Journal of Pan-Pacific Association of Applied Linguistics, 22(1), 19-41.
https://doi.org/10.25256/PAAL.22.1.2

Acquisition of Contraction Constraint by Japanese Learners of English*

Yasuko Ito
Kanda University of International Studies

Ito, Y. (2018). Acquisition of contraction constraint by Japanese learners of English. *Journal of Pan-Pacific Association of Applied Linguistics, 22*(1), 19-41.

Second language (L2) acquisition research has explored the acquisition of various syntactic constraints by L2 learners, one of which is *wanna* contraction. However, there is still a very limited body of research regarding the acquisition of *wanna* contraction, both in first language (L1) and L2. The purpose of the study is to examine adult L2 learners' knowledge of *wanna* contraction by using a grammaticality judgment task. Ninety-three Japanese learners of English took the grammaticality judgment task which consisted of 24 experimental items and 24 fillers, with a context provided. The experimental stimuli consisted of six conditions: Object extraction (e.g., *Who do you want to/wanna advise?*), subject extraction (e.g., *Who do you want to/*wanna advise Mary?*), and no extraction (e.g., *Do you want to/wanna advise Mary?*), all of which were presented with and without contraction. Subject extraction with contraction was the only ungrammatical condition. The participants were divided into three groups according to their English proficiency as measured by the cloze test: High level (JPN-H), intermediate level (JPN-I), and low level (JPN-L). The same grammaticality judgment task was also given to 41 native speakers of English in order to collect the baseline data. The results showed a proportional increase of learners who were correctly differentiating the contraction patterns and the decrease of those who were overgeneralizing the patterns over the three proficiency groups. This suggests a developmental pattern among the L2 learners with respect to the contraction constraint.

Keywords: *wanna* contraction, grammaticality judgment

1 Introduction

Second language (L2) acquisition research has explored the acquisition of various syntactic constraints by L2 learners, one of which is *wanna* contraction. There is a significant amount of discussion about linguistic

* This study is based on my doctoral dissertation (Ito, 2005). The author would like to thank Prof. Robert Bley-Vroman, Prof. JD Brown, Prof. Bonnie Schwartz, Prof. William O'Grady, and Prof. Patricia Donegan for their valuable comments about the dissertation.

analyses of *wanna* contraction (e.g., Chomsky & Lasnik, 1977, 1978; Hudson, 2006; Lakoff, 1970; O'Grady, 2005; Postal & Pullum, 1978, 1982; Pullum, 1997), but there is a very limited body of research regarding its acquisition, both in first language (L1) and L2.

What is special about *wanna* contraction is exemplified in the following.

(1) a. Who do you want to/wanna advise?
b. Who do you want to/*wanna advise Mary?

In (1a), where *who* is the object of the infinitival verb *advise*, contraction of *want to* to *wanna* is possible (object extraction). On the other hand in (1b), where *who* is the subject of the infinitival verb *advise*, such contraction makes the sentence ungrammatical (subject extraction). A standard view about this contrast is formed within the generative framework, which claims that a case-marked trace intervening between *want* and *to* blocks the contraction in (1b) (Jaeggli, 1980). As abstract principles of Universal Grammar (UG) are believed to be involved in determining the conditions under which contraction can take place (e.g., Chomsky & Lasnik, 1977, 1978; Jaeggli, 1980), researchers in the field of language acquisition have explored the acquisition of this contraction constraint, that is, the knowledge about where contraction can take place, in order to determine whether the L1 and L2 acquisition is guided by UG principles. The logic behind the UG-based studies is as follows: If a particular linguistic structure is not instantiated in the learner's L1 (in the case of L2 acquisition) and cannot be derived in a straightforward way from the input, and yet the learner produces it with the target distribution or judges its grammaticality/ ungrammaticality correctly, it is concluded that the learner must have access to UG (White, 1989, 1990, 2003).

The purpose of this study is to examine adult L2 learners' acquisition of *wanna* contraction. The L2 learners' L1 was controlled by soliciting only Japanese learners of English. Japanese is a *wh*-in situ language. Thus, neither *wh*-movement nor its trace, which are the abstract grammatical representations considered to be involved in *wanna* contraction, are instantiated in their L1.

2 *Wanna* Contraction in L1 and L2 Acquisition Research

Among the various theoretical proposals about language acquisition, Chomsky's (1957, 1959) generative approach has been very influential and discussed extensively in L1 and L2 acquisition research. The generative approach claims that there are inborn principles (Universal Grammar, or UG) which enable us to acquire languages. While researchers working in the UG-framework generally agree that L1 acquisition is constrained by UG principles, its role in L2 acquisition has been controversial (Meisel, 1998).

The research about *wanna* contraction in L1 and L2 acquisition has also been the object of interest in UG-based studies. However, in contrast to a considerable amount of discussions about *wanna* contraction in theoretical linguistics (e.g., Chomsky & Lasnik, 1977, 1978; Lakoff, 1970; O'Grady, 2005; Postal & Pullum, 1978, 1982; Pullum, 1997), there are only a few studies of its acquisition.

A well-known study of *wanna* contraction in L1 acquisition is Crain and Thornton (1998). They tested two theoretical approaches to acquisition, namely Universal Grammar and the Input Matching Model, by examining children's acquisition of the contrast of *wanna* contraction given in (2) and (3) (The following sentences were taken from Crain and Thornton (1998, p. 177)).

(2) a. Who do you want to kiss?
    b. Who do you wanna kiss?
(3) a. Who do you want to kiss Bill?
    b. *Who do you wanna kiss Bill?

In the sentences in (2), a *wh*-element is base-generated in the object position of a verb, *kiss*, in the infinitival clause, and it moves to [Spec, CP]. Thus, these sentences are called object extraction questions (abbreviated here as OEQ, following Kweon, 2001a). In the sentences in (3), on the other hand, a *wh*-element is base-generated in the subject position of an infinitival verb, and thus they are called subject extraction questions (SEQ).

The Input Matching Model is an input-based model. The basic assumption is that children rely mainly on input to formulate their grammatical knowledge. According to this model, since children hear many instances of *wanna* contraction in OEQ, they also apply contraction to SEQ. The model predicts that children may first use *wanna* in SEQ as in (3b) because they are exposed to ample evidence of contraction in OEQ in the input, but its use gradually decreases as children are exposed to more input. Thus, a gradual change is expected in children's development of *wanna* contraction. In contrast, the UG approach does not predict such a gradual change. Instead, it assumes that whatever constraint prohibits sentences like (3b) is based on innate principles. Thus, it predicts that children will not produce SEQ with *wanna* contraction.

Crain and Thornton (1998) elicited oral data from children using a game with a puppet. They analyzed data that consisted of oral production from 14 children whose ages ranged from 3;6 to 5;5. The results showed that the large majority of OEQ was produced with contracted *wanna*, whereas the large majority of SEQ contained non-contracted *want to*. Although it is in fact optional to contract in OEQ, children chose to contract in most of the cases.

As a gradual decrease of contraction was not observed in SEQ in these data, Crain and Thornton concluded that the prediction of the Input

Matching Model was not confirmed. The data showed the pattern predicted by the UG approach instead.

Karinš and Nagy (1993) studied the interpretation of *wanna* contraction by adult native speakers of English. They found that 80% of those presented with *Which one would you want to help?* interpreted the question as SEQ, while only 32% of those presented with *Which one would you wanna help?* did so. This shows that the OEQ interpretation is favored over the SEQ interpretation when *want to* is contracted to *wanna*. However, 32% of the native speakers in their study interpreted *wanna* contraction as SEQ, which contradicts the linguistic theories' predictions. Karinš and Nagy attribute this interpretation to three possible reasons. One is simply a performance error. The second reason is that because participants were provided with a context preceding the test sentences, the sentences may have been pragmatically skewed toward the SEQ interpretation, suggesting pragmatics were overriding syntactic constraints. The last possible reason is the existence of "variable choice between existing rules" on *wanna* contraction within native speakers (p. 99). In case of *wanna* contraction, there are two possible rules, according to Karinš and Nagy: One is that a *wh*-trace behaves like a lexical NP and therefore blocks contraction, and the other is that a *wh*-trace behaves like PRO and does not block contraction. They propose that the native speakers might have chosen between these two rules.

One of the few L2 studies of *wanna* contraction is Kweon (2001a, 2001b, 2001c, 2001d). She used three tests—an elicited production test, an oral repair test, and a grammaticality judgment test—to collect data of *wanna* contraction in SEQ and OEQ from advanced Korean learners of English. She had four categorization groups depending on each participant's use/ acceptance of the contraction: conservative, correctly differential, backward, and overgeneralization. They are characterized in Table 1.

Table 1. Characterization of the Four Groups in Kweon (2001a)

		OEQ	
		want to	*wanna*
SEQ	*want to*	I. Conservative	II. Correctly differential
	**wanna*	III. Backward	IV. Overgeneralization

Those who are in the "conservative" category almost always use non-contracted *want to* or reject contracted *wanna* in both OEQ and SEQ. Ones in the "correctly differential" category allow *wanna* in OEQ, but not in SEQ. Those in the "backward" category behave in a completely opposite manner from the "correctly differential" group in that they allow the contracted form in SEQ, but not in OEQ. Lastly, ones in the "overgeneralization" category are likely to contract *want to* to *wanna* in both question types.

Among 104 Korean-speaking learners of English, the majority fell into the category of "overgeneralization," which is claimed to show no access to UG. Kweon concluded that there was no general support for UG availability in her participants.

Kweon and Bley-Vroman (2011) collected data from native speakers of English using the same three tasks as those in Kweon (2001a). The results indicated that no one fell into the category of "backward." However, there are overgeneralizing speakers, particularly in the oral repair and the elicited production data. As there is scarce experimental data on native speakers' performance on *wanna* contraction, Kweon and Bley-Vroman's work is crucial in interpreting the available L2 data.

Kweon's participants were all advanced learners of English, and yet the majority of them overgeneralized contraction. One possible factor for this finding is the age of onset of their English learning: Kweon's participants first learned English at around the age of 13. A sensitive period for the acquisition of the contraction constraint was studied by Park and Goldner (2005). They tested for knowledge of binding principles, subjacency, and *wanna* contraction in 16 Korean-American English speakers whose age of arrival in the US ranged from 5 to 19, as well as five native speaker controls. The nonnative speakers were divided into two groups—pre-puberty and post-puberty groups. Park and Goldner used a grammaticality judgment task as the instrument of measure. An interesting finding about *wanna* contraction was that there was no significant difference between the native speaker controls' and pre-puberty group's performance, but the post-puberty group's performance significantly differed from these two. The results also showed that the age of onset significantly negatively correlated with the knowledge of subjacency and with the contraction constraint, but not with the binding principles. Furthermore, Park and Goldner found a positive correlation in performance between subjacency and the contraction constraint. They speculate that the similar results for subjacency and contraction can be attributed to the fact that both of these are based on *wh*-movement, which the participants' L1, Korean, lacks. These results suggest that the age of onset is an important factor to consider when testing knowledge of *wanna* contraction, especially with L2 learners whose L1 lacks *wh*-movement.

L2 learners in both Kweon (2001a) and Park and Goldner (2005) had Korean as their L1. In contrast, Ellidokuzoglu (n.d.) collected data from 30 adult Turkish-speaking learners of English to study their knowledge of *wanna* contraction. This was in an EFL context, where the author claims the participants hardly hear *wanna* in the input. A grammaticality judgment task was used, but there were only six *wanna* items, three of which were ungrammatical. Due to the small number of items and absence of statistical tests, the results were not conclusive. However, more participants rejected ungrammatical *wanna* sentences than grammatical *wanna* sentences. This can

be a suggestive finding for the distinction between grammatical and ungrammatical *wanna* made by L2 learners.

An emergentist approach to *wanna* contraction is proposed by O'Grady (2005). His major claim about an emergentist approach is that "a simple processor, not Universal Grammar, lies at the heart of the human language faculty" (2005, p. 2). This approach assumes two systems: a conceptual-symbolic system and a computational system. The former system contains information about meaning and argument structure, while the latter system resolves argument requirements, or dependencies. When speakers or listeners process a language, they utilize both of these systems. What is crucial according to O'Grady is that there is no independent grammar per se. O'Grady (2005) attempts to account for contraction phenomena, including *wanna* contraction, using the emergentist approach. O'Grady, Nakamura, and Ito (2008) investigated *wanna* contraction in second language acquisition in the emergentist framework, which supports the claim made by O'Grady (2005) about *wanna* contraction. Rezaeian, Sadighi, Yamini, and Bagheri (2017) also examined *wanna* contraction in second language acquisition using the emergentist approach. In their study, Iranian EFL learners took a grammaticality judgment test and an elicited production test. The results showed that they were likely to contract *want to* in OEQ and SEQ when the two elements, *want* and *to*, are next to each other.

As the goal of the present study is to examine L2 learners' knowledge of contraction, rather than their knowledge of *wh*-movement, it becomes necessary to separate them out. However, test stimuli used in the grammaticality judgment in previous L2 studies about *wanna* contraction (e.g., Kweon, 2001a; Park & Goldner, 2005) do not seem to do so. Sentences used in those studies are object extraction with contraction (e.g., *Who do you wanna advise?*) and subject extraction with contraction (e.g., **Who do you wanna advise Mary?*), and this contrast involves not only whether or not the contraction constraint matters, but also the subject-object asymmetry in *wh*-movement. Earlier works on the acquisition of *wh*-movement by L2 learners have reported that a subject-object asymmetry is observed in L2 learners' judgments (e.g., Juffs & Harrington, 1995). Thus the distinctions made by the L2 learners in previous *wanna* contraction studies can also be attributed to the subject-object asymmetry instead of, or in addition to, the knowledge of the contraction constraint. The pair that enables us to examine knowledge of the contraction constraint is, therefore, subject extraction without contraction (e.g., *Who do you want to advise Mary?*) and with contraction (e.g., **Who do you wanna advise Mary?*). Although this involves additional asymmetry, that is the existence of contraction, whether or not this matters can be examined by comparing object extraction cases which differ only in terms of the existence of contraction. If there is no difference between the object extraction without contraction (e.g., *Who do you want to advise?*) and with

contraction (e.g., *Who do you wanna advise?*), it can be an independent evidence supporting a claim that the existence of contraction does not matter.

In an attempt to investigate the issue, the following two research questions are formulated:

1. Do Japanese learners of English and native speakers of English differ in their grammaticality judgments of *wanna* contraction?
2. Is there a developmental pattern observed in the Japanese learners' acquisition of *wanna* contraction?

For the first question, it is hypothesized that the judgments of the Japanese learners, especially those with lower English proficiency, will show different patterns from those of the ENG group, indicating that they do not have the contraction constraint based on previous literature. The second question concerns the proportion of learners in the four categories defined by Kweon (2001a): "conservative," "correctly differential," "backward," and "overgeneralization." If we observe, from lower to higher proficiency groups, an increase in the proportion falling into "correctly differential" and a proportional decrease falling into "overgeneralization," then such a developmental pattern would constitute evidence for acquisition of the contraction constraint.

3 Method

3.1 Participants

One group of participants consisted of 103 Japanese-speaking learners of English (JPN). Of these, 87 were recruited at a university in Hiroshima, in the southwestern part of Japan, while the remaining 16 were recruited at a university in Hawaii. Because one of the purposes of the present study was to examine the effect of the learners' proficiency level on their performance, participants with different proficiency levels were needed. This motivated me to recruit participants not only in Japan, an EFL context, but also in Hawaii, an ESL context.

Among these participants, however, some were omitted from the data analysis. Two were omitted because their cloze test (Brown, 1980) score was outside the range set for the data analysis. An additional eight were omitted because their accuracy rate on comprehension questions given with the experimental items was below 80%.[1] In total, 10 participants were omitted from the data, which left 93 participants. These 93 were divided into three

[1] These comprehension questions were given in another task, a self-paced reading task, which is not discussed in this paper.

groups according to their English proficiency as measured by the cloze test: High level (JPN-H), intermediate level (JPN-I), and low level (JPN-L). The number of participants in each group was 33, 30, and 30 respectively.

The other group of participants were 49 native speakers of English (ENG), who provided the baseline data. They were recruited in Hawaii and the majority was undergraduate or graduate students at a university in Hawaii. The following participants were omitted from the data for the same reasons as those given for the JPN group: four based on the cloze test results, three based on the results from the comprehension questions. Another participant was omitted because this participant was likely to reject most conditions in the grammaticality judgment task. In total, eight participants of the ENG group were eliminated from the data, leaving 41 native speakers of English for the data analysis. Participants' demographic information and their cloze test scores are given in Table 2.

Table 2. Background Information of the JPN and ENG Groups

		JPN			ENG
		JPN-H	JPN-I	JPN-L	
n		33	30	30	41
Age	*M*	23.1	21.6	22.5	29.0
	SD	4.0	3.6	5.2	10.5
Male		11	6	7	25
Female		22	24	23	16
Have you studied linguistics?	Yes	30	21	15	17
	No	3	8	15	24
	N/A	0	1	0	0
Cloze test score	*M*	36.8	27.9	20.2	44.6
	SD	3.5	1.5	3.4	3.5
	Score range	32-46	26-31	15-25	35-49

Note. The maximum score of the cloze test was 50.

Although the ENG group participants' regional dialects varied, there seemed to be little effect of region on *wanna* contraction, except liberal dialect (Postal & Pullum, 1978; Pullum, 1997). Postal and Pullum (1982) point out the existence of liberal dialect, which permits *wanna* contraction even in subject extraction. The speakers of the liberal dialect will be identified in the present study.

3.2 Stimuli

Although the central interest of this study is sentences with *wanna* contraction, it is also crucial to examine the acquisition of sentences without contraction. The logic behind this is that even though native speakers reject subject extraction with *wanna* contraction (e.g., **Who do you wanna advise*

Mary?) and accept object extraction with contraction (e.g., *Who do you wanna advise?*), their rejection may be simply due to the processing difficulty in subject extraction (e.g., Juffs & Harrington, 1995). In order to find this out, judgments of both subject and object extraction without contraction should be examined. Furthermore, as control conditions, questions without extraction, both with and without contraction, are included in this study. In summary, the following six conditions were prepared in this study.

Table 3. Summary of Conditions

Condition	Extraction	Contraction	Sentence
A	Object	No	Who do you want to advise at the training session next week?
B	Object	Yes	Who do you wanna advise at the training session next week?
C	Subject	No	Who do you want to advise Mary at the training session next week?
D	Subject	Yes	* Who do you wanna advise Mary at the training session next week?
E	None	No	Do you want to advise Mary at the training session next week?
F	None	Yes	Do you wanna advise Mary at the training session next week?

The selection of embedded verbs should also be considered carefully for the following reasons. First, since the experimental stimuli consist of both object and subject extraction sentences, the likelihood of a filler (i.e., *wh*-word) to be either an object or a subject of an embedded verb should be balanced. For example, in the case of a sentence *Who do you want to teach English?*, the probability of a subject interpretation and that of an object interpretation may be different across readers. This variation may affect their judgments. Second, the embedded verb should be one which is clearly a transitive so that an intransitive interpretation is avoided. For instance, in the case of a sentence like *Who do you want to meet?*, both object extraction (therefore transitive) and subject extraction (therefore intransitive) interpretations are possible (e.g., *I want to meet John* for object extraction; *I want John and Mary to meet* for subject extraction.). Having both possibilities makes the judgment of its counterpart with contracted *wanna* unclear; in the case of *Who do you wanna meet?,* if one interprets this sentence as an object extraction, the sentence must be grammatical, whereas with the subject extraction interpretation the sentence becomes ungrammatical. In other words, depending on which interpretation the reader takes, the grammaticality judgment also differs. Considering these issues, I

chose verbs that easily permit animate subject and object, such as *advise*, *interview*, and *congratulate*.

There were 24 experimental items prepared for each condition (24 items x 6 conditions=144 items), and a Latin square design was applied so that the same participant would not see the same item more than once in the task. For instance, one participant saw only Condition A for item No.1 (*Who do you want to advise at the training session next week?*), and not the other conditions of item No.1 (e.g., *Who do you wanna advise at the training session next week?* in Condition B). Similarly, another participant saw only Condition B for item No.1 (*Who do you wanna advise at the training session next week?*), and not the other conditions of the same item. Each experimental item was preceded by a context in the experiment. The provision of a context is necessary in order for the grammatical sentences to be accepted. Not only does the provision of contexts solve this problem, it also reduces the effect other factors may have on judgments, such as being unable to think of possible contexts. Contexts were identical for Conditions A and B, for Conditions C and D, and for Conditions E and F.

As fillers, sentences with other types of connected speech, such as *gonna* (*going to*), *gotta* (*got to*), *-in'* (*-ing*), and *'ll* (*will*), were prepared. As in the experimental items, both *wh*-questions and Yes-No questions, in both contracted and non-contracted forms, were included. Half of the fillers were *wh*-questions and the other half were Yes-No questions. Half of the fillers were grammatical and the other half were ungrammatical. Every filler was also accompanied by a context.

3.3 Materials and tasks

There were four tasks in this study: a listening task, a grammaticality judgment task, a cloze test, and a background questionnaire.

3.3.1 Listening task

Given that participants would see a written form of contraction in the grammaticality judgment task, it was crucial to ensure that they were familiar with those written forms. This listening task was prepared to let participants link the sound to the written form of *wanna* and other connected speech forms that served as distractors.

The genre of narration was chosen for this task because a written script of a narration is likely to contain forms used in a spoken language. A narration script was prepared by the researcher. The general context of the narration was that two characters, named Audrey and David, are working at a travel agency. A female native English speaker was recorded reading aloud the instructions of the listening task as well as the narration itself. The recording took place in a recording room to avoid any noise. Participants

were asked to listen twice to the recorded reading of the narration while looking at the written text. (See Appendix for the script.)

3.3.2 Grammaticality judgment task

The grammaticality judgment task consisted of 24 experimental items (4 items x 6 conditions) and 24 fillers. There were six lists prepared for this task, and each list contained 24 experimental items, which were in a differently randomized order across the six lists. The fillers were also included in each list, therefore each list consisted of 48 items in total. An example of an item is given below.

General context: Audrey and David are working at a travel agency.

Context :	There will be a training session for new employees next week. Audrey wants to advise one of the new employees at the session. David is curious to know who it will be, and asks her:
David :	Who do you want to advise at the training session next week?
QUESTION :	*How does this sentence sound?* *perfect okay strange awful no opinion*
SUGGESTED IMPROVEMENT :	(Participants rewrite the sentence here if they have judged the sentence to be "strange" or "awful," or had "no opinion.")

This task was a paper-and-pencil off-line task. Participants were asked to read aloud the test stimuli as they saw each of them on the paper. *Wanna* contraction is a phenomenon observed in spoken language, and therefore even though readers see a written form of *want to* (i.e., non-contracted form) on a sheet of paper, they may unconsciously read it as *wanna* (i.e., contracted form). This misreading can affect their grammaticality judgment, and it is for this reason that participants were asked to read them aloud. Participants were instructed to circle their judgment ("perfect," "okay," "strange," "awful" or "no opinion") and rewrite the sentence if they judged it to be "strange" or "awful," or had "no opinion."

The reliability of the material was calculated for each list using Cronbach alpha. Table 4 presents the value of Cronbach alpha.

Table 4. Reliability of the Six Lists of the Grammaticality Judgment Task (ENG Group's Responses Only)

List	Cronbach alpha
1	.61
2	.42
3	.17
4	.00
5	.43
6	.39

As I expected the ENG participants to correctly answer all the items, the value should be close to zero due to less variability. However, all the lists except List 4 have a value larger than zero. There are two possible reasons for this. One is that these values were obtained from all the ENG participants, including liberal dialect speakers. As documented in the linguistic literature, liberal dialect speakers are those who are likely to accept subject extraction with contraction (Condition D in the present study), and thus their response is expected to differ from non-liberal dialect speakers. This may have caused variability in the data to some extent. Another possible reason is the coding system that I used in order to calculate the reliability of the material. I regarded "perfect" and "okay" as acceptance and "strange" and "awful" as rejection, and converted the accuracy of the response to one (correct) or zero (incorrect). All the items responded to as "no opinion" were coded as incorrect. However, some participants seemed to have distinguished grammatical sentences from ungrammatical sentences using only "perfect" and "okay": "perfect" for grammatical sentences and "okay" for ungrammatical sentences. Thus this categorical coding may not have been faithful enough to study the participants' response accuracy.

3.3.3 Cloze test

This test was used as the proficiency measurement because it is often claimed that cloze tests measure overall language proficiency. I used a cloze test designed by Brown (1980). The text was a reading passage about the progress of mankind designed for intermediate ESL learners. Every seventh word was omitted, and the participants were instructed to fill in each blank with a word that fits in the context. The test was scored based on all possible answers provided on the answer key sheet. The reliability was calculated using Kuder-Richardson formula 21 (K-R21), and the value was 0.91.[2] Thus this test has relatively high reliability. This test has also been used by other researchers, and its test validity and reliability has been confirmed.

[2] This K-R21 was calculated based on the combined cloze test scores from ENG and JPN groups.

3.3.4 Background questionnaire

The background questionnaire asked questions about participants' biographic information, L2 learning experience, and so on.

3.4 Procedure

The researcher met with the participants individually. Since the experiment actually included another task, it took the ENG group participants for about one and a half hours to complete all tasks, and slightly longer for the JPN group in Hawaii.[3] Participants first read a consent form and signed two copies of the form so that they could keep one. The first task was a listening task. They were asked to listen to a recording while looking at a written script. They next took the cloze test, which was followed by the grammaticality judgment task. Lastly, they answered the background questionnaire. There was no time limit for all tasks, therefore participants worked on the tasks at their own pace.

The procedure for the JPN group participants in Japan was slightly different due to their tight class schedule that limited their availability. The one-on-one meetings had to be limited to a single 45-minute session with each. As a compromise, when the participants in Japan met with the researcher individually, they were asked to work on the listening task and the background questionnaire, and then to work on the remaining tasks (the cloze test and the grammaticality judgment task) on their own as homework. Since the ENG group and the remaining JPN participants in Hawaii completed all the tasks in one session, and hence there was not much time separating the listening task and the grammaticality judgment task, the participants in Japan were also instructed to complete the cloze test and the grammaticality judgment task on the same day as they took the listening task, or on the following day at latest. They were also told to complete the cloze test first, then the grammaticality judgment task, so as to make the order of tasks equivalent to the rest of the participants.

3.5 Analyses

Before examining the judgment data, all participants were categorized into four groups according to adaptations made on Kweon's (2001a) method as discussed previously. The data of the liberal dialect speakers (i.e., native speakers in "overgeneralization") were treated separately from the remaining non-liberal dialect speakers (i.e., native speakers in "conservative" and "correctly differential"). To make the results comparable between the ENG group and the JPN groups, the data of the L2 learners in the

[3] The experiment included a self-paced reading task, which is not discussed in this paper.

"overgeneralization" category were likewise treated separately from the others. It was expected that more participants would fall into the category of "overgeneralization" as documented by previous studies (e.g., Kweon, 2001a). It is crucial to examine their results carefully because overgeneralizing learners are the expected characteristics of L2 learners in *wanna* contraction. For this reason, two separate analyses were conducted on those in the "conservative" and "correctly differential" categories, on the one hand, and on those in the "overgeneralization" category on the other hand.

For the second research question, two two-way repeated-measures ANOVAs with a 3 × 2 design were run on the grammaticality judgment results: one on "conservative" and "correctly differential" combined, and the other on "overgeneralization." The dependent variable was the grammaticality judgment rating. The independent variables were extraction with three levels (object extraction, subject extraction, and no extraction) and contraction with two levels (no contraction and contraction) as within subject variables. Because two ANOVA tests were used, the alpha level was adjusted using the Bonferroni adjustment. The alpha level of .05 was divided by the number of ANOVAs, that is two, and it was set at .025 for each test (.05 ÷ 2 = .025).

4 Results

4.1 Categorization of participants

I adapted Kweon's (2001a) method of categorization, as shown in Table 1. In order to calculate the score, a judgment for each item was transferred to a number (*perfect*=4, *okay*=3, *strange*=2, *awful*=1). The score used in this method was the total score of their judgment per condition, with the maximum score for each condition being 16 (4 (maximum acceptability rating of each item) x 4 (the number of items per condition) = 16). To determine to which category one belongs, the criterion of acceptability was set at 80% (score 12.8). In this categorization process, I examined the data from Conditions B (object extraction with contraction) and D (subject extraction with contraction) and did not take into consideration the other conditions (Conditions A, C, E and F). For example, when one participant's total score was 15 for both Conditions B and D, this indicates that the acceptance rate of both conditions was above 80% (15/16 x 100 = 93%) and that the participant was likely to accept both conditions. Thus the participant was categorized in Category IV ("overgeneralization"). Table 5 provides the results. Category IV, "overgeneralization," is where liberal dialect speakers among native speakers fall.

Table 5. Categorization of Participants According to the Adaptation of Kweon's Method

	I. Conservative	II. Correctly differential	III. Backward	IV. Overgeneralization
ENG	17	19	0	5
JPN-H	9	13	2	9
JPN-I	9	8	1	12
JPN-L	8	6	2	14

There were five native speakers who were categorized in Category IV (overgeneralization), and so they will be considered to be speakers of a liberal dialect. Their data will be treated separately from the remaining data because their judgments are different from what the linguistic literature in general proposes.

As Table 5 demonstrates, the ratio of correctly differentiating learners increases as proficiency advances, with a decrease in the ratio of overgeneralizing learners. This suggests the existence of development within the JPN group.

4.2 Grammaticality judgment

The results of the remaining 36 non-liberal dialect speakers will be reported first. Table 6 gives the descriptive statistics of their judgment ratings. The items rated as "no opinion" were excluded from the analysis.

Table 6. Descriptive Statistics of ENG Group's Grammaticality Judgment Ratings (Non-Liberal Dialect Speakers Only)

	A	B	C	D	E	F
	OE	OE	SE	SE	NE	NE
	want to	*wanna*	*want to*	*wanna*	*want to*	*wanna*
n	36	36	36	36	36	36
M	3.41	3.31	3.13	2.33	3.56	3.33
SD	0.38	0.42	0.61	0.43	0.34	0.42
Skew./*SE*	-0.82	0.87	-0.82	0.41	-0.87	0.72

Note. Maximum rating = 4. OE = object extraction. SE = subject extraction. NE = no extraction. *want to* = with contraction. *wanna* = without contraction.

Tables 7, 8 and 9 give the descriptive statistics of the three JPN groups' grammaticality judgment ratings. The items rated as "no opinion" were excluded from the analysis.

Table 7. Descriptive Statistics of JPN-H Group's Grammaticality Judgment Ratings

	A	B	C	D	E	F
	OE	OE	SE	SE	NE	NE
	want to	*wanna*	*want to*	*wanna*	*want to*	*wanna*
n	33	33	33	33	33	33
M	3.55	3.52	3.28	2.74	3.67	3.67
SD	0.39	0.44	0.61	0.86	0.38	0.39
Skew./*SE*	-0.68	-0.44	-1.66	-1.17	-2.02	-1.80

Table 8. Descriptive Statistics of JPN-I Group's Grammaticality Judgment Ratings

	A	B	C	D	E	F
	OE	OE	SE	SE	NE	NE
	want to	*wanna*	*want to*	*wanna*	*want to*	*wanna*
n	30	30	30	30	30	30
M	3.48	3.44	3.28	3.23	3.47	3.47
SD	0.44	0.47	0.51	0.48	0.50	0.46
Skew./*SE*	-1.09	-1.12	0.16	0.63	-1.56	-1.07

Table 9. Descriptive Statistics of JPN-L Group's Grammaticality Judgment Ratings

	A	B	C	D	E	F
	OE	OE	SE	SE	NE	NE
	want to	*wanna*	*want to*	*wanna*	*want to*	*wanna*
n	30	30	30	30	30	30
M	3.53	3.39	3.22	3.17	3.48	3.45
SD	0.39	0.40	0.46	0.58	0.48	0.42
Skew./*SE*	0.16	-0.33	-1.77	-0.95	-1.53	0.16

Table 7 shows that there are no significant issues with the normality of the data distribution in the JPN-H group, as all of its skewedness values (except for that of Condition E) fall within the acceptable range of ±2. The skewedness value of Condition E is -2.02 but is still close to -2, the lower limit. The JPN-I's and JPN-L's data also confirm that there are no problems with skewedness, as all of their values fall within the acceptable range.

Mean grammaticality judgment ratings from the ENG and the JPN groups are summarized in Figure 1. Compared to the ENG group, the three JPN groups are more likely to rate Condition D higher.

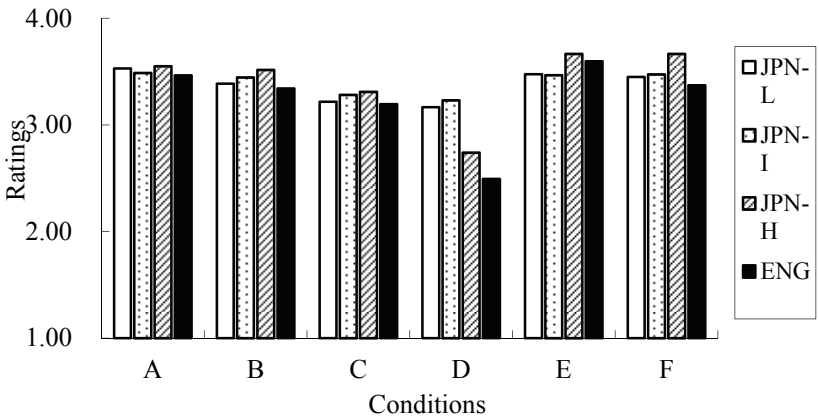

Figure 1. Mean grammaticality judgment ratings by the ENG and three JPN groups

While JPN-H and ENG groups rated Condition D relatively lower than the other conditions, JPN-L's and JPN-I's ratings of Condition D was similar to those of other conditions, especially Conditions A, B, and C. The decline of ratings from the two JPN groups with lower proficiency (JPN-L and JPN-I) to JPN-H suggests a developmental pattern within the JPN participants.

To make the results comparable between the ENG group and the JPN groups, those in "backward" were discarded from the data analysis. In order to ensure that those in the "conservative" and "correctly differential" categories are behaving like ENG non-liberal dialect speakers, and that those in "overgeneralization" are behaving like ENG liberal dialect speakers, ANOVA tests were run.

Table 10. Two-Way Repeated-Measures ANOVA Table for the JPN Group's Grammaticality Judgment Ratings ("Conservative" and "Correctly Differential" Only)

Source	*SS*	*df*	*MS*	*F*	*p*	*η2*	power
Extraction	21.29	1.16	18.42	37.37*	.000	0.25	1.00
Error	29.63	60.11	0.49			0.35	
Contraction	3.02	1	3.02	15.50*	.000	0.04	0.97
Error	10.14	52	0.19			0.12	
Extraction × Contraction	4.21	1.32	3.18	13.62*	.000	0.05	0.98
Error	16.06	68.80	0.23			0.19	

Note. *p< .025.

Both main effects and the extraction by contraction interaction effect were significant. Figure 2 also suggests the existence of the interaction effect.

The difference in rating between object extraction and subject extraction and between no extraction and subject extraction is greater in the contracted conditions (wanna) than in the non-contracted conditions (want to). But the effect size for this interaction is very small (.05).

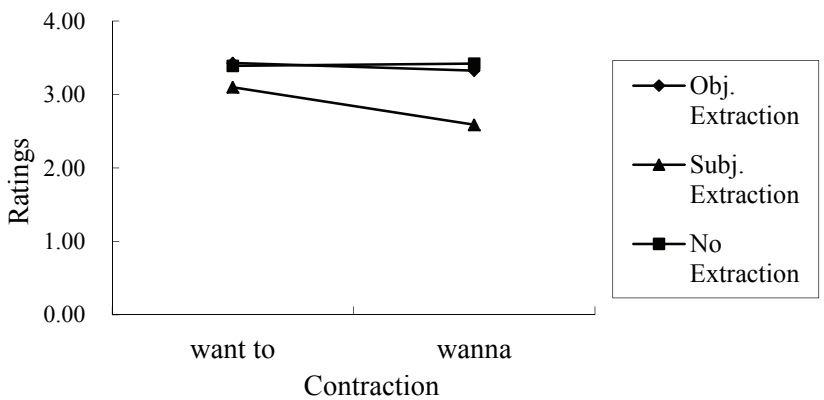

Figure 2. JPN group's mean grammaticality judgment ratings ("conservative" and "correctly differential" only)

Nine post-hoc comparisons, with the alpha level adjusted to .003 (.025 ÷ 9 = .003), revealed that there was a significant difference between C and D (t(52)=4.19, p=.000), B and D (t(52)=6.16, p=.000), and D and F (t(52)= –6.64, p=.000), but not between A and B (t(52)=2.27, p=.027), E and F (t(52)= –0.66, p=.510), C and E (t(52)= –3.04, p=.004), A and E (t(52)=0.91, p=.367), and B and F (t(52)= –2.33, p=.024). This confirms the assumption that those Japanese learners in the "conservative" and "correctly differential" categories rate Condition D significantly lower than the other conditions, while rating the other conditions relatively similarly. Therefore, they are behaving in a similar manner to ENG non-liberal dialect speakers. However, it should be noted that another significant difference was also obtained between A and C (t(52)=3.95, p=.000). In other words, although both Conditions A and C are grammatical, Condition C was judged significantly lower than Condition A. This may be partly due to the processing difficulty of Condition C items compared to those of Condition A.

Table 11. Two-Way Repeated-Measures ANOVA Table for the JPN Group's Grammaticality Judgment Ratings ("Overgeneralization" Only)

Source	*SS*	*df*	*MS*	*F*	*p*	*η2*	power
Extraction	0.56	1.65	0.34	4.13	0.028	0.05	0.65
Error	4.58	55.96	0.08			0.43	
Contraction	0.08	1	0.08	1.62	0.212	0.01	0.24
Error	1.60	34	0.05			0.15	

Extraction × Contraction	0.39	2	0.20	3.75	0.028	0.04	0.67
Error	3.56	68	0.05			0.33	

Note. *p< .025.

With respect to the JPN participants in "overgeneralization," no effect was significant as shown in Table 11. The effect size was also small for each effect. As the power was not large enough, these non-significant differences cannot be confirmed, but this result may suggest that the overgeneralizing learners rated all the conditions more or less similarly.

5 Conclusion

The first research question addressed the Japanese learners' grammaticality judgments of *wanna* contraction, and especially whether or not their judgment patterns differ from the English speakers'. The overall judgment pattern was different between the two groups in that the Japanese learners were more likely to accept Condition D (subject extraction with contraction). This finding was compatible with earlier studies on *wanna* contraction by L2 learners (e.g., Kweon, 2001a). The second research question concerned the development of knowledge of *wanna* contraction by Japanese learners. The proportional increase of "correctly differential" learners and the decrease of "overgeneralization" learners over the three proficiency groups, as shown in Table 5, suggest that there is a developmental pattern among the L2 learners with respect to the contraction constraint.

However, we should be aware of the fact that there were also L2 learners who were correctly differentiating Conditions C and D. The question is, how do they come to know about the constraint? What distinguishes those in the "correctly differential" category and those in the "overgeneralization" category? One is the overall English proficiency because there seems to be a correlation between the proficiency and the possession of the constraint. However, the causal relation is still in question. Another is input. Kweon & Bley-Vroman (2011) claim that L2 learners come to know that *wanna* takes a bare infinitive as they are exposed to more input. Another possible explanation concerns processing. It can be posited that, from a processing point of view, the reason they allow contraction in subject extraction can be due to the fact that they do not posit a trace, i.e., processing problem. This processing issue can be explored using an on-line task, such as a self-paced reading task or an eye tracker.

The present study found a proportional increase of learners who were correctly differentiating the contraction patterns and the decrease of those who were overgeneralizing the patterns over the three proficiency groups.

This finding suggests a developmental pattern among the L2 learners with respect to the contraction constraint.

This study sheds light on the acquisition of the contraction constraint by Japanese learners of English. The effect of L1 transfer was not an issue in this study, but it is certainly an interesting topic to investigate in the future. The L2 learners' L1 in this study was Japanese, which is a *wh*-in situ language. But how do learners whose L1 is similar to English judge *wanna* contraction? Further investigations on the topic will help identify the source of difficulty in the acquisition of *wanna* contraction by L2 learners.

References

Brown, J. D. (1980). Relative merits of four methods for scoring cloze tests. *The Modern Language Journal, 64*(3), 311-317.

Chomsky, N. (1957). *Syntactic structures*. The Hague, The Netherlands: Mouton.

Chomsky, N. (1959). A review of B. F. Skinner's *Verbal Behaviour*. *Language, 35*(1), 26-58.

Chomsky, N., & Lasnik, H. (1977). Filters and control. *Linguistic Inquiry, 8*(3), 425-504.

Chomsky, N., & Lasnik, H. (1978). A remark on contraction. *Linguistic Inquiry, 9*(2), 268-274.

Crain, S., & Thornton, R. (1998). *Investigations in Universal Grammar: A guide to experiments on the acquisition of syntax and semantics*. Cambridge, MA: MIT.

Ellidokuzoglu, H. (n.d.). *The role of innate knowledge in first and second language acquisition*. Retrieved March 9, 2004, from http://maxpages.com/thena/Innate_Knowledge_in_L1_and_L2

Hudson, R. (2006). Wanna revisited. *Language, 83(3)*, 604-627.

Ito, Y. (2005). *A psycholinguistic approach to wanna contraction in second language acquisition.* Unpublished doctoral dissertation, University of Hawaii at Manoa.

Jaeggli, O. (1980). Remarks on *to* contraction. *Linguistic Inquiry, 11*(1), 239-246.

Juffs, A., & Harrington, M. (1995). Parsing effects in second language sentence processing. *Studies in Second Language Acquisition, 17*(4), 483-516.

Karinš, K., & Nagy, N. (1993). Developing an experimental basis for determining grammaticality. *Penn Review of Linguistics, 17*, 93-100.

Kweon, S.-O. (2001a). *The acquisition of English contraction constraints by advanced Korean learners of English: Experimental studies on wanna contraction and auxiliary contraction.* Unpublished doctoral dissertation, University of Hawaii at Manoa.

Kweon, S.-O. (2001b). The contraction phenomenon and L2 acquisition: An experimental study by Korean learners of English. *Ohak Yonku, 37*, 203-220.

Kweon, S.-O. (2001c). Does UG make a correct prediction about L2 acquisition? *Proceedings of the Annual Boston University Conference on Language, 25*, 425-435.

Kweon, S.-O. (2001d). How much do adult L2 learners contract and in what way? *Journal of Pan-Pacific Association of Applied Linguistics, 5*(1), 47-55.

Kweon, S.-O., & Bley-Vroman, R. (2011). Acquisition of the constraints on wanna contraction by advanced second language learners: Universal grammar and imperfect knowledge. *Second Language Research, 27(2)*, 207-228.

Lakoff, G. (1970). Global rules. *Language, 46*, 627-639.

Meisel, J. M. (1998). Revisiting Universal Gramar. In NFLRC (Ed.), *UG access in L2 acquisition: Reassessing the question (NFLRC NetWork #9)* [HTML document]. Honolulu: University of Hawai'i, Second Language Teaching & Curriculum Center. Retrieved May 10, 2004 from the Word Wide Web: http://www.nflrc.hawaii.edu/NetWorks/NW09

O'Grady, W. (2005). *Syntactic carpentry: An emergentist approach to syntax*. Mahwah, NJ: Lawrence Erlbaum Associates.

O'Grady, W., Nakamura, M., & Ito, Y. (2008). Want-to contraction in second language acquisition: An emergentist approach. *Lingua, 118(4)*, 478-498.

Park, S., & Goldner, D. (2005). A sensitive period for the acquisition of English syntax by Korean learners of English. *Korean Journal of Applied Linguistics, 21*(1), 37-76.

Postal, P. M., & Pullum, G. K. (1978). Traces and the description of English complementizer contraction. Linguistic *Inquiry, 9*(1), 1-29.

Postal, P. M., & Pullum, G. K. (1982). The contraction debate. *Linguistic Inquiry, 13*(1), 122-138.

Pullum, G.. K. (1997). The morpholexical nature of English *to*-contraction. *Language, 73*(1), 79-102.

Rezaeian, M., Sadighi, F., Yamini, M., Bagheri, M. S. (2017). Investigating "wanna" contraction through an emergentist approach among Iranian EFL learners applying usage-based model of language acquisition. *Lingua, 196*, 55-73

White, L. (1989). *Universal grammar and second language acquisition*. Amsterdam: John Benjamins.

White, L. (1990). Second language acquisition and universal grammar. *Studies in Second Language Acquisition, 12*(2), 121-133.

White, L. (2003). On the nature of interlanguage representation: Universal Grammar in the second language. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp. 19-42). Oxford: Blackwell.

Appendix
Transcript of the Listening Task

Instruction: Below, you will find a script of a narration about the life of a woman working at a travel agency in Hawaii. Because this is a script, it is written as it is spoken. Therefore, you sometimes find a casual style of spelling, unlike what you see in formal writing.

For example:

I am	→	I'm
you have	→	you've
because	→	'cause
working	→	workin'
enjoying	→	enjoyin'
going to	→	gonna
want to	→	wanna
got to	→	gotta
let me	→	lemme

This first task is prepared for you to get used to the casual style of spelling because in the second task, you will also see the casual style of spelling.

Please look at the script, and then listen to the recording of the script through the headphones. While you are listening to the recording, please follow the written script. The recording will be repeated twice. If you have any questions, please let the researcher know now.

Hi! My name is Audrey, and I'm working at a travel agency located in Hawaii. I started workin' for the travel agency 'cause I love travelin'! I wanna visit different countries, meet many people, communicate with 'em, and learn more about their cultures! Of course, I also love to try foods from different countries. Let me tell you about my life here in Hawaii. As you'll see, I'm havin' a wonderful time working at the travel agency, and I'm enjoyin' my life here in Hawaii.

My life here is extremely busy, but I'm enjoyin' it so much! I like the weather here, 'cause it's so beautiful! It sometimes rains, but when it's sunny, you can see the clear blue sky! If you wanna swim in the ocean in August, you sure can! If you wanna swim in December, no problem! You can swim in the ocean all year round—can you imagine that?

Do you want to see the whales and turtles swimmin' in the ocean? Do you want to see active volcanoes? How about beautiful tropical trees and flowers? Do you want to see them? Lemme tell you: If you do, you've gotta come to Hawaii! You're gonna experience all of these here in Hawaii. It's an amazingly beautiful place! If you've never visited Hawaii, you've got to come here at least once! People come to Hawaii 'cause they want to experience something different from

their ordinary life.
Now, I'm gonna tell you a little bit about my work. It's a tough job. Sometimes I've got to come to work even on weekends. But the best thing is that you get to learn a lot about many places in the world: about places to visit, about the people livin' there, about the foods, and about their cultures! This is what I've always liked to do, so I'm enjoyin' my work so much! I want to visit as many places as I can.

Now, I wanna know about your life, too, so lemme hear your stories!

Yasuko Ito
Affiliation: Kanda University of International Studies
Address: 6-30-1-308 Okusawa, Setagaya-ku, Tokyo 158-0083, Japan
Phone: +81-90-4386-3850
Fax: +81-3-6670-0089
E-mail: yasukoi@kanda.kuis.ac.jp

Received: March 30, 2018
Revised: June 10, 2018
Accepted: June 16, 2018