a particular context.

4.1. Understandability Test

4.1.1. Material

This study selects two specific contextual factors to create the experimental contexts. First is the availability of a verb from the preceding context sentence. As discussed in previous sections, the predicate of the NP₁ *wa* NP₂ *da* construction consists of a single NP (NP₂), and it is not obvious how NP₂ is connected to NP₁ when they do not refer to the same referent. Thus, if readers of the sentence can find a particular verb that can take NP₂ as the direct object, it would help determine the referent of NP₂ in the context and thus understand the meaning of the sentence. In addition, as argued by some semanticists such as Katz (1972, 2004) and Jackendoff (1983), the conceptual structure of a particular verb contains

information about the semantic type of its arguments, whether or not those arguments are syntactically articulated. Thus, a specific verb in the preceding context sentence that can evoke a thematic relation between NP₁ and NP₂ (even without a syntactic link) can also help in the understanding of the meaning of NP₁ wa NP₂ da sentences. Second, an existence of a locative in the context sentence is examined as a possible contextual factor that influences the understanding of NP₁ wa NP₂ da sentences. A locative works to establish a frame about a particular place, and the wide variety of conceptual information evoked by the frame about a particular place is predicted to help establish a contextual assumption, which can indicate how an NP₁ wa NP₂ da sentence should be interpreted in the context.

In the experiments, NP₁ wa NP₂ da sentences were presented with preceding context sentences that were created so that they all contained a topic and a particular verb. The topic NP refers to a specific person, and the verb expresses that person's action. The topic NP of the test sentence, that is, NP₁, also refers to a specific but different person, while the NP₂ of the test sentence refers to a specific object.

Example (9) shows an experimental sentence pair with a context sentence that has a transitive verb. If readers use the verb *tyuumon-suru* in the context sentence to understand the relation between the two NPs in the target sentence, it would specify the unexpressed element in the target NP₁ wa NP₂ da sentence and allow for a connection between the two NPs. In (9), the specified unexpressed element in the NP₁ wa NP₂ da sentence can form a contextual assumption that "Ogawa also ordered something." Based on this assumption, NP₂ can be interpreted as a direct object of the verb, and the sentence can be understood as "Ogawa ordered an ice cream."⁶ The understandability of the target NP₁ wa NP₂ da sentence in (9) is compared with the one in the minimally different counterpart in (10), where the transitive verb *benkyou-suru* in the context sentence cannot be expected to take the NP₂ in the target sentence as a direct object. Therefore, the same target NP₁ wa NP₂ da sentence will be less understandable in the context of (10) in which the syntactic relation established by the context sentence is not available for the target sentence.⁷ These two contexts are called the syntactic and non-syntactic conditions, respectively.

(9) Syntactic

Context: *Sonoda-san wa tyuumon-si-ta*

Sonoda-Mr./Ms. TOP ordered

"Sonoda ordered."

Target: *Ogawa-san wa aisukuriimu da*

Ogawa-Mr./Ms. TOP ice cream COP

"Ogawa (ordered) ice cream."

⁶ We might say that the interpretation contains a recovery of a syntactic ellipsis of the verb found in the context sentence, and therefore, the predicted interpretative process suggests a possible source of the "underlying structural elements" presumed by Okutu (1978) and other traditional Japanese linguists who claim that NP₁ wa NP₂ da sentences are derived from a transformational operation. While the current study does not address whether a transformational operation is implicit in this construction, it does seek to present a potential source of possibly omitted elements and offer a possible deductive process through which those elements are used to interpret the sentence.

⁷ Examples (9) and (10) (as well as (13) and (14) below) present the context sentences (which all include transitive verbs) without articulated direct objects. This is to avoid the possible effect of the semantic association between a direct-object NP in the context sentence and an NP₂ in the target sentence. To make such context sentences sound natural even without an explicit direct object, care was taken to use transitive verbs that do not necessarily require an articulated direct object. In fact, the transitivity of some Japanese verbs is unclear, and Japanese dictionaries often do not define them uniformly. The verbs used in the experiments of this study sound natural with and without a marked direct object. For a detailed discussion of the transitivity of Japanese verbs, see, for example, Kunihiro (1989).

(10) Non-syntactic

Context: *Sonoda-san wa benkyou-si-ta*
Sonoda-Mr./Ms. TOP studied
“Sonoda studied.”

Target: *Ogawa-san wa aisukuriimu da*
Ogawa-Mr./Ms. TOP ice cream COP
“Ogawa (?) ice cream.”

Similarly, in the sentence pairs in examples (11) and (12), the context sentence contains an intransitive verb that can or cannot take the NP₂ in the target sentence as a theme. Since no syntactic relation can be expected between the intransitive verb and the target NP₁ *wa* NP₂ *da* sentence, these sentence pairs examine the effect of a semantic relation between the intransitive verb in the context sentence and the NP₂ in the target sentence. Hence, the NP₁ *wa* NP₂ *da* sentence will be easier to understand in the context of (11) than in (12) because the NP₂ can be understood as a theme in (11) and not in (12). These two contexts are called the semantic and non-semantic conditions, respectively.

(11) Semantic

Context: *Tanaka-san wa dokusyo-si-ta*
Tanaka-Mr./Ms. TOP read (intransitive)
“Tanaka read.”

Target: *Suzuki-san wa ren'ai-syousetu da*
Suzuki-Mr./Ms. TOP love story COP
“Suzuki (read) a love story.”

(12) Non-semantic

Context: *Tanaka-san wa suwat-ta*
Tanaka-Mr./Ms. TOP sat
“Tanaka sat.”

Target: *Suzuki-san wa ren'ai-syousetu da*
Suzuki-Mr./Ms. TOP love story COP
“Suzuki (?) a love story.”

Finally, both sentence pairs, that is, with and without a syntactic relation and with and without a semantic relation, were compared with a counterpart that contains a locative to establish a frame for a particular place. These sentence pairs with locatives are (13) and (14) as the counterparts of (9) and (10), and (15) and (16) as the counterparts of (11) and (12), respectively.

(13) Syntactic with locative

Context: *Sonoda-san wa syokudou de tyumon-si-ta*
Sonoda-Mr./Ms. TOP diner in ordered
“Sonoda ordered in the diner.”

Target: *Ogawa-san wa aisukuriimu da*
Ogawa-Mr./Ms. TOP ice cream COP
“Ogawa (ordered) ice cream.”

(14) Non-syntactic with locative

Context: *Sonoda-san wa syokudou de benkyou-si-ta*
 Sonoda-Mr./Ms. TOP diner in studied
 "Sonoda studied in the diner."

Target: *Ogawa-san wa aisukuriimu da*
 Ogawa-Mr./Ms. TOP ice cream COP
 "Ogawa (?) ice cream."

(15) Semantic with locative

Context: *Tanaka-san wa tosyokan de dokusyo-si-ta*
 Tanaka-Mr./Ms. TOP library in read (intransitive)
 "Tanaka read in the library."

Target: *Suzuki-san wa ren'ai-syousestu da*
 Suzuki-Mr./Ms. TOP love story COP
 "Suzuki (read) a love story."

(16) Non-semantic with locative

Context: *Tanaka-san wa tosyokan de suwat-ta*
 Tanaka-Mr./Ms. TOP library in sat
 "Tanaka sat in the library."

Target: *Suzuki-san wa ren'ai-syousestu da*
 Suzuki-Mr./Ms. TOP love story COP
 "Suzuki (?) a love story in the library."

The locative provides information about a particular place that reminds the readers of the target sentence of the specific knowledge associated with that place. It can activate a frame that would enable readers to interpret the target sentence as a description of an event that may take place in that particular frame. For example, in (13) and (14), the locative should evoke the frame of a diner and provide information about possible events that can occur and the participatory roles in those events. The inferences activated by this frame may allow a reader to understand the target sentence as a description of an event taking place in the diner. Thus, adding a locative to the context sentence will facilitate one's understanding of the target sentences in all conditions.

Thus, there are a total of four syntactic conditions and four semantic conditions as shown below. For each condition, 10 test sentences were created.

Conditions for NP₁ wa NP₂ da sentences

Syntactic conditions:

1. Syntactic
2. Non-syntactic
3. Syntactic with locative
4. Non-syntactic with locative

Semantic conditions:

5. Semantic
6. Non-semantic

7. Semantic with locative
8. Non-semantic with locative

The target sentences in the syntactic and non-syntactic conditions do not correspond to those in the semantic and non-semantic conditions because of the need to find appropriate locatives. In addition to the sentence pairs in the syntactic or semantic conditions, the test materials included 27 filler sentence pairs that varied in structure and comprehension and also consisted of one context sentence and one target sentence.⁸

4.1.2. Participants

A total of 112 native speakers of Japanese from a range of age groups participated in the understandability test. They were undergraduate or graduate students, or working full or part time. The mean age was 24, ranging from 18 to 60. All participants filled out the language background questionnaire and were told that the experiment will examine how native speakers of Japanese understand Japanese sentences.

4.1.3. Procedure

The task for the understandability test was self-paced and conducted on an individual basis on a computer. The test was created using Paradigm beta version 4 (written by Bruno Tagliaferri, 2007). Each participant was randomly assigned to one of the eight conditions, and each sentence pair was presented in a series of frames. In the first frame, a context sentence was presented. Participants pressed the space bar to proceed to the second frame. In the second frame, the target sentence appeared with a rating scale from 1 (“Do not understand at all” (*mattaku wakaranai*)) to 5 (“Understand very well” (*totemo yoku wakaru*)). Participants responded by pressing one of the five keys in the center row of the keyboard, which were specially marked with stickers showing numbers from 1 to 5. When the participants made their choice and pressed the appropriate key, the frame on the screen was replaced with an instruction frame prompting them to press the space bar to proceed to the next sentence pair. Thus, the participants were asked to evaluate the understandability of each target sentence in each sentence pair when it is interpreted following the context sentence.

Each participant assessed a total of 52 items including overt and covert practice items at the beginning of the test. Of these, 10 were test items while 27 were fillers, and these items were randomized.⁹ The practice items as well as the 27 fillers consisted of different types of context and target sentence pairs with their estimated understandability ranging from easiest to most difficult. These practice and filler sentence pairs could verify the participants’ understanding of the test procedure and of the understandability of the target sentence in each sentence pair.

4.1.4. Results

Tables 1 and 2 show the mean understandability ratings of the target NP₁ *wa* NP₂ *da* sentences in four syntactic conditions with and without locative and in four semantic conditions with and without locative, respectively. Figure 1 illustrates the mean ratings of the target sentences for all eight conditions.

⁸ For all sentence pairs, see Yoshida (2013).

⁹ Since the target and context sentences have the same structure for all test conditions, the test material included many filler sentence pairs to distract the participants’ attention from the particular structures of the experimental context and target sentences.

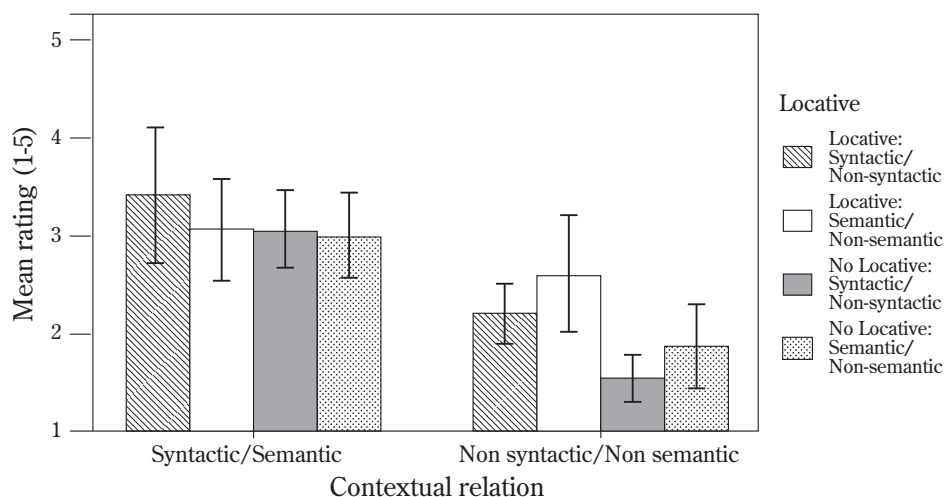
Table 1. Means and standard deviations for sentences with/without syntactic relation and locative

Context type	Syntactic (n=12)	Non-syntactic (n=12)	Syntactic-locative (n=12)	Non-syntactic-locative (n=12)
Mean	3.06	1.55	3.41	2.20
SD	.62	.38	1.07	.48

Table 2. Means and standard deviations for sentences with/without semantic relation and locative

Context type	Syntactic (n=16)	Non-syntactic (n=16)	Syntactic-locative (n=16)	Non-syntactic-locative (n=16)
Mean	3.03	1.81	3.07	2.59
SD	.91	.58	.73	.84

Figure 1. Mean understandability ratings of sentences for syntactic/non-syntactic and semantic/non-semantic, with/without locative



Both syntactic and semantic conditions were rated higher than non-syntactic and non-semantic conditions whether or not they have a locative. To investigate the hierarchy of these effects, two separate factorial two-way analyses of variance were performed. The first examined the effect of the syntactic versus the semantic condition and the effect of the locative for these two conditions. No significant differences were observed across these four conditions. The second examined the effects of the non-syntactic versus the non-semantic condition and the effect of the locative for these two conditions. The results indicated a significant effect of the locative ($F(1,52) = 18.374$, partial eta squared = .261, $p < .0001$) ($F(2,36) = 17.381$, partial eta squared = .326, $p < .0001$). The effect of the non-syntactic versus the non-semantic condition was not significant, and no interaction effect was found between non-syntactic/non-semantic condition and the locative.

Post-hoc tests using Tukey HSD indicated that the sentences in the non-semantic relation with the locative were rated significantly higher than those in both the non-syntactic relation without the locative ($p = .0003$ (F1), $p = .0009$ (F2)) and non-semantic relation without the locative ($p = .0042$ (F1), $p = .0172$ (F2)). The sentences in the non-syntactic relation with the locative were rated significantly higher than those in the non-syntactic relation without the locative only in an item-based analysis ($p = .0603$ (F1), $p = .0426$ (F2)).

The overall results indicate the strength of the effect of having a syntactic or semantic relation with the context sentence. The sentences that have a syntactic or semantic relation with the context sentence were always rated significantly higher than those with no such relation whether or not the sentence has a locative. Meanwhile, sentences with no syntactic or semantic relation without a locative received the lowest ratings, and there was no significant difference whether or not the relation was non-syntactic or non-semantic.

When the context sentence in the non-syntactic or non-semantic condition included a locative, the rating of the target NP₁ *wa* NP₂ *da* sentence improves in both conditions. However, the locative only has a marginal effect on the non-syntactic relation, and the sentences in that relation with a locative were rated significantly higher than those with the non-syntactic relation without a locative only in the item-based analysis. In contrast, a locative has a significant effect on the non-semantic relation, and the sentences in the non-semantic relation with a locative were rated significantly higher than those in both the non-semantic and non-syntactic relations without a locative. No significant differences were observed between the ratings of the sentences for the non-semantic relation with a locative and the non-syntactic relation with a locative, but the results of post-hoc tests indicated that the locative had a higher influence on the improvement in ratings when it is added to the context sentence with the non-semantic relation.

4.2. Interpretation Test

Two rounds of the interpretation test were conducted separately. The first round asked about the interpretation of the target sentences in the experimental sentence pairs used in the understandability test. The second round was a follow-up of the first round.

4.2.1. Interpretation Test 1

4.2.1.1. Material

Eight of the ten experimental sentence pairs used in the understandability test, four each in the syntactic and semantic conditions, were selected to create four counterbalanced sets.¹⁰ Each version of the material included either (i) two sentence pairs for all four syntactic conditions (syntactic/non-syntactic with/without a locative) or (ii) two sentence pairs for all four semantic conditions (semantic/non-semantic with/without locative). In addition, 24 of the 27 filler sentence pairs that were incorporated into the test material of the understandability test were also included in the interpretation test. Thus, each version of the interpretation test included 8 test sentence pairs (2 sentence pairs for either the four syntactic or the four semantic conditions) and 24 filler sentence pairs as schematized below. The test items of all versions were randomized.

(i) Syntactic conditions (four versions)

- 2 syntactic
- 2 non-syntactic
- 2 syntactic with locative
- 2 non-syntactic with locative
- 24 fillers

¹⁰ First, this study selected eight sentence pairs from both the syntactic and semantic conditions by excluding the sentence pairs that included proper nouns to assure no confusion among the participants. Afterward, the sentence pairs with the largest standard deviation in the rating in the understandability test were excluded from the interpretation test.

(ii) Semantic conditions (four versions)

- 2 semantic
- 2 non-semantic
- 2 semantic with locative
- 2 non-semantic with locative
- 24 fillers

4.2.1.2. Participant

A different set of participants took the interpretation test. The group consisted of 32 Japanese residents who worked full or part time or were housewives. The mean age of this group was 40 (range 39–45). All participants also filled out the same language background questionnaire used for the participants in the understandability test. Materials for the interpretation test were distributed individually to the 32 participants; 16 participants were assigned one version from the four syntactic conditions, while the other 16 participants were assigned one version from the four semantic conditions.

4.2.1.3. Procedure

The test was administered as a paper-and-pencil test. Written instructions were provided on the first page of the questionnaire. The participants were asked to write down their interpretations of each target sentence when they read it after the context sentence, and as part of the instructions, they were given one example of a possible interpretation of a sentence that followed the same process. The instructions reminded the participants that the test was being conducted to learn how Japanese native speakers interpret various sentences and that, as such, there was no right or wrong answer. The participants were also disallowed from going back to their answers to the previous questions and changing them after reading the other sentence pairs. This was to avoid generating a dependency on any particular kind of reading strategy for the experimental sentence pairs. Each sentence pair was printed on a separate page of the questionnaire so that the participants could not read and compare one sentence pair to another while writing their interpretation of the pair immediately in front of them.

4.2.1.4. Results

As explained in section 4.2.1.1, four different participants interpreted each experimental NP₁ *wa* NP₂ *da* sentence paired with a single context. This resulted in a total of 32 interpretations, with 4 interpretations for each of 8 target sentences in each contextual condition. These interpretations were grouped into six categories according to the participants' approaches to understanding their meanings as follows. First, the interpretations were roughly divided into two groups in terms of whether they were created by adding a particular verb and using that verb to impose a thematic relation between NP₁ and NP₂. If the interpretation included this kind of thematic structuring, it was further divided into two categories according to the source of the verb. If the interpretation included the verb in the context sentence, the interpretation was categorized as "context verb," but if it included a verb that was not the one in the context sentence, it was categorized under "other verb."¹¹ This resulted in the classification of similar interpretations created by adopting the same verb into different categories according to whether or not the verb actually appears in the context sentence. For example, the interpretation "Koike sang a Japanese ballad" falls under "context verb" if the context sentence includes the verb "to sing" but falls under "other

¹¹ In all the experimental items for all conditions, there were no more than two verbs in the "other verb" interpretation category.

verb” if the context sentence does not have this verb.

Interpretations that were not based on an assumed verb had several different characteristics, but they all involved a sentence-internal conceptual link between NP₁ and NP₂. In some cases, the relation between NP₁ and NP₂ was created metaphorically by attributing a property of NP₂ to NP₁ or by creating an inalienable relation between them. This category of NP₁ *wa* NP₂ *da* sentence interpretation was labeled “metaphorical/inalienable.” A fourth kind of interpretation, “preference,” was created by assuming that NP₂ expresses a preference of the person referred to by NP₁. Sentences in this category had the meaning “the person referred to by NP₁ likes the item expressed by NP₂.” The remaining interpretations were all idiosyncratic, and no consistent characteristics could be discovered; these were labeled “no consistency.” Finally, there were responses that the NP₁ *wa* NP₂ *da* sentence was “not understandable.” Thus, all responses were categorized into one of six interpretative categories as listed below.¹²

Interpretation categories observed in the responses of NP₁ *wa* NP₂ *da* sentences

1. Context verb
2. Other verb syntactically/semantically connected to NP₂
3. Metaphorical/ Inalienable
4. Preference
5. No consistency
6. Not understandable

Table 3 shows the total frequencies of the interpretative categories observed in the interpretations of the NP₁ *wa* NP₂ *da* sentences in the syntactic conditions. The overall tendency shows a clear distinction between the interpretations of the target sentences in the syntactic conditions, with/without a locative, compared with the non-syntactic conditions, with/without a locative. The interpretations in the syntactic conditions were more likely to adopt the verb from the context sentence, and the presence of an overt locative in the context sentence strengthened this tendency because no other categories of interpretation were applied in this condition (except for the five responses that claimed “not understandable”). Although the locative did not significantly affect the understandability of NP₁ *wa* NP₂ *da* sentences with a syntactic relation (as revealed in the understandability test), the interpretations of sentences in the syntactic-with-locative condition demonstrated more consistency than those in the syntactic-without-locative condition. Meanwhile, interpretations of the NP₁ *wa* NP₂ *da* sentences in the non-syntactic condition, with or without a locative, seemed much less consistent. These interpretations were more frequently categorized as “no consistency” and “not understandable.” In addition, the frequency of interpretations in which a verb was used, that is, the “context verb” and “other verb” categories, were lower than in either syntactic condition (although the lower frequency of the “context verb” category is not unreasonable considering the absence of a syntactic relation between the context and target sentences).

Table 3. Frequency of interpretations of sentences in each syntactic condition per category

Interpretative category	Syntactic	Syntactic Locative	Non-Syntactic	Non-Syntactic Locative
Context verb	20 (63%)	27 (84%)	3 (9%)	2 (6%)
Other verb	1 (3%)	0 (0%)	4 (13%)	14 (44%)

¹² The categorization of responses in the interpretation test was confirmed by three Japanese native speakers.

Metaphorical/ Inalienable	2 (6%)	0 (0%)	0 (0%)	0 (0%)
Preference	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No consistency	2 (6%)	0 (0%)	9 (28%)	5 (16%)
Not understandable	7 (22%)	5 (16%)	16 (50%)	11 (34%)
Total	32 (100%)	32 (100%)	32 (100%)	32 (100%)

Table 4 illustrates the frequencies of the interpretative categories applied when interpreting NP₁ wa NP₂ da sentences in the four semantic conditions. The overall tendency is that a greater variety of interpretative categories was used in all four conditions when compared with the frequencies of the interpretative categories observed in the syntactic conditions in Table 3.

Table 4. Frequency of interpretations of sentences in each semantic condition per category

Interpretative category	Semantic	Semantic Locative	Non-Semantic	Non-Semantic Locative
Context verb	19 (59%)	23 (72%)	0 (0%)	0 (0%)
Other verb	3 (9%)	0 (0%)	15 (47%)	23 (72%)
Metaphorical/ Inalienable	1 (3%)	2 (6%)	2 (6%)	1 (3%)
Preference	1 (3%)	0 (0%)	1 (3%)	2 (6%)
No consistency	2 (6%)	2 (6%)	6 (19%)	2 (6%)
Not understandable	6 (19%)	5 (16%)	8 (25%)	4 (13%)
Total	32 (100%)	32 (100%)	32 (100%)	32 (100%)

One difference from the frequencies in the syntactic conditions lies in the application of the context verb in the non-semantic conditions. Unlike the interpretations in the non-syntactic conditions, there were no interpretations made by adopting a contextually provided intransitive verb which is not semantically (and syntactically) connected to the NP₂ in the target sentence. This is probably due to the semantic nature of the intransitive verbs included in the context sentences for the non-semantic condition with/without a locative. These verbs did not contain an implicit theme. Nevertheless, the interpretations of the NP₁ wa NP₂ da sentences in the non-semantic conditions with/without a locative were more frequently classified under "other verb" than under other interpretative categories. Overall, the tendency of adopting a verb, from the context sentence or from another source, to interpret the target sentence, which was observed in the interpretations of the sentences in all syntactic/non-syntactic conditions, was also seen in the interpretations in all semantic/non-semantic conditions. Using a verb to connect the two NPs and creating a thematic relation of the whole construction can be considered a typical interpretation strategy when this type of construction is generated in a context.

Though these frequencies show the overall differences in the interpretative categories used in interpreting NP₁ wa NP₂ da sentences for each condition, they do not demonstrate the degree to which

each participant employed different interpretative strategies according to the different conditions. Simply put, a given participant may or may not have used a particular interpretative category across all or most of the conditions. A specific analysis targeting this question is necessary to examine whether a real preference for an interpretative category exists according to the contextual condition.

To examine this question, McNemar's tests were conducted, which assess the difference between two correlated proportions based on the same participant sample. To analyze the results of the interpretation test, McNemar's tests were used to evaluate differences in the participants' use of one interpretation category between two different conditions. As explained in section 4.2.1.1, each participant read two sentence pairs for each condition. Therefore, the statistical tests comparing the conditions were based on these participants' interpretations of the two sentences for each condition. For example, to compare the proportions of the "context verb" interpretations in the syntactic and non-syntactic conditions, the number of participants with at least one "context verb" interpretation in the syntactic condition but no "context verb" interpretations in the non-syntactic condition was tallied and compared to the number of participants who showed the opposite pattern, that is, no "context verb" interpretations in the syntactic condition and at least one "context verb" interpretation in the non-syntactic condition. (Note that some participants may have "context verb" interpretations in both conditions or in neither condition. These participants are not informative with respect to differences between the conditions.)

When applying McNemar's tests, the "preference" and "metaphorical/inalienable" categories and the "no consistency" and "not understandable" categories, respectively, were combined because of their small frequencies. The tests were applied to all possible comparisons of any two conditions in the use of a particular interpretative category, which amounted to comparisons of a total of 15 pairs in the syntactic condition and 16 pairs in the semantic condition. These were all pairwise comparisons that remained after excluding the cells with zero counts.

In the syntactic conditions, one significant difference was observed in the uses of "context verb" between the syntactic with/without locative and non-syntactic with/without locative conditions (syntactic vs. non-syntactic (odds = 8:0, $p = .008$), syntactic vs. non-syntactic with locative (odds = 12:0, $p = .004$), syntactic with locative vs. non-syntactic (odds = 11:0, $p < .001$), and syntactic with locative vs. non-syntactic with locative (odds = 9:0, $p < .001$)). This means that when the target sentence has a syntactic relation with the context sentence, the participants were more likely to use the verb in the context sentence to make a syntactic connection to the NP₂ in the target sentence. Meanwhile, when the target sentence does not have a syntactic relation with the context sentence, the participants tended to come up with a verb that is not included in the context sentence but can still be syntactically connected to the NP₂ in the target sentence. This was observed in the significant difference in the uses of "other verb" between the syntactic versus non-syntactic cases with a locative (odds = 0:10, $p = .001$).¹³ The locative in the context sentence appears to enhance the possibility of this kind of interpretation since there was a marginal difference in the use of "other verb" in the non-syntactic and non-syntactic-with-locative conditions (odds = 2:9, $p = .065$). Typical examples of the interpretations of "context verb" and "other verb" for sentences in the syntactic and non-syntactic-with-locative conditions, respectively, are shown in examples (17) and (18) below.

(17) "Context verb" for the syntactic condition

Context sentence: *Hosoda-san wa utat-ta*
 Hosoda-Mr./Ms. TOP sang
 "Hosoda sang."

¹³ The uses of "other verb" between syntactic versus non-syntactic-without-locative conditions being not significantly different is surely due in part to the small frequency of responses for both conditions.

Target sentence: *Koike-san wa enka da*

Koike-Mr./Ms. TOP Japanese ballad COP

Interpretation: "Koike sang a Japanese ballad."

(18) "Other verb" for the non-syntactic condition with locative

Context sentence: *Hosoda-san wa karaoke de seisan-si-ta*

Hosoda-Mr./Ms. TOP karaoke at evened up accounts

"Hosoda evened up accounts at a karaoke-box."

Target sentence: *Koike-san wa enka da*

Koike-Mr./Ms. TOP Japanese ballad COP

Interpretation: "At karaoke, Koike sang a Japanese ballad."¹⁴

As discussed, these differences in the uses of "context verb" and "other verb" between the syntactic and non-syntactic conditions are not unexpected because the interpretations can be attributed to the availability of the syntactically connected verb in the context sentence. What should be noted, however, is the consistent use of a particular verb for interpreting the target sentence in both the syntactic and non-syntactic conditions, whether or not the verb was transferred from the preceding context sentence, and that the transitive verb in the context sentence can function to help participants evoke a verb to connect the two NPs in the target sentence.

Another significant difference was observed in the uses of "no consistency/not understandable" between the syntactic with/without locative and non-syntactic with/without locative conditions. When the target sentence has no syntactic relation with the context sentence, more participants tended to end up with an idiosyncratic or inconsistent interpretation or to claim "not understandable" as opposed to when the sentences have a syntactic relation with the context sentence. Moreover, the presence of an overt locative in the context sentence with a non-syntactic relation did not have much of an effect (syntactic vs. non-syntactic (odds = 0:9, $p = .004$), syntactic vs. non-syntactic with locative (odds = 0:7, $p = .016$), syntactic with locative vs. non-syntactic (odds = 0:13, $p < .0002$), syntactic with locative vs. non-syntactic with locative (odds = 0:9, $p = .004$)). No significant differences were also observed in the proportion of "no consistency/not understandable" between the syntactic versus syntactic-with-locative conditions or between the non-syntactic versus non-syntactic-with-locative conditions.

In the semantic conditions, significant differences were observed only in the use of the "no consistency/not understandable" and "other verb" interpretative categories. There was a significant difference in the use of "no consistency/not understandable" between the non-semantic and non-semantic-with-locative conditions (odds = 1:8, $p = .04$). This means that readers tended to claim fewer "no consistency/not understandable" interpretations when they read the sentences with a non-semantic relation with a locative than those with a non-semantic relation without a locative. Moreover, the proportion of participants who used this interpretative category at least once for the non-semantic-with-locative condition was statistically identical to that of participants who used it for sentences with a semantic relation with or without a locative. These results show the effect of the locative in the use of the "no consistency/not understandable" interpretation. When a locative is added to a context sentence that lacks a semantic relation with the target NP₁ wa NP₂ da construction, it helps decrease the number

¹⁴ As explained in section 4.2.1.4, the same interpretation "Koike sang a Japanese ballad" in (17) and (18) is classified into different interpretative categories: "context verb" for the interpretation in (17) and "other verb" for (18). This is due to differences in the verb that appears in each context sentence.

of participants who claimed “no consistency/not understandable” at least once for the sentences in this condition. These results may mean that the difficulty of interpreting a target sentence that lacks a semantic relation with its context sentence can be overcome by adding a locative to the context sentence. More generally, the influence of a semantic relation in the specifics of the interpretation is not as strong as that of a syntactic relation. The differences between the semantic and non-semantic conditions in the ratio of participants who used “no consistency/not understandable” at least once were marginal, while those between the syntactic and non-syntactic conditions were significant.

Regarding the use of the “other verb” interpretative category, significant differences were observed between the semantic and non-semantic conditions (odds = 1:10, $p = .011$) and between the semantic and non-semantic-with-locative conditions (odds = 1:12, $p = .003$). When the target sentence was not semantically connected to the context sentence, readers were more likely to adopt a verb that was not included in the context sentence to interpret the target sentence. Examples (19) and (20) show the uses of “other verb” in the sentences for non-semantic and non-semantic-with-locative conditions, respectively.

(19) “Other verb” for non-semantic condition

Context sentence: *Mori-san wa osyaberi-si-ta*
 Mori-Mr./Ms. TOP talked (intransitive)
 “Mori had a chat.”

Target sentence: *Kagawa-san wa mafuraa da*
 Kagawa-Mr./Ms. TOP scarf COP

Interpretation: “While Mori was talking, Kagawa took off (his/her) scarf.”

(20) “Other verb” for non-semantic condition with locative

Context sentence: *Asada-san wa depaato de arukimawat-ta*
 Asada-Mr./Ms. TOP department store in walked around
 “Asada was walking around in a department store.”

Target sentence: *Katoo-san wa tokei da*
 Katoo-Mr./Ms. TOP watch COP

Interpretation: “While Asada was walking around in a department store, Katoo was looking for a watch to buy there.”

No significant difference was found in the use of “other verb” between the non-semantic and non-semantic-with-locative conditions although the frequency of this interpretative category for these conditions in Table 4 seemed to demonstrate at least some degree of difference. This means that most participants used this interpretative category for both the non-semantic and non-semantic-with-locative conditions; in fact, 11 of 16 participants gave at least one response that employs this interpretation category for both conditions. This result differed from the proportion of the use of “other verb” between the non-syntactic and non-syntactic with-locative conditions, which had a marginally significant difference. A locative in the context sentence without a syntactic relation seemed to have the effect of eliciting a particular verb to interpret the NP₁ *wa* NP₂ *da* sentence. However, this does not seem the case for the locative in the non-semantic condition.

This result regarding the use of “other verb” in the non-semantic and non-semantic-with-locative conditions shows that participants used a verb to interpret the NP₁ *wa* NP₂ *da* sentence even when the preceding context sentence included neither a locative nor a verb that was semantically connected to the NP₂. The question is how they determine the verb based on the (semantically underdetermined) context

found in the non-semantic-without-locative condition. It may be that information in the context sentence, such as a semantically unrelated intransitive verb, works as a stimulus to elicit a verb that can connect the two NPs in the target NP₁ wa NP₂ da sentence. Another possibility is that the relation between the two NPs in the target sentence itself somehow has an effect of eliciting a verb that connects them. To examine these possibilities, a follow-up interpretation test was conducted.

4.2.2. Interpretation test (follow-up): Interpretations of NP₁ wa NP₂ da sentences with no context

This interpretation test required the interpretations of the same set of NP₁ wa NP₂ da sentences used in all semantic conditions. In this condition, the NP₁ wa NP₂ da sentences were presented alone with no preceding context sentence to examine if the target sentence itself rather than any information given in the context evokes a specific interpretation. If participants reading the NP₁ wa NP₂ da sentence without context still consistently arrive at an interpretation by adding a particular verb, we can conclude that the NP₁ wa NP₂ da sentence itself evokes that particular verb. A second kind of experimental item in this follow-up study had the structure of the NP₁ wa NP₂ da sentence but with an overt locative as well. This item was added to examine the effect, if any, of the locative exclusively, independent of any other information that a context sentence might provide.

4.2.2.1. Conditions, materials, and participants

Condition 1: No context

The target sentences used in all semantic conditions were presented with no-context sentence. The target sentences assume the NP₁ wa NP₂ da structure.

Example: *Tanaka-san wa ren'ai-syousetu da*
 Tanaka-Mr./Ms. TOP a love story COP

Condition 2: No context with locative

The locatives included in the context sentences used in all semantic conditions were added to the target sentences. These sentences have the structure NP₁ wa locative *de* (at/in) NP₂ da.

Example: *Tanaka-san wa tosyokan de ren'ai-syousetu da*
 Tanaka-Mr./Ms. TOP library in a love story COP

The test materials were constructed from the same eight experimental items used in the interpretation tests for the various semantic conditions. Filler sentences were not included because the purpose of this follow-up test was to examine the possibility of specific interpretations of these particular sentences.

Forty undergraduate students at a university in the Tokyo area with a mean age of 18.5 (range 18–19) participated in the test. A group of 20 participants read all eight sentences in the no-context condition, and the other 20 read all eight sentences in the no-context-with-locative condition. These tests followed the same procedure as that of the interpretation test for the syntactic and semantic conditions as explained in the previous section.

4.2.2.2. Results

The interpretations of the target NP₁ wa NP₂ da sentences for these two conditions showed the same variety as those in the syntactic and semantic conditions except for the lack of the “context verb” category due to the absence of a context sentence. Table 5 describes the frequency of each interpretative category

used to interpret the sentences in the two conditions. The frequencies of the interpretative categories used for the NP₁ *wa* NP₂ *da* sentences in the non-semantic and non-semantic-with-locative conditions, as discussed in the previous section, are also presented for comparison.

Table 5. Frequency of interpretations of sentences for no-context and non-semantic conditions per category

Interpretative category	No Context	No Context Locative	Non-Semantic	Non-Semantic Locative
Context verb	NA	NA	0 (0%)	0 (0%)
Other verb	11 (7%)	142 (89%)	15 (47%)	23 (72%)
Metaphorical/ Inalienable	85 (53%)	5 (3%)	2 (6%)	1 (3%)
Preference	19 (12%)	3 (2%)	1 (3%)	2 (6%)
No consistency	17 (11%)	1 (1%)	6 (19%)	2 (6%)
Not understandable	28 (18%)	9 (6%)	8 (25%)	4 (13%)
Total	160 (100%)	160 (100%)	32 (100%)	32 (100%)

The frequencies of the interpretation categories in Table 5 show that the interpretations of the sentences in the no-context condition have a different pattern from the other three conditions. Interpretations in the no-context condition varied from the “metaphorical/inalienable” interpretation (the highest-frequency interpretation) to the “other verb” interpretation (the lowest-frequency interpretation). The uses of “no consistency” and “not understandable” also showed relatively high frequencies in the no-context condition. Meanwhile, the interpretation categories observed in the no-context-with-locative condition seemed to pattern with those in the non-semantic-with-locative condition. In both conditions, the “other verb” interpretative category was the most frequent, while the other categories were relatively infrequent. Interpretations of sentences in the non-semantic (without locative) condition seemed to come in between since the uses of both “other verb” and the combined uses of “no consistency/not understandable” had high frequencies.

Since the interpretations of the sentences in the no-context and no-context-with-locative conditions, on the one hand, and of the sentences in the other two non-semantic conditions, on the other hand, were collected from different groups of participants, and since the same participant gave responses to both of the latter two non-semantic conditions, a series of Fisher Exact tests were conducted separately to examine the differences in the frequency of any two conditions in the use of each interpretative category. Specifically, the tests compared the ratios of the number of participants who had at least one interpretation of each category to the number of participants with no interpretation of the same category.

Results of the Fisher Exact tests illustrated the difference between the no-context condition and the no-context-with-locative condition in the pattern of all interpretative categories employed for these two conditions. In the interpretations for the no-context condition, significantly fewer participants gave at least one “other verb” interpretation ($p < .0001$). Meanwhile, significantly more participants provided interpretations based on the other three interpretative categories: “preference” ($p = .002$), “metaphorical” ($p < .0001$), and “no consistency/not understandable” ($p = .0001$). Sentences in the no-context condition were interpreted with a greater variety of interpretative categories compared with the other three conditions. Examples (21), (22), (23), and (24) show the uses of “preference,” “metaphorical,” “inalienable,” and “other verb,” respectively, for sentences in the no-context condition.

(21) "Preference" for no-context condition

Target sentence: *Kagawa-san wa mafuraa da*
 Kagawa-Mr./Ms. TOP scarf COP

Interpretation: "Kagawa likes a scarf very much."

(22) "Metaphorical" for no-context condition

Target sentence: *Kagawa-san wa mafuraa da*
 Kagawa-Mr./Ms. TOP scarf COP

Interpretation: "Kagawa is a warm-hearted person like a scarf."

(23) "Inalienable" for no-context condition

Target sentence: *Kagawa-san wa mafuraa da*
 Kagawa-Mr./Ms. TOP scarf COP

Interpretation: "Kagawa always wears a scarf."

(24) "Other verb" for no-context condition

Target sentence: *Katou-san wa tokei da*
 Katou-Mr./Ms. TOP watch COP

Interpretation: "Katou selected a watch."

In contrast, sentences in the no-context-with-locative, non-semantic, and non-semantic-with-locative conditions received significantly more uses of the "other verb" category compared with sentences in the simple no-context condition. As discussed in the previous section, no significant difference was observed between non-semantic and non-semantic-with-locative conditions. To examine the hierarchy in the proportion of "other verb" among these three conditions (no context with locative, non-semantic, and non-semantic-with-locative), Fisher Exact tests were conducted for multiple pairwise comparisons. Though there were no significant differences in the proportion of the use of "other verb" between the no-context-with-locative and non-semantic-with-locative conditions or between the non-semantic and non-semantic-with-locative conditions (based on the McNemar test in the previous section), more participants claimed no use of "other verb" for sentences in the non-semantic condition when compared with the no-context-with-locative condition in the subject-based analysis ($p = .012$). This suggests participants' less frequent use of "other verb" when they read the sentences in the non-semantic-without-locative condition compared with the other two conditions, which both included a locative.

In summary, it is the overt locative and not the NP₁ wa NP₂ da sentence itself that had the effect of eliciting a particular verb for interpreting the target sentence when it is not semantically (and therefore syntactically) connected to the context sentence or when it is presented without context. An overt locative increases the number of interpretations using a semantically and syntactically appropriate verb that functions to connect the NP₁ and the NP₂ in the target sentence; as a result, the interpretations for the locative without context conditions ended up being much more consistent than those of sentences presented without context and without a locative. Example (25) illustrates the use of "Other verb" for sentence in the no-context-with-locative condition.

(25) "Other verb" for no-context-with-locative condition

Target sentence: *Ikeda-san wa izakaya de biiru da*
 Ikeda-Mr./Ms. TOP Japanese pub in beer COP

Interpretation: “Ikeda ordered/drank a beer in the Japanese pub.”

5. Mechanism of establishing an “aboutness” relation

These experiments demonstrated that in the process of understanding a given NP₁ *wa* NP₂ *da* sentence in a particular context, different relations are established, and these different links between the sentence and its context help determine the relation between the two NPs in a particular NP₁ *wa* NP₂ *da* sentence. In some sense, this means that the “aboutness” in an NP₁ *wa* NP₂ *da* sentence is characterized by the relation between the sentence and its context. Specifically, the experimental studies revealed several contextual factors that affect the comprehension of an NP₁ *wa* NP₂ *da* sentence as well as the strength and weakness of the relation between the two NPs in such a construction. These findings suggest that the “aboutness” relation is not a fixed relation that can be defined by a particular kind of relation but is rather a pragmatic process for determining the meaning of a sentence. In the construction of NP₁ *wa* NP₂ *da* sentences, the “aboutness” relation should be explained based on a relationship of an NP₁ *wa* NP₂ *da* sentence and its context.

When reading an NP₁ *wa* NP₂ *da* sentence in a particular context, a particular verb taken from such context was understood as an unexpressed element. This verb established a syntactic or semantic relation with the NP₂ by taking it as its direct object or theme. The combination of a transitive or an intransitive verb and the NP₂ brought coherence to the whole predicate of the sentence (unexpressed verb + NP₂) and connected it to the topic NP (NP₁). Thus, an understanding based on a syntactic/semantic relation with the context was established between the NP₁ and the NP₂ with the help of a verb adapted from the context.

A syntactic relation formed in relation to the context sentence helps establish a strong “aboutness” relation between the two NPs in an NP₁ *wa* NP₂ *da* sentence. The results of the experimental studies showed that even an overt locative in the preceding context sentence does not facilitate the understanding of the target sentence when the target NP₂ and the verb in the context sentence were not syntactically related. In the non-syntactic condition, the NP₂ in the NP₁ *wa* NP₂ *da* construction violated the selectional restrictions of the transitive verb in the context sentence. This violation could not be compensated for by any other relations that might be elicited by, for example, a locative.

A semantic relation between a context sentence with an intransitive verb in the context and a given NP₂ in the NP₁ *wa* NP₂ *da* sentence can also define an “aboutness” relation between the two NPs in the target sentence. This relation is based on a relationship between the intransitive verb and its implicit theme, which establishes a more obvious link between the NP₁ and the NP₂ than a relation evoked simply by semantic association with particular components in the context.¹⁵ Since a semantic relation based on a thematic link depends on the meaning of the words and not on their grammar, that is, not on selectional

¹⁵ Example (26) is an instance where the NP₂ *tomato* (tomato) may be semantically associated with *rakunou* (dairy industry) in the preceding context sentence in that they are both food production terms. Given this association and the expectation established by the discourse frame that the utterance in (26b) should be related to the speaker’s business since (26a) is a question asking about this issue, (26b) can be understood as a statement about her business. However, even if the meaning in (26b) is what is naturally inferable, it remains vague because of the lack of syntactic or semantic connections with the context sentence based on specific grammatical arguments or thematic roles.

(26)
a. *Anata mo rakunou yatten’no*
you too dairy industry doing Q
“Are you also engaged in dairy industry?”

b. *Watasi wa tomato desu*
I TOP tomato COP(formal)
“I (grow (?)) tomato.”

(“*Turubei no Kazoku ni Kanpai* [Toast to families by Turubei],” an episode of a television series broadcast on June 16, 2008, on NHK (Japan Broadcasting Corporation)).

restrictions, a non-semantic relation in the experimental context does not result in a grammatical violation. Rather, in such non-semantic contexts, an "aboutness" relation is established via a particular verb evoked by an overt locative frame or the intransitive context verb itself even when a semantic relation with the NP₂ is absent. Semantic relations are more flexible, allowing for a greater possibility in connecting semantically different concepts according to information introduced into the context. Readers of NP₁ *wa* NP₂ *da* sentences in a non-semantic context seemed to create a possible situation in which the intransitive verb in the preceding context and the NP₂ are both components of the frame activated by the locative despite not being semantically connected. They wanted all the pieces to fit together. Thus, an "aboutness" relation can be established through a syntactic or semantic relation with the context.

A locative in the preceding context sentence does not directly designate a specific verb to connect the two NPs in the target NP₁ *wa* NP₂ *da* sentence, but it does evoke a set of verbs that can be adopted to make the connection. As shown in section 4.2.2, it even functions to establish an "aboutness" relation between the NP₁ and the NP₂ when it is presented within an NP₁ *wa* NP₂ *da* sentence without context.

Finally, as described in section 4.2.2.2, when an NP₁ *wa* NP₂ *da* sentence is presented without context, an "aboutness" relation can be sentence-internally established, and the sentence is interpreted based on various conceptual relations between the NP₁ and the NP₂, such as metaphorical, inalienable, conventional, or preference. When interpreting NP₁ *wa* NP₂ *da* sentences without context, readers might look for commonalities between NP₁ and NP₂, and when no other contextual assumptions are available, a connection called a quasi-identity relation can be evoked.¹⁶

Based on this discussion, it can be concluded that "aboutness" is a procedure for understanding and interpreting an NP₁ *wa* NP₂ *da* sentence. At its most basic level, it entails the process of determining an appropriate predicate that allows readers to create a proposition that can connect the topic NP₁ and the predicate NP₂.¹⁷ All context-internal and context-external information, that is, potential semantic identity, conceptual information, syntactic/semantic relations, or relations based on various frames as well as prior knowledge, help readers choose a predicate that appropriately specifies the unexpressed element in the NP₁ *wa* NP₂ *da* sentence. With the appropriate predicate and the NP₂, readers create a proposition that can be attributed to the topic NP, establishing the "aboutness" relation.

6. Conclusion: the meaning of "*wa*" and communication in Japanese

This study examines the understanding and interpretation of NP₁ *wa* NP₂ *da* sentences. The experimental investigations reveal that the interpretation of NP₁ *wa* NP₂ *da* sentences requires the establishment of a relation between the sentence and its context. One might ask what component triggers this interpretive process for readers/listeners of an NP₁ *wa* NP₂ *da* sentence. It can be hypothesized that this is the actual function of the topic marker *wa*, which functions as a linguistic and pragmatic signal to engage readers/listeners in a deductive process to determine the relation between the *wa*-marked NP and the rest of the sentence.

Kuroda (1965, 1992, 2005) and Fiengo and McClure (2002) define *wa* pragmatically as a speech act marker that expresses a speaker's categorical judgment on a given item. By marking an item with *wa*,

¹⁶ This interpretation of NP₁ *wa* NP₂ *da* sentences is similar to what Wisniewski (1996, 1997) argues in his study of English noun-noun compounds, such as "zebra horse." Wisniewski claims that one way to interpret English noun-noun compounds involves constructing a new property for the head noun by integrating one property of the modified noun into the concept of the head noun by finding the commonalities of the two concepts referred to by the two nouns.

¹⁷ The NP₁ *wa* NP₂ *da* sentence in (5) by Obana, discussed in section 2.1, is understandable because the preceding context sentence provides a component that can be used to determine the predicate and therefore create the proposition that connects the two NPs in the sentence.

speakers lead listeners to assume that the item is given and categorize the item by producing the predicate that matches the item. This predicate is then understood to convey a property that can be attributed to the given item. From the listener's perspective, it can be assumed that upon hearing the topic NP marked with *wa*, they expect that whatever they hear next as a predicate expresses a property of the topic NP, a given item. A pragmatic process of establishing "aboutness" makes this connection possible, but it is the linguistic form of *wa* that activates this mechanism. Thus, *wa* functions as a speech act marker for speakers to mark an item as given so that an assertion about the given item can be made. Concurrently, *wa* directs listeners to look for a possible connection between the item (topic NP) and the predicate such that the predicate expresses a property of the given item. Upon listening to or reading the topic marker *wa*, listeners or readers begin their search for the most appropriate predicate in any available information.

This function of the topic marker *wa*, which triggers the reader's deductive process, is also discussed by Hinds (1987). He analyzes the use of *wa* in an essay on a Japanese newspaper and indicates that *wa* marked a noun phrase which presented totally unpredictable information to the reader. The overall topic of the essay is *waribasi*, throwaway chopsticks, and the essay discusses this topic in the first four paragraphs. Then, the fifth paragraph introduces a noun *Rikyuu* and begins with the phrase "*Rikyuu wa*" (*Rikyuu* (a tea ceremony master) TOP). This noun is marked by *wa*, which is "a signal to the reader that the noun phrase so marked has some kind of connection with the overall theme of the essay... It tells the reader, in effect, that this noun phrase should be treated as if it were old, predictable information, even though it is not." (Hinds 1987, p.150) Fukuda (2003) also argues that *wa* shows a speaker-oriented free "selection" that should be constrained by textual/situational relevance. He claims that it is common for a speaker or writer to thematize an item that may be "brand new" to listeners. Once an item is thematized, that is, marked with *wa*, listeners or readers accept it as the theme. Thus, the topic marker *wa* activates a conversational frame to facilitate the listener's/reader's comprehension process when used in actual communication. Although further studies are required, it seems reasonable to assume that this process can be applied to communication in other languages that include unexpressed elements, such as Korean or Chinese.

Given that the topic marker is articulated in Japanese and therefore stands out as a signal that sets off the listener's/reader's search for the predicate, it can be said that in Japanese communication, listeners and readers bear much responsibility for making their communication successful. As mentioned in section 1, Japanese is well-known for the ease with which elements are left unspoken. It can be argued that this deductive process used to understand NP₁ *wa* NP₂ *da* sentences can be applied to other kinds of omissions such as subjects or objects in Japanese. There are also other linguistic forms that function as a cue in making reference to the omitted element. For example, a particular honorific form used for a verb may specify the subject or the person referred to by the direct/indirect object. Verbs of giving and receiving in Japanese also encode directionality between a speaker and a listener. The listeners, realizing that the sentence contains an unspoken element, search for possible referents based on possible syntactic and semantic relations with the linguistic context or the wider situational frame for relevant objects, events, situations, or prior knowledge that they have. Though the topic marker *wa* may not be included in these sentences, the existence of an empty space can be a trigger for such a deductive process. In this sense, as Hinds (1987) and other researchers also claim, it can be said that it is primarily the listener/reader who is responsible for effective communication in Japanese rather than the speaker/writer as is the case in English, for example. With this in mind, it must be necessary for Japanese learners of English not only to learn the different communication style but also to cultivate the communicative attitude as a "responsible" speaker/writer in English communication.

Appendix: List of abbreviations in the glosses

ACC	Accusative
COMP	Complementizer
COP	Copula
FP	Sentence final particle
NOM	Nominative
NOMI	Nominalizer
Q	Question marker
TOP	Topic marker

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