

ENGLISH SPEAKER ACQUISITION OF TOPIC AND SUBJECT IN MULTIPLE-CLAUSE SENTENCES IN JAPANESE

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This study investigated native English speakers' acquisition of the constraint for topic-*wa* and the preference for subject-*ga* in multiple-clause sentences in Japanese. The constraint for topic-*wa* is that it cannot appear in certain types of subordinate clauses, and the preference for subject-*ga* is that the overt subject-*ga* in a subordinate clause should not overlap the topic for a matrix clause. Two sentence-completion experiments were conducted with native English-speaking participants, who were considered advanced-level Japanese learners, as well as native Japanese-speaking participants (the control group). The results indicated that although English speakers followed the constraint for the topic-*wa*, they frequently used the topic-*wa* as non-subject topics (unlike native Japanese speakers) when an embedded subordinate clause separated the topic-*wa* and the rest of the matrix clause. Also, English speakers used the same subject-*ga* for both subordinate and matrix clauses, unlike the native Japanese speakers' preference. The outcome implies that English speakers associated the topic-*wa* with English non-subject topics and the subject-*ga* with English subjects.

1. TOPIC AND SUBJECT IN JAPANESE AND ENGLISH

In second-language acquisition studies, it has often been claimed that the Japanese topic postposition *wa* and the nominative postposition *ga* are functionally complex and difficult for Japanese learners to acquire (Mori 2008: 1; Russell 2005: 2021).¹ The present study also researches the acquisition of *wa* and *ga* by native English speakers, but it specifically focuses on the constraint for the topic-*wa* and the preference for the subject-*ga* in multiple-clause sentences. To the author's best knowledge, although the functions and acquisitions of *wa* and *ga* have long been discussed in the field of linguistics, few empirical studies have examined Japanese learners' acquisition of restricted usages of *wa* and *ga* in multi-clausal sentences.

Like many other East Asian languages, Japanese has a noun phrase (NP) category for the topic. In general, topichood can be established through multiple manipulations, such as pronominalization, repetitive mention, initial mention, and so forth. In Japanese, the topic postposition *wa* is a morphological device that marks an overt NP as a topic (Kuno 1973: 38–40). Also, a

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topic is an information-structure category that is independent from the grammatical structure. Therefore, a topic-NP is not restricted to any particular grammatical category, and it can play any grammatical role, such as the subject or the object (Mikami 1960: 11; Nishimura 1989: 367; Lambrecht 1994: 118; Li & Thompson 1976: 466); that is, a topic can be a topic-subject or topic-object. Examples are shown below:

- (1a) Sentence with a topic-subject (*Taro-wa*)

Taro-wa Hanako-o shotai-sita.
Taro-TOP Hanako-ACC invited

‘Taro invited Hanako.’

- (1b) Sentence with a topic-object (*Hanako-wa*)

Hanako-wa Taro-ga shotai-sita.
Hanako-TOP Taro-NOM invited

‘Taro invited Hanako.’

- (1c) Sentence with a non-topic subject (*Taro-ga*) and non-topic object (*Hanako-o*)

Taro-ga Hanako-o shotai-sita.
Taro-NOM Hanako-ACC invited

‘Taro invited Hanako.’

In the above example sentence (1a), the topic-*wa* is a grammatical subject (topic-subject); in (1b), the topic-*wa* is a grammatical object (topic-object). In actual Japanese usage, over 90 percent of topic-*wa* occurrences appear as grammatical subjects (i.e. topic-subject) (Nishimura 1989: 374).

Unlike Japanese, English does not utilize morphological markings and has no explicit NP category of topic. In English, the topic is typically expressed by the word order, where a sentence-initial NP functions as the topic. Because grammatical subjects are positioned at the beginning of sentences in the default word order of English, subjects often overlap the topic (Chafe 1987: 36; Keenan & Dryer 2007: 325; Kamata 1992: 20). For example, in the sentence ‘Taro invited Hanako’, ‘Taro’ is the topic, which is the grammatical subject. In the sentence ‘Hanako was invited by Taro’, ‘Hanako’ is the topic, which is also the grammatical subject.

Native English speakers may not notice that English grammatical subjects also function as topics, because English does not explicitly differentiate between the topic and the subject (like Japanese does with *wa* for the topic and *ga* for the subject). However, English speakers might recognize an entity as a topic when a grammatical non-subject appears as the topic in sentences such as ‘Pizza, I don’t eat it’ or ‘John, I don’t like him.’ In these sentences, ‘Pizza’ and ‘John’ are topics, and they are also grammatical objects. For these non-subject topics, English speakers may notice that they are topics, not mere objects, because the topic-objects are placed in a non-default position, namely, the sentence-initial position.

Differentiation between the topic-*wa* and the subject-*ga* in Japanese is known as one of the difficult elements for Japanese learners to acquire when the learners’ first languages do not utilize similar morphological markings to differentiate the topic and the subject (Mori 2008: 1; Athukorala 2015: 26). The present study reports an experiment (Experiment 1) that tested native English speakers’ acquisition of different usages of the topic-*wa* and the subject-*ga*, specifically focusing on them in multi-clausal sentences; the topic-*wa* does not appear in certain types of

subordinate clauses, and the subject-*ga* does not appear in subordinate clauses when the same entity is the topic for the matrix clause. Furthermore, an additional experiment (Experiment 2) explores how native English speakers' usage of the topic-*wa* in multi-clausal sentences differs from that of native Japanese speakers by focusing on the positions of topic-*wa* phrases and subordinate clauses in multi-clausal sentences.

This article is organized as follows. The next two sections review the multi-clausal constraints for topic-*wa* and the preference for subject-*ga*. The following two sections present Experiment 1 with its results and discussion, and the next two sections show Experiment 2 with its results and discussion. The author then proceeds to the general discussion, followed by limitations and conclusion.

2. MULTI-CLAUSAL CONSTRAINT FOR TOPIC-WA

It is well known that the topic-*wa* does not appear in certain types of subordinate clauses, which include conditional clauses ('if...'), temporal clauses ('when...', 'after...', 'before...', 'while...'), and relative clauses (Noda 2007: 6), as shown below.

- (2a) *Taro-ga/*wa kitara Hanako-ga/wa uti-nikaeru.*
 Taro-NOM/TOP if.come Hanako-NOM/TOP home-toreturn
 'If Taro comes, Hanako will go home.'

- (2b) *Taro-ga/*wa hon-o yondeita toki Hanako-ga/wa kita.*
 Taro-NOM/TOP book-ACC was.reading when Hanako-NOM/TOP came
 'When Taro was reading a book, Hanako arrived home.'

- (2c) *Taro-ga/*wa yonda hon-o Hanako-ga/wa katta*
 Taro-NOM/TOP read book-ACC Hanako-NOM/TOP bought
 'Hanako bought a book that Taro read.'

In the above examples, *Taro-wa* (topic-*wa*) is not allowed in subordinate clauses while *Taro-ga* (subject-*ga*) is allowed. In other words, when a topic-*wa* appears in these types of multi-clause sentences, it must co-refer with the topic of both matrix and subordinate clauses.

The fact that the topic-*wa* is not allowed in some subordinate clauses indicates that it cannot be a subtopic that is confined in these types of subordinate clauses. As Heycock (2008: 58) argues, the topic-*wa* is basically a root phenomenon. That is, a clause that includes a topic-*wa* must be part of a root clause (or matrix clause, in this case), and thus a topic-*wa* belongs only to clauses that are 'unambiguously nonsubordinate'. Because a topic is a part of the matrix clause that embeds subordinate clauses, the topic remains as the topic of both matrix and subordinate clauses (Mikami 1960: 130; Kato 2006: 96). This property of the topic-*wa* contributes to the comprehension of sentences such as the one below.

- (3) *Tori-wa tobu toki konna-fu-ni suru.*
 bird-TOP fly when like.this do
 'When a bird_i flies, it_i goes like this.' (Yamada 1936: 490)

This sentence above includes two predicates for the subordinate and matrix clauses, *tobu toki* 'when flying' and *konna-fu-ni suru* 'do like this', respectively. The subject entity presented for this multi-clausal sentence is *tori-wa* 'a bird', which is *wa*-marked and thus a topic-subject. This *wa*-marked topic-subject should be a part of the matrix clause as *tori-wa konna-fu-ni suru*

‘a bird goes like this’. The subject entity for the subordinate clause (i.e. the entity that flies) is null in the sentence. Because the matrix-clausal topic (bird) should remain as the topic of multiple clauses, the null-subject entity for the subordinate clause should be co-indexed with the topic-subject, *tori-wa* ‘a bird’, as *tori-wa tobu toki* ‘when a bird flies’. Accordingly, this entire sentence has to be interpreted as *Tori-wai* [\emptyset_i *tobu toki*] *konna-fu-ni suru* ‘A bird_i goes like this when it_i flies.’ It is impossible to interpret this sentence as [*Tori-wai tobu toki*] \emptyset_y *konna-fu-ni suru* ‘When a bird flies, (something else) goes like this.’

Note that in the above example (3), the topic-*wa* functions as a grammatical subject (i.e. topic-subject) in the matrix and subordinate clauses, that is, ‘a bird goes like this’ and ‘when a bird flies’. However, we can recall that the topic-*wa* does not have to be a subject, and that it can play any grammatical role (Mikami 1960: 11; Nishimura 1989: 367; Lambrecht 1994: 118). For example, the topic-*wa* in the example below functions as a non-subject.

- (4) *Tori-wa tobu toki hane-ga utukusi.*
 bird-TOP fly when wings-NOM beautiful
 ‘When a bird_i flies, its_i wings look beautiful.’

In this sentence, the matrix clause is *Tori-wa hane-ga utukusi* ‘a bird’s wings look beautiful’, in which *tori-wa* ‘a bird’ is not a grammatical subject.

Furthermore, as Heycock (2008: 56) states, the topic-*wa* can appear in some subordinate clauses that include that-clauses when they are complements to verbs such as ‘to say’ and ‘to know’, as shown below.

- (5) *Hanako-ga/wa Tokyo-ni kaetta to Taro-ga/wa itta.*
 Hanako-NOM/TOP Tokyo-to returned that Taro-NOM/TOP said
 ‘Taro said that Hanako returned to Tokyo.’

3. MULTI-CLAUSAL PREFERENCE FOR SUBJECT-GA

Kuno (1978: 115) points out a preference in native Japanese speakers’ usage of an overt subject-*ga* in subordinate clauses. That is, when a subject-*ga* for a subordinate clause and the topic-subject-*wa* for a matrix clause are the same entity, the topic-subject-*wa* for the matrix clause should not be omitted, and the subject-*ga* should be the one to be omitted. The omitted subordinate-clausal subject-*ga* is interpreted as the same entity as the matrix topic because, as mentioned in the previous section, a topic-*wa* belongs to a root clause (or matrix clause, in this case) that embeds subordinate clauses, and the topic-*wa* remains as the topic of the entire sentence, including both matrix and subordinate clauses (Mikami 1960: 130; Kato 2006: 96). In contrast, a subordinate-clausal subject-*ga* is not a root phenomenon, and thus it may not be interpreted as the same entity as the matrix topic-subject when the matrix topic-subject is omitted. Consequently, the presence of an overt subject-*ga* in a subordinate clause indicates that the subject-*ga* entity should be different from the matrix topic-subject entity. This preference is illustrated in the examples shown below.

- (6a) *Taro-ga nihon-ni kaette kara hatraitai.*
 Taro-NOM Japan-to return after worked
 ‘After Taro_i returned to Japan, he_{#ij} worked.’ (Nariyama 2002: 135–145)

- (6b) *Taro-ga byoki na-noni gakko-o yasumo-to sinai.*
 Taro-NOM sick although school-ACC intend.to.be.absent not.do

‘Although Taro_i is sick, he_{#i/j} does not intend to be absent from school.’ (Kuno 1978: 115)

In (6a) above, Taro is the overt subject with *ga*, and the subject entity for the matrix clause (the person who worked) is omitted. The null topic-subject entity, who worked, should be a different entity from Taro_i; that is, the sentence should be interpreted as: [*Taro-gai nihon-ni kaette kara*] *Øy hataraita* ‘After Taro returned to Japan, (someone else) worked.’ Likewise, in (6b), the null topic-subject entity, the person who does not intend to be absent from school, should be different from Taro. If Taro overlaps the matrix-clausal topic-subject, then *Taro-ga* should be the one to be omitted, and the topic *Taro-wa* should be overt in the sentence as *Taro-wa nihon-ni kaette kara hataraita* ‘After Taro_i returned to Japan, he_i worked.’ Similarly, one finds *Taro-wa byoki na-noni gakko-o yasumo-to sinai* ‘Although Taro_i is sick, he_i does not intend to be absent from school.’

The preference for the subject-*ga* indicates that it tends to be confined within the subordinate clause, unlike the topic-*wa*. Recall that in sentence (3), *Tori-wa tobu toki konna-fu-ni suru* ‘When a bird_i flies, it_i goes like this’, the topic-*wa* should be the topic for both subordinate and matrix clauses. However, when *wa* in (3) is replaced by *ga*, the meaning of the sentence should change.

- (7) *Tori-ga tobu toki konna-fu-ni suru*
 bird-NOM fly when like.this do

‘When a bird_i flies, it_{#i/j} goes like this.’

In this sentence (7), *tori-ga* ‘a bird’ should be understood as the subject entity for the subordinate clause (*tobu toki* ‘when flying’), and is unlikely to be co-indexed with the topic entity for the matrix clause predicate, *konna-fu-ni suru* ‘do like this’. Therefore, natural interpretations of this sentence would have a new entity that ‘goes like this’, which is different from ‘a bird’. In short, this sentence should be interpreted as [*Tori-gai tobu toki*] *Øy konna-fu-ni suru* ‘When a bird flies, (something else) goes like this.’ It is unlikely that this sentence would be interpreted as *Tori-gai* [*Øi tobu toki*] *konna-fu-ni suru* ‘When a bird_i flies, it_i goes like this.’

Note that this preference for the subject-*ga* is not limited to particular types of clauses, such as the ones for the topic-*wa* (e.g. conditional clauses, temporal clauses, relative clauses). Also, note that this restricted usage of the subject-*ga* is not a rigid grammatical constraint; this is an extra-grammatical preference; that is, it is still grammatically possible to interpret (6a) as ‘Taro_i worked after he_i returned to Japan.’ Moreover, the less preferred interpretation may become acceptable depending on the discourse context. For example, Kuno (1973) and Ono, Thompson, and Suzuki (2000) argue that *ga* is preferably used when the sentence expresses something unpredictable. In other words, it may be acceptable to interpret (6a) as ‘Taro_i worked after he_i returned to Japan’ if the surrounding context implies that it is unpredictable or surprising that Taro worked. However, these cases are not considered in this article, and the following discussion is based on the general preference that an overt subject-*ga* in a subordinate clause tends not to be co-indexed with the matrix topic-subject.

According to early studies, even advanced-level learners of a second language may experience difficulties in acquiring extra-grammatical aspects. For example, Belletti, Bennati, and Sorace (2007) found that native English speakers who are advanced learners of Italian showed grammatical but infelicitous interpretations of null and overt pronouns in Italian. They inter-

preted subordinate-clausal overt pronouns co-referential with the matrix-clausal subjects significantly more frequently than native Italian speakers. In other words, the learners did not follow the native-like preference for Italian overt pronouns to not refer to matrix-clausal subjects. The advanced-level learners' vulnerability regarding the syntax-discourse interface might appear in English speakers' usage of the Japanese multi-clausal *ga* in this study.

4. EXPERIMENT 1

The previous sections introduced the constraint for the topic-*wa* and the preference for the subject-*ga*. The present study tested whether native English speakers who are advanced-level Japanese learners have acquired this constraint and preference. Indeed, advanced-level Japanese learners should have heard or read multi-clausal sentences while communicating in Japanese. However, because their first language does not differentiate between topic and subject as the Japanese language does, native English speakers may not notice their different usages.

4.1 Participants

Here, 13 native English speakers, who were recruited at the University of North Carolina at Charlotte and the University of South Carolina (both in the United States of America), participated in this experiment. They all were advanced-level Japanese learners, who had taken at least six semesters of Japanese classes, which consisted of three or four class meetings (3.5–4.5 hours) per week. Nine of them had resided in Japan as international students or as English teachers. Also, 23 native Japanese speakers from those communities participated in the same experiment as the control group.

4.2 Method

An untimed written test was given to the participants. The test included six critical items and six distractor items, all of which were incomplete sentences with blanks. The six critical items included either temporal or conditional clauses, followed by a blank. The six critical items were given in one of two conditions: starting with a NP-*wa* or with a NP-*ga*. Thus, three critical items for each condition were provided to participants. A sample item is shown below. (All items used in the actual experiment are shown in Appendices.)

(8) Conditions for Experiment 1

a. Topic-*wa*

Tori-wa tobu toki _____.
bird-TOP fly when

‘When a bird_i flies, _____. (A bird, when flying, _____).’

b. Subject-*ga*

Tori-ga tobu toki _____.
bird-NOM fly when

‘When a bird_i flies, _____.’

There was no comma or space in the given item sentences. Participants were tasked to fill in the blanks to complete the sentences. Also, the distractor items were all mono-clause sentences. The order of the items listed in the test was randomized. All the tested text was in untranslated Japanese.

If the participants acquired the constraint for *wa* and the preference for the *ga* in multiple-clause sentences, the completed sentences in their responses should use the given topic-*wa* (e.g. *tori-wa* ‘bird’, as in (8)) as the topic entity for both subordinate and matrix clauses (e.g. *Tori-wa tobu toki hane-o ugokasu* ‘When a bird_i flies, it_i flaps its wings.’). Also, their responses should use the given subject-*ga* only as the subordinate-clausal subject and include a new subject entity for the matrix clause (e.g. *Tori-ga tobu toki happa-ga yureru* ‘When a bird_i flies, leaves_y shake.’).

5. RESULTS OF EXPERIMENT 1

5.1 Native Japanese speakers (Control group)

The results from the native Japanese speakers are summarized in the table below. The table shows whether the given topic-*wa* and subject-*ga* were used as the topic/subject of both subordinate and matrix clauses or as that of the subordinate clause only.

Table 1 Native Japanese Speakers’ Responses: Usages of Given Topic-*wa* and Subject-*ga*

	Responses (out of 69 total) (%)
Topic- <i>wa</i> (e.g. <i>tori-wa tobu toki</i>)	
(a) Topic- <i>wa</i> used for subordinate & matrix clauses (following constraint)	69 (100%)
(b) Topic- <i>wa</i> used for subordinate clause only (violating constraint)	0 (0%)
Subject- <i>ga</i> (e.g. <i>tori-ga tobu toki</i>)	
(a) Subject- <i>ga</i> used for subordinate clause only (following preference)	59 (85.5%)
(b) Subject- <i>ga</i> used for subordinate & matrix clauses (violating preference)	8 (11.6%)
(c) Others	2 (2.9%)
<i>Note.</i> ‘Others’ were blank responses	

5.1.1 Native Japanese speakers: Topic-*wa*

For the items that included a NP-*wa*, 100 percent of the native Japanese responses used the NP-*wa* as the topic entities for both subordinate and matrix clauses, following the constraint. An example response is shown below.

(9) *Kuruma-wa hasitteiru aida-ni gasorin-o shohi-simasu*
 car-TOP running while gasoline-ACC consume

‘While a car_i is running, (it)_i consumes gas.’

The results confirm the validity of the constraint for the topic-*wa* in multiple-clause sentences: the topic-*wa* must be the topic for both matrix and subordinate clauses.

Also, 66 responses out of 69 total responses from all 23 participants used the given topic-*wa* as topic-subjects of matrix clauses, as in (9) above: *kuruma-wa... gasorin-o shohi-simasu* ‘a car ... consumes gas’. The other three responses (from three different participants) used the given topic-*wa* as topic-objects of the matrix clauses, as shown below.

(10) *Omise-wa simaru mae-ni sozi-o simasu.*
 store-TOP close before cleaning-ACC do

‘Before a store_i closes, (they) clean it_i.’

The outcome of native Japanese speakers using topic-*wa* as topic-subjects in most cases might reflect the fact that over 90 percent of topics in actual Japanese sentences are topic-subjects (Nishimura 1989: 374), as mentioned in the introduction.

5.1.2 Native Japanese speakers: Subject-*ga*

As for the results of the subject-*ga*, 59 responses out of 69 total responses (85.5%) obtained from all 23 native Japanese-speaking participants followed its preference: the given overt subject-*ga* entities were different from the matrix-clausal topic-subjects. An example response is shown below.

- (11) *Omise-ga simaru mae-ni kaimono-o sumasemasita.*
 store-NOM close before shopping-ACC finish
 ‘Before the store_i closed, (I/someone)_y finished shopping.’

The sentence above includes the matrix-clausal (null-)topic-subject, ‘I/someone’, which is different from the subordinate-clausal subject ‘store’.

On the other hand, there were 8 responses out of 69 total responses (11.6%) obtained from 6 participants of the 23 total participants that did not follow the preference, as in the example response shown below.

- (12) *Kuruma-ga hasitteiru aida-ni oki oto-o dasimasita.*
 car-NOM running while big noise-ACC made
 ‘While a car_i was running, (it)_i made a big noise.’

The results of the control group that 85.5 percent of native Japanese participants followed the preference confirmed its validity: an overt subject entity of a subordinate clause should be confined within the subordinate clause and should be different from a topic-subject entity in the matrix clause. Also, responses such as (12) reflect that the preference is not a rigid grammatical constraint, as mentioned earlier: depending on the parser or context, the subject-*ga* can be interpreted as the subject for matrix clauses, too.

5.2 Native English speakers

The results from the native English speakers are summarized in the table below.

Table 2 Native English Speakers’ Responses: Usages of Given Topic-*wa* and Subject-*ga*

	Responses (out of 39 total) (%)
Topic- <i>wa</i> (e.g. <i>tori-wa tobu toki</i>)	
(a) Topic- <i>wa</i> used for subordinate & matrix clauses (following constraint)	26 (66.7%)
(b) Topic- <i>wa</i> used for subordinate clause only (violating constraint)	10 (25.6%)
(c) Others	3 (7.7%)
Subject- <i>ga</i> (e.g. <i>tori-ga tobu toki</i>)	
(a) Subject- <i>ga</i> used for subordinate clause only (following preference)	23 (59.0%)
(b) Subject- <i>ga</i> used for subordinate & matrix clauses (violating preference)	14 (35.9%)
(c) Others	2 (5.1%)
<i>Note.</i> ‘Others’ included incomprehensible responses and/or blank responses.	

Regarding the native English-speaking participants' responses with topic-*wa*, out of the thirteen participants, five followed the constraint for all three critical items, three followed the constraint for two critical items, and the other five participants followed the constraint for only one critical item. Also, regarding the responses with subject-*ga*, only one participant followed the native Japanese-like preference for all three critical items, two participants followed the preference for two critical items, seven participants followed the preference for one critical item, and the other three participants did not follow the preference in any case.

5.2.1 Native English speakers: Topic-*wa*

As for the results for the given subordinate clause that followed each topic-*wa*, 27 responses out of 39 total responses (69.2%) obtained from all 13 participants used the given topic-*wa* for both subordinate and matrix clauses, following the constraint. An example response is shown below.

- (13) *Tori-wa tobu toki siawase-so desu.*
 bird-TOP fly when look.happy COP
 'When a bird_i flies, (it)_i looks happy.'

On the other hand, 10 responses out of 39 total responses (25.6%) obtained from 7 participants of the 13 total participants violated the constraint. They used the given topic-*wa* only for the subordinate clauses and presented new topics (null entity or overt entity with -*wa*) for the matrix clauses. Example responses are shown below.

- (14a) *Kuruma-wa hasitteiru aida-ni henzi-o kangaemasita.*
 car-TOP running while reply-ACC thought
 'While a car_i is running, (I/someone)_y thought of a reply.'
- (14b) *Kodomo-wa naitara mawari-no inu-wa furimuku.*
 child-TOP if.cry nearby-GEN dog-TOP turn.around
 'If a child_i cries, surrounding dogs_y turn around.'

These responses are considered to be violations of the constraint because the given topic-*wa* phrases (*kuruma-wa* 'a car', *kodomo-wa* 'child') in these responses above cannot stand as the matrix-clausal topics. This invalidity as a topic can be tested by excluding the subordinate clauses (**kuruma-wa henzi-o kangaeta* 'a car, (I/someone) thought of a reply', and **kodomo-wa inu-wa furimuku* 'a child, a dog turns around'), which are obviously ungrammatical sentences.

For the native English speakers' responses for the given topic-*wa*, a chi-square test was conducted to reveal whether there is a statistically significant difference between the participants' responses that followed and violated the constraint for *wa*. The responses categorized as 'Others' were excluded from the analysis. The results indicated that the responses that used the given topic-*wa* for both subordinate and matrix clauses (which followed the constraint) were significantly more frequent than the responses that used the given topic-*wa* for subordinate clauses only (which violated the constraint): [$\chi^2 = 7.111, p = .008$]. The analysis indicates that the native English speakers who are advanced-level Japanese learners have acquired the constraint: the topic-*wa* entity should be the topic for both subordinate clauses and matrix clauses.

An unpredicted finding from native English speakers' results was that out of the 26 responses that followed the constraint, only 13 of them (obtained from 10 participants) used the given

topics as topic-subjects for the matrix clauses. The other 13 responses used the given topic-*wa* as various non-subject topics. Example responses are shown below.

- (15a) *Kodomo-wa naitara tasukeru beki desu.*
 child-TOP if.cry help should COP
 ‘If a child_i cries, (we) should help him/her_i.’

- (15b) *Omise-wa simaru mae-ni takusan okyakusama-ga hairimasita.*
 store-TOP close before many customers-NOM entered
 ‘Before the store_i closed, many customers entered (there)_i.’

In (15a), *kodomo-wa* ‘child-TOP’ in the matrix clause is used as the matrix-clausal object as ‘(we) should help him/her (i.e. the child)’. Also, in (15b), *omise-wa* ‘store-TOP’ is used as a prepositional phrase in the matrix clause as ‘many customers entered (there (i.e. the store))’. The outcome that native English speakers used the given topic-*wa* as non-subject topics and as topic-subjects in an indifferent way is distinct from almost all native Japanese responses (66 responses out of 69 total responses) using the given topics as topic-subjects for the matrix clauses, as shown in (9). This difference is further tested in Experiment 2.

5.2.2 Native English speakers: Subject-*ga*

Regarding the native English speakers’ results for the given subordinate clauses that started with subject-*ga*, 24 responses out of 39 total responses (61.5%) obtained from 12 participants of the 13 total participants followed the preference. They included new (null or overt) subject entities for the matrix clause, which were different from the given subject-*ga* entities, as shown below.

- (16) *Omise-ga simaru mae-ni kukki-o kai-ni-iku.*
 store-NOM close before cookie-ACC go.to.buy
 ‘Before the store_i closes, (I/someone)_y goes to buy cookies.’

On the other hand, 14 responses out of 39 total responses (35.9%) from 10 participants of the 13 total participants did not follow the preference. The subject-*ga* in the given subordinate clauses was used as the matrix-clausal topic-subject as well. An example response is shown below.

- (17) *Tori-ga tobu toki habatakimasu.*
 bird-NOM fry when flap.wing
 ‘When a bird_i flies, (it)_i flaps its wings.’

A chi-square test was conducted to examine whether there is a statistically significant difference between the participants’ responses that followed and did not follow the native Japanese-like preference for the use of *ga*. The responses categorized as ‘Others’ were excluded from the analysis. The results exhibited that there was no significant difference between the responses that used the given subject-*ga* for subordinate clauses only (which followed the preference) and those that used the given subject-*ga* for both subordinate and matrix clauses (which did not follow the preference): [$\chi^2 = 2.189$ $p = .139$]. The analysis indicates that native English speakers who are advanced-level Japanese learners have not acquired the clausal preference for subject-*ga*. They did not know that if a subordinate clause includes an overt subject-*ga*, the topic-subject for the matrix clause should be a different entity.

non-subject in English speakers' responses. This possibility was tested in Experiment 2, which is reported in the next section.

6.2 Subject-ga

As for subject-*ga* items, the results indicated that native English speakers do not realize the preference that if a subordinate clause includes an overt subject-*ga*, then the subject for the matrix clause should be a different entity. In Experiment 1, many participating English speakers used the given subject-*ga* as the subject of matrix clauses as well as for subordinate clauses, as in (17) *Tori-ga tobu toki habatakimasu* 'When a bird_i flies, it_i flaps its wings.' The results may straightforwardly indicate that many participating native English speakers used the subject-*ga* as they would for subjects in English, namely, that subjects can be used in both matrix and subordinate clauses. English grammatical subjects are not restricted for subordinate clauses like Japanese subjects with *ga*.

7. EXPERIMENT 2

Experiment 1 elicited an unpredicted result. Native English speakers frequently used the given topic-*wa* phrases as non-subject topics in matrix clauses, while native Japanese speakers almost always used them as subject-topics. The previous section showed that the frequent occurrences of non-subject topics in native English speakers' responses might be because they employed the topic-*wa* phrases as non-subject topics in English (e.g. topic-objects) due to the presence of subordinate clauses that created a boundary between the topic-*wa* and the rest of the matrix clause. If this account is correct, then native English speakers would produce the topic-subject-*wa* more frequently when there is no boundary between the given topic-*wa* and the rest of the matrix clause. Experiment 2 examined this possibility: the research question is whether native English speakers interpret the given topic-*wa* as topic-subjects when the given topic-*wa* is not separated from the rest of the matrix clause more frequently than when the topic-*wa* is separated from the rest of the matrix clause (as in Experiment 1).

7.1 Participants

In total, 11 native English speakers from the University of North Carolina at Charlotte participated in this experiment. Similar to Experiment 1, they all were advanced-level Japanese learners, who had taken at least six semesters of Japanese classes, which consisted of three class meetings (3.5 hours) per week. Ten of them had resided in Japan as international students. Also, 15 native Japanese speakers from those communities participated in the same experiment as the control group.

7.2 Method

The items used in Experiment 2 were basically the same as the topic-*wa* items, like (8a) in Experiment 1. The difference was that the positions of the topic-*wa* phrases were either at the beginning of the sentence followed by subordinate clauses (identical to Experiment 1 items) or in the middle of the sentence, preceded by subordinate clauses. Examples are shown below. (All items used in the actual experiment are shown in Appendices.)

(19) Conditions for Experiment 2

- a. Topic-
- wa*
- placed separately from the rest of the matrix clause (= 8a)

Tori-wa tobu toki _____.
bird-TOP fly when

‘When a bird_i flies, _____. (A bird, when flying, _____.)’

- b. Topic-
- wa*
- NOT placed separately from the rest of the matrix clause

Tobu toki tori-wa _____.
fly when bird-TOP

‘When a bird_i flies, _____. (When flying, a bird _____.)’

The prediction is that items such as (19a) with intra-sentential subordinate clauses would exhibit frequent non-subject topics in matrix clauses, as observed in Experiment 1. In contrast, items such as (19b), in which subordinate clauses do not separate the given topic-*wa* and the rest of the matrix sentence, might produce less non-subject topics compared with (19a). These items were given to the participants as a written test, which included six critical items (like 18a and 19b) and another six distractor items. The distractor items were all mono-clause sentences. Participants filled in the blank in order to complete the sentence. The other aspects in the methods and procedures were the same as Experiment 1.

8. RESULTS OF EXPERIMENT 2

8.1 Native Japanese speakers (Control group)

The results from the native Japanese speakers are summarized in the table below. The table shows whether the given topic-*wa* was used as the topic-subject or the non-subject topic for the matrix clauses.

Table 3 Native Japanese Speakers’ Responses: Usages of Given Topic-*wa*

	Responses (out of 45 total) (%)
Topic- <i>wa</i> separated from the rest of the matrix clause (e.g. <i>tori-wa tobu toki</i>)	
(a) Topic- <i>wa</i> used as topic-subject	34 (75.6%)
(b) Topic- <i>wa</i> used as non-subject topic	8 (17.8%)
(c) Others	3 (6.7%)
Topic- <i>wa</i> NOT separated from the rest of the matrix clause (e.g. <i>tobu toki tori-wa</i>)	
(a) Topic- <i>wa</i> used as topic-subject	39 (86.7%)
(b) Topic- <i>wa</i> used as non-subject topic	3 (6.7%)
(c) Others	3 (6.7%)
<i>Note.</i> ‘Others’ included ambiguous responses and blank responses.	

8.1.1 Native Japanese speakers: Topic-*wa* separated from the rest of the matrix clause

In items such as (19a), the topic-*wa* is at the beginning of the sentence and separated from the rest of the matrix clause, with the presence of an intra-sentential boundary (subordinate clause) between them. For this type of item, out of total 45 responses from native Japanese speakers,

34 responses (75.6%) obtained from all 15 participants used the topic-*wa* as topic-subjects for matrix clauses. An example response is shown below.

- (20) *Kuruma-wa hasitteiru aida-ni tikyū-o yogositeiru.*
 car-TOP running while earth-ACC dirty
 ‘While a car_i is running, (it)_i dirties the earth.’

On the other hand, 8 responses (17.8%) obtained from 6 participants used the topic-*wa* as non-subject topics. An example response is shown below.

- (21) *Omise-wa simaru mae-ni sozī-o suru.*
 store-TOP close before cleaning-ACC do
 ‘Before a store_i closes, they clean (it)_i.’

A chi-square test compared the frequencies of their occurrences. The responses categorized as ‘Others’ were excluded from the analysis. The analysis indicated that responses that used the topic-*wa* as topic-subjects were significantly more frequent than responses that used the topic-*wa* as non-subject topics: [$\chi^2 = 16.095, p < .001$]. The outcome indicates that the topic-*wa* was used more as topic-subjects than as non-subject topics when positioned at the beginning of a sentence and separated from the rest of the matrix clause, even with the presence of an intra-sentential boundary (subordinate clause), similar to the results from Experiment 1.

8.1.2 Native Japanese speakers: Topic-*wa* NOT separated from the rest of the matrix clause

In the items such as (19b), the topic-*wa* is positioned in the middle of the sentence, not separated from the rest of the matrix clause. For these types of items, out of a total of 45 responses from native Japanese speakers, 39 (86.7%) obtained from all 15 participants used the topic-*wa* as topic-subjects, as shown in the example below.

- (22) *Hasiridasitara inu-wa hayai.*
 if.start.running dog-TOP fast
 ‘If a dog_i starts running, (it)_i is fast.’

In contrast, only 3 responses (6.7%) obtained from 3 different participants used the topic-*wa* as non-subject topics. An example response is shown below.

- (23) *Hasitteiru aida-ni kuruma-wa hirohakai-ga susundeiru.*
 running while car-TOP metal.fatigue-NOM ongoing
 ‘While a car_i is running, metal fatigue is incurred on (it)_i.’

The fact that 86.6% of responses used the topic-*wa* as topic-subjects is an obvious indication that the topic-*wa* was used more as topic-subjects than as non-subject topics when the topic-*wa* was not separated from the rest of the matrix clause.

In sum, the results imply that regardless of the position of the topic-*wa*, native Japanese speakers used it as topic-subjects more frequently than as non-subject topics.

8.2 Native English speakers

The results from the native English speakers are summarized in the table below.

Table 4 Native English Speakers' Responses: Usages of Given Topic-*wa*

	Responses (out of 33 total) (%)
Topic- <i>wa</i> separated from the rest of the matrix clause (e.g. <i>tori-wa tobu toki</i>)	
(a) Topic- <i>wa</i> used as topic-subject (like native Japanese speakers)	15 (45.5%)
(b) Topic- <i>wa</i> used as non-subject topic (unlike native Japanese speakers)	14 (42.4%)
(c) Others	4 (12.1%)
Topic- <i>wa</i> NOT separated from the rest of the matrix clause (e.g. <i>tobu toki tori-wa</i>)	
(a) Topic- <i>wa</i> used as topic-subject (like native Japanese speakers)	26 (78.8%)
(b) Topic- <i>wa</i> used as non-subject topic (unlike native Japanese speakers)	3 (9.1%)
(c) Others	4 (12.1%)
<i>Note.</i> 'Others' included sentences with topic- <i>wa</i> for subordinate clauses only (violating the constraint) and ambiguous responses.	

Regarding the native English-speaking participants' responses, when the given topic-*wa* was separated from the rest of the matrix clause, only one out of eleven participants used the topic-*wa* as a topic-subject (similar to native Japanese speakers) for all three given critical items. Three of the participants did so for two critical items, six did so for one critical item, and one never produced topic-subjects. Also, regarding the items with topic-*wa* not separated from the rest of the matrix clause, five participants used the topic-*wa* as a topic-subject for all three critical items, another five did so for two critical items, and one participant did so for only one critical item.

8.2.1 Native English speakers: Topic-*wa* separated from the rest of the matrix clause

For items such as (19a) that presented the topic-*wa* separated from the rest of the matrix clause, 15 responses (45.5%) obtained from 10 native English-speaking participants used the topic-*wa* as topic-subjects, as shown in the example below.

- (24) *Otosan-wa kaisha-ni itta ato okasan-ni denwa-sita.*
 father-TOP company-to went after mother-DAT phoned
 'After father_i went to the company, he_i called mother.'

Also, 14 responses (42.4%) obtained from 10 participants used the topic-*wa* as non-subject topics, as shown in the example below.

- (25) *Kuruma-wa hasitteiru aida-ni taiya-ga mawarimasu.*
 car-TOP running while tire-NOM roll
 'While a car_i is running, (its)_i tires roll.'

A chi-square test compared the occurrences of the responses that used the given topic-*wa* as topic-subjects and those that used the given topic-*wa* as non-subject topics. The responses categorized as 'Others' were excluded from the analysis. The analysis found that responses that used the topic-*wa* as topic-subjects and the responses that used the topic-*wa* as non-subject topics did not exhibit significant differences in their occurrences: [$\chi^2 = 0.310 \cdot p = .577$]. The outcome replicated the results from Experiment 1. Native English speakers used the sentence-initial topic-*wa*, which is separated from the rest of the main clause, either as topic-subjects or non-subject topics with roughly the same frequency.

8.2.2 Native English speakers: Topic-wa NOT separated from the rest of the matrix clause

For items such as (19b) that presented the topic-wa in the middle of the sentence preceded by a subordinate clause, 26 responses (78.8%) obtained from all 11 participants used the topic-wa as topic-subjects, as shown in the example below.

- (26) *Hasitteiru aida-ni kuruma-wa karuku narimasu.*
 running while car-TOP light become
 ‘While a car_i is running, (it)_i becomes lighter.’

On the other hand, only 3 responses (9.1%) obtained from 3 different participants used it as non-subject topics, as shown in the example response below.

- (27) *Tobu toki tori-wa utu-no-ga muzukasi.*
 fly when bird-TOP shooting-NOM difficult
 ‘When a bird_i flies, it is difficult to shoot (it)_i.’

Again, a chi-square analysis tested the statistical significance. The responses categorized as ‘Others’ were excluded from the analysis. The analysis revealed that responses that used the topic-wa as topic-subjects were significantly more frequent than responses that used the topic-wa as non-subject topics: [$\chi^2 = 18.241, p < .001$]. The outcome is distinct from the results of the other condition and Experiment 1, which separated the topic-wa from the rest of the matrix clause.

Overall, the analyses for the two conditions indicate that native English-speaking participants produce topic-subjects and non-subject topics at similar frequencies when the topic is separated from the rest of the matrix clause, but they produce more topic-subjects than non-subject topics when the topic is not separated from the rest of the matrix clause.

9. DISCUSSION

The results of the native Japanese-speaking control group did not show a significant difference between the conditions: the topic-wa is separated or not separated from the rest of the matrix clause. They produced topic-subjects more frequently than non-subject topics in both conditions. Regarding native English speakers’ results, they used the given topic-wa as the topic-subjects more frequently than as non-subject topics when the topic-wa was not separated from the rest of the matrix clause. In short, they interpreted the given topic-wa as a grammatical subject (topic-subject) in this condition. On the other hand, English speakers frequently produced non-subject topics when the topic-wa was placed sentence-initially and was separated from the rest of the matrix clause by the intervention of a subordinate clause (replicating Experiment 1). The sentence shows a similar sentence structure to an English sentence with a non-subject topic, in which a comma separates the non-subject topic and the rest of the sentence (i.e. *Tori-wa [tobu toki] utu-no-ga muzukasi* ‘The bird_i, [when flying,] it is difficult to shoot it_i’ and ‘Pizza_i [,] I ate it_i’). Therefore, it is possible that English speakers may associate a Japanese sentence including a topic-wa followed by a boundary (a subordinate clause) with an English sentence including a non-subject topic followed by a boundary (a comma). This association did not appear when a Japanese sentence included a topic-wa with no boundary between the topic-wa and the rest of the matrix clause.

10. GENERAL DISCUSSION

In the present study, Experiment 1 indicated that native English speakers who were advanced Japanese learners knew that the topic-*wa* cannot appear in certain subordinate clauses and that it has to be the topic of matrix clauses. However, their responses seem to have associated the Japanese topic-*wa* particularly with English non-subject topics. The results of Experiment 2 indicated that the frequent appearances of the non-subject-*wa* is dependent on the position of the topic-*wa*. When a subordinate clause separates the topic-*wa* and the rest of the matrix clause, English speakers tended to use the given topic-*wa* as non-subjects, unlike when the topic-*wa* is not separated from the rest of the matrix clause. In summary, while native English speakers have acquired the multi-clausal constraints for the topic-*wa*, their usage of it is possibly affected by the non-subject-topic construction in their first language, English.

Also, Experiment 1 indicated that native English-speaking learners of Japanese may have not acquired the restricted usage of subject-*ga* in multi-clause sentences. They used the given subject-*ga* as in English, frequently employing it in both matrix and subordinate clauses. A possible account for this outcome is that the participating native English speakers may have associated the subject-*ga* with English grammatical subjects. Further research is necessary to test the validity of this explanation.

The initial question that motivated the present study was whether native English speakers who are considered advanced-level learners of Japanese have acquired the different modes of use of the topic-*wa* and the subject-*ga*. In order to examine this issue, this study tested their acquisition of the multi-clausal constraint for the topic-*wa* and the preference for the subject-*ga*. The participating English speakers indeed realized that the topic-*wa* given in the experiment was the topic, not a mere subject, because they often used the given topic-*wa* as a non-subject in matrix clauses. Also, it is clear that the English speakers differentiated the subject-*ga* from the topic-*wa*, because they used the given subject-*ga* only as a grammatical subject in the matrix clause (when they used it) while they often used the topic-*wa* as non-subjects. However, their usage of the topic-*wa* and the subject-*ga* showed dissimilarities from native Japanese speakers.

11. LIMITATIONS

A clear limitation of this study is the small number of experimental items and participants. Experiments 1 and 2 provided three critical sentences per condition to each participant, and the numbers of native English-speaking participants were 13 and 11 for the experiments, respectively. Therefore, the present study may be treated as a pilot study, and the findings should remain suggestive. Further studies are necessary to confirm the conclusions found in this study.

Another possible limitation of the present study is seen in a native English speaker's response in Experiment 1, as shown below.

- (28) *Otosan-ga kaisha-ni itta ato keki-o katte-kite-kuremasita.*
 father-NOM company-to went after cake-ACC bought.come.give

‘After father_i went to the company, he_i came back with a cake for me (he bought a cake for me and came back).’

The above sentence does not follow the preference for the subject-*ga* because the subject-*ga* ‘father’ is used as the subject in both matrix and subordinate clauses. However, the above sentence might sound natural to native Japanese speakers (and thus this response was excluded

from the data analysis). This possible acceptability could be because, as Kuno (1978: 116) states, the non-preferred use of subject-*ga* can be allowed if the entire sentence is stated from the viewpoint of the omitted topic entity. This seems to be the case with the above sentence (28), which features the unique property of Japanese ‘giving’ verbs, *ageru/agemasu* and *kureru/kuremasu*, both of which mean ‘to give’. When a sentence that includes ‘to give’ is described from the viewpoint of the giver, *ageru/agemasu* is used. When the sentence is described from the viewpoint of the receiver, *kureru/kuremasu* is used. These verbs can be combined with another verb (e.g. *V-te-ageru/V-te-agemasu/V-te-kureru/V-te-kuremasu*) to mean ‘to give the favor of V-ing’ or ‘V as a favor’. In (28), (*katte-kite*)-*kuremasita* ‘gave (the favor of buying)’ indicates that the sentence is described from the viewpoint of the recipient (receiver of the favor) (Kuno 1978: 141), which in this case is ‘me (the speaker of the sentence)’.

In addition, below is another native English speaker’s response, which followed the topic-*wa* constraint.

- (29) *Kodomo-wa naitara onna-no-hito-ga amai-mono-o agemasu.*
 child-TOP if.cry woman-NOM sweets-ACC give

‘If a child_i cries, a woman gives him/her_i sweets.’

According to the constraint that a topic-*wa* should be the topic of both subordinate and matrix clauses, (29) should be acceptable: ‘child’ is the topic for the subordinate clause (‘if a child cries’) and for the matrix clause (‘a woman gives the child sweets’). However, this sentence might sound unacceptable to native Japanese speakers, and thus this response was excluded from the analysis. In this sentence, the giving verb *agemasu* ‘give’ indicates that the sentence is described from the viewpoint of the giver (i.e. ‘mother’), which is different from that of the topic (‘child’). Kuno (1978: 141) states that a topic entity tends to overlap an entity from whose viewpoint the sentence is described. This could be a reason for the possible unacceptability of sentence (29), in which the topic ‘child’ does not overlap ‘mother’, from whose perspective the sentence is stated. If *agemasu* ‘give’ in this sentence is replaced by *kuremasu* ‘give’, then this sentence would sound natural, because *kuremasu* indicates that it is stated from the viewpoint of the receiver (‘child’), which overlaps the topic. This article did not examine viewpoint-related issues, but it could be an interesting theme for new research: usage of the topic-*wa* and the subject-*ga*, depending on whether subordinate and matrix clauses are described from the same viewpoint or different viewpoints.

12. CONCLUSION

This study investigated usages of the Japanese topic-*wa* and subject-*ga* in multiple-clause sentences by native English speakers, who were considered advanced-level Japanese learners. This study is unique in that it focused on multi-clausal constraints for the topic-*wa* and the subject-*ga* in second-language acquisition studies of Japanese. The present study should contribute to understanding English speakers’ acquisition of the topic and the subject in Japanese.

ABBREVIATIONS

ACC	accusative
COP	copula
DAT	dative
GEN	genitive
NOM	nominative
TOP	topic

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APPENDIX 1

Items for Experiment 1

1. *Omise-wa/ga simaru mae-ni* _____.
store-TOP/NOM close before
'Before the store closes, ...'
2. *Otosan-wa/ga kaisha-ni itta ato* _____.
father-TOP/NOM company-to went after
'After the father went to the company, ...'
3. *Inu-wa/ga hasiridasitara* _____.
dog-TOP/NOM if.start.running
'If a dog starts running, ...'
4. *Kodomo-wa/ga naitara* _____.
child-TOP/NOM if.cry
'If a child cries, ...'
5. *Tori-wa/ga tobu toki* _____.
bird-TOP/NOM fly when
'When a bird flies, ...'
6. *Kuruma-wa/ga hasitteiru aida-ni* _____.
car-TOP/NOM running while
'While a car is running, ...'

APPENDIX 2

Items for Experiment 2

- (1a) Topic-*wa* followed by subordinate clause
Omise-wa simaru mae-ni _____.
store-TOP close before
'Before the store closes, ... (The store, before closing, ...)'
- (1b) Topic-*wa* preceded by subordinate clause
Simaru mae-ni omise-wa _____.
close before store-TOP
'Before the store closes, ... (Before closing, the store ...)'
- (2a) Topic-*wa* followed by subordinate clause
Otosan-wa kaisha-ni itta ato _____.
father-TOP company-to went after
'After the father went to the company, ... (The father, after going to the company, ...)'

- (2b) Topic-
- wa*
- preceded by subordinate clause

Kaisha-ni itta ato Otosan-wa _____.
company-to went after father-TOP

‘After the father went to the company, ... (Before going to the company, the father...)’

- (3a) Topic-
- wa*
- followed by subordinate clause

Inu-wa hasiridasitara _____.
dog-TOP if.start.running

‘If a dog starts running, ... (A dog, if starting to run, ...)’

- (3b) Topic-
- wa*
- preceded by subordinate clause

Hasiridasitara Inu-wa _____.
if.start.running dog-TOP

‘If a dog starts running, ... (If starting to run, a dog ...)’

- (4a) Topic-
- wa*
- followed by subordinate clause

Kodomo-wa naitara _____.
child-TOP if.cry

‘If a child cries, ... (A child, if crying, ...)’

- (4b) Topic-
- wa*
- preceded by subordinate clause

Naitara kodomo-wa _____.
if.cry child-TOP

‘If a child cries, ... (If crying, a child...)’

- (5a) Topic-
- wa*
- followed by subordinate clause

Tori-wa tobu toki _____.
bird-TOP fly when

‘When a bird flies, ... (A bird, when flying, ...)’

- (5b) Topic-
- wa*
- preceded by subordinate clause

Tobu toki tori-wa _____.
fly when bird-TOP

‘When a bird flies, ... (When flying, a bird...)’

- (6a) Topic-
- wa*
- followed by subordinate clause

Kuruma-wa hasitteiru aida-ni _____.
car-TOP running while

‘While a car is running, ... (A car, while running, ...)’

- (6b) Topic-
- wa*
- preceded by subordinate clause

Hasitteiru aida-ni Kuruma-wa _____.
running while car-TOP

‘While a car is running, ... (While running, a car...)’

APPENDIX 3

Distractors for Experiments 1 and 2

1. *Tanaka-san-to Honda-san-ga Sato-san-o* _____.
Mr. Tanaka-AND Mr. Honda-NOM Mr. Sato-ACC
'Mr. Tanaka and Mr. Honda ... Mr. Sato.'
2. *Okasan-wa imoto-to issho-ni* _____.
mother-TOP younger sister-WITH together
'Mother ...with her younger sister.'
3. *Neko-ga sakana-no atama-o* _____.
cat-NOM fish-GEN head-ACC
'A cat ... fish head.'
4. *Koppu-ga roka-no yuka-ni* _____.
cup-NOM hallway-GEN floor-NI
'A cup ... on the floor of the hallway.'
5. *Enpitu-wa gakkō-no tukue-ni* _____.
pencil-ACC school-GEN desk-NI
'A pencil ... on a school desk.'
6. *Uma-wa takai yama-ni* _____.
horse-TOP high mountain-DAT
'A horse ... to the high mountain.'