

外国人日本語学習者のための発音能力テストの開発について

Examining Japanese L2 Learners' Pronunciation: A Japanese Oral Proficiency Test

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1. Introduction

This note reports an elicitation paragraph developed in order to evaluate the pronunciation of Japanese by L2 learners. We are not aware of any existing test evaluating the pronunciation of Japanese L2 learners: Most of the available Japanese proficiency tests provide a judgment based mainly on syntactical aptitudes. These tests evaluate reading, writing and listening competences but they do not consider the oral competence and especially pronunciation. The current oral proficiency test was created to fit the needs of this gap. Despite the fact it focuses more on segmental properties of Japanese than supra-segmentals, it constitutes a useful tool to examine learners' pronunciation, at least at the segmental level. The content of the test is yet subject to some further change in order to provide a more comprehensive evaluation of supra-segmentals.

This test is based on the principle of the Speech Accent archive (henceforth SAA, Weinberger, 2015), which is a database of speech samples of English native and non-native speakers providing an overview of the various accents of English-

speakers from diverse origins. The SAA consists of an elicitation paragraph that contains the inventory of the consonants, vowels and clusters of American English. These principles were used for Japanese in the development of the oral proficiency test introduced in this paper.

2. The Test

The current test includes the inventory of segments and possible segment sequences in Japanese. In order to fit the phonological properties of Japanese language and the needs of the present research, it contains words that allow to examine supra-segmentals as well. The items to be evaluated were chosen based on a comprehensive review of the literature on both Japanese phonology (Vance, 1987, 2008; Labrune, 2006) and its acquisition by L2 learners (Ayusawa, 2003; Hirata, 2005, 2009, 2015; Toda 2003 *inter alia*). in order to identify the phonological properties of Japanese language that are essential for speech comprehensibility, intelligibility and naturalness. As such, the following features can be evaluated using the test: (a) segments: all of the CV combinations (based on

the *hiragana* syllabary), (b) mora timing-related: geminate consonants and long vowels, (c) vowel devoicing, (d) pitch accent, (e) mora nasal assimilation and (f) some other difficult phonemic contrasts unique to Japanese (see 3.6).

The paragraph was written in the style of the textbooks used in Japanese classes (e.g. *Minna no nihongo*, 3A NETWORK, 2012). For the paragraph to be understandable to learners of any level, it is based on an everyday life situation and uses simple grammar forms and words than can mostly be found in the N5 and N4 levels of the Japanese Language Proficiency Test (JLPT, The Japan Foundation/Japan Educational Exchanges and Services). Fourteen words that do not belong to that list were also included in order to test some specific items (e.g. minimal pairs, rare CV sequences), among which five loanwords from English. The test targets learners that have already reached an intermediate level of proficiency, because in the very first stages of their acquisition they still have to acquire the basics of Japanese grammar before focusing on pronunciation. Most of the words used in this paragraph are therefore supposed to be known to all learners. In case they still don't feel comfortable with some of the words, the experimenter might want to ease them using a glossary.

(1) Annotated version of the elicitation paragraph (underlined words: long vowels, framed words: geminates, characters in bold: mora nasal)

今日は自**転**車で広いデパートへ買い物に行きました。ピルの地下 1階 から 9階 までお店が沢**山**あります。屋根に 一本 の旗が そと と揺れています。洋服屋でセールを やっ て いた ので、ワ ン ピースとキャミソールを 一着 ずつ買いました。ワ ン ピースはベージュで、肩に緑の 葉っぱ とリボンが付いています。次に、文 房具屋で、青い

ン、雑 誌と消しゴムを 買 っ た 時、店 員さんに飴をもらいました。病気で 一 緒に 行 け な か っ た 娘に子供服とおもちゃの売り場で大好きな象のぬいぐるみを 買 っ て あげました。そして、北陸**新**幹線の 切 符 を買いました。来週は 天 と娘と 三 人で金沢を旅行する予定です。その後は、美容院に予約を取りに 行 っ た ら、ず っ と 会 え て い な か っ た 友達に 偶 然 会いました。昔二人で中国へ留学したことは、一 生の思い出です。二人で牛乳入りの紅茶を飲みながら、学 校で好き だ っ た 授業の話に夢中になりました。帰る時は、外は雨が 降 っ て い ま し た。傘は 持 っ て い な く て、そのままじゃちょっと帰り づ ら か っ た ので、バ ー でビールを飲みながら雨が止むのを待ちました。

Learners will be able to choose the writing style they feel the more comfortable with between a *hiragana* only version and a version including *kanji*. Indeed, the focus of the test is not the reading competence and using Chinese characters introduces a new level of difficulty, which might distract learners from the real purpose of this test, that is to evaluate pronunciation. On the other hand, Chinese characters in Japanese provide useful information on word boundaries that is also used by native speakers for reading accuracy. Spaces are used in the paragraph in order to retain word boundary information and ease the reading. This writing style is not used in regular Japanese writing, but can be found in books for Japanese children.

3. Methodology

This section is devoted to the presentation of the methodology used when writing the paragraph above (1). Specifically, this section accounts for the choice of the items examined and provides an explanation of the words in the paragraph that can

be used for their evaluation.

3.1 Segments

The CV sequence was chosen as the basic unit for this test (vs. segment in SAA). All the possible CV sequences in the Japanese *hiragana* syllabary were included, as well as their voiced counterparts with diacritics (e.g. /ka/ vs. /ga/) and the palatalized CjV sequences (e.g. /kja/). On the other hand, diachronically “new” sequences (e.g. /ti/) were not included because of their low frequency: they only occur in some recent borrowings. Moreover, as じ and ぢ in standard Japanese are neutralized and pronounced as the alveolo-palatal affricate [dzi], only the former, and most frequent in Japanese, was included (see the general orthographic reform of 1946). Palatalized sequences appearing mainly in mimetics (onomatopoeia) were also excluded.

3.2 Mora Timing

The mora-timed nature of Japanese language is well known for being a challenge in terms of acquisition for L2 learners (Dupoux, Kakehi, Hirose, Pallier, & Mehler, 1999, p.1577). Specifically, the segmental length contrasts of vowels (short vs. long see 3.2.1) and consonants (singleton vs. geminate see 3.2.2) have been widely pointed out in the literature for being arduous for learners (Hirata, 2009, 2015; Toda, 1998, 2003 *inter alia*). In Japanese, these contrasts have a high functional load (King, 1967; Wang, 1967; Brown, 1988; Munro & Derwing, 2006), which means that their accurate pronunciation is crucial for intelligibility and comprehensibility in communication with native speakers. It appears essential for a Japanese proficiency test to evaluate this property, and as such the present test examines both contrasts types.

3.2.1 Vocalic length contrast

The phonological inventory of Japanese has five vocalic phonemes: /a/, /i/, /u/, /e/, /o/, which

contrast in terms of length with their counterparts /a:/, /i:/, /u:/, /e:/, /o:/ (Labrune, 2006; Vance, 1987). The minimal pairs in (2a) and (2b), illustrate the Japanese vocalic length contrast. Words containing a long vowel in the elicitation paragraph are underlined in (1).

- (2) a. /to:ru/ “to go through” vs. /toru/ “to take”
b. /bi:ru/ “beer” vs. /biru/ “building”

3.2.2 Consonantal length contrast

Gemination appears in all the Japanese lexical strata but is subject to phonotactic restrictions as only obstruents can be geminated. In particular, the native and Sino-Japanese lexical strata have only voiceless obstruent geminates, while voiced ones occur only in loanwords. In native words, they are found mainly in inflectional forms (3), and seldom word-internally. In the Sino-Japanese vocabulary they emerge as a result of the concatenation of two Sino-Japanese morphemes (4).

- (3) /kau/ + /ta/ → /katta/
“buy” + past marker → “bought”

- (4) /gaku/ + /ko:/ → /gakko:/
“learn” + “building” → “school”

The minimal pairs in (5a) and (5b), which can also be found in the test, illustrate the Japanese consonantal length contrast.

- (5) a. /kata/ “shoulder” vs. /katta/ “bought”
b. /soto/ “outside” vs. /sotto/ “softly”

The elicitation paragraph contains both inflectional geminates and word-internal geminates from the native and Sino-Japanese strata, yet only voiceless geminates were included owing to the marked nature of voiced ones. Indeed, besides the fact that they are found exclusively in loanwords, they also

exhibit a strong tendency to undergo devoicing in native pronunciation. Words in the paragraph were chosen in order to include all types of obstruent geminates: stops, fricative and affricate, as illustrated in (1) with words in **frame**.

Finally, although phonological sonorant geminates are not relevant in Japanese, the geminate /n/ emerges phonetically as the moraic nasal followed by an /n/. The test contains one sonorant geminate:

(6) /sannin/ “three persons”

3.3 Mora Nasal

The moraic nasal has a special status in Japanese. Similarly to the first part of a geminate obstruent, it constitutes one mora although it is not vocalic, and is also one of the two only codas that are allowed in Japanese phonotactics. Its unique nature makes its acquisition a challenge for learners: In particular, the moraic nasal is one mora long and as such, it has the same length as a CV sequence. It also systematically undergoes place assimilation with the following consonant as illustrated in (7). Lastly, it is realized intervocalically as a nasalized vowel (Labrune, 2006).

(7) $n \rightarrow m / _ p, b, m$
 $n \rightarrow \eta / _ k, g, \eta$

In order to evaluate nasal place assimilation by learners, words containing the mora nasal followed by various segments were chosen for the elicitation paragraph. They can be found in **bold** in (1).

3.4 Vowel Devoicing

Vowels in Tokyo Japanese undergo devoicing when between two voiceless consonants or word finally when preceded by a voiceless consonant (8). Although this process occurs mainly for the high vowels /u/ and /i/, vowel devoicing can also sometimes be observed with /o/ and /a/ (e.g.

/kokoro/ “heart” or /kakashi/ “scarecrow”) but with more restrictions: that is, when the target segment is unaccented and in a reduplication environment only (Labrune, 2006).

(8) $V \rightarrow \check{V} / [-\text{voice}] _ [-\text{voice}], [-\text{voice}] _ \#$
 e.g. /takusan/ “a lot” \rightarrow [tak \check{u} san]

A few words with a phonological environment triggering devoicing in both word-final and word-internal position are included in this test. Specifically, devoicing is supposed to occur in all the non-past forms /masu/ and /desu/ and in the past form /masita/. Triggering environments are also found in the following words: /takusan/ “a lot”, /jo:fuku/ “clothes”, /daisuki/ “love”, /hutari/ “two persons” for /u/ and /sosite/ “then”, /mukasi/ “long ago” for /i/.

3.5 Pitch Accent

Japanese has a lexical pitch accent, as opposed to English’s stress. Pitch accent is characterized by variations in the fundamental frequency and more specifically by a drop in pitch, which indicates the syllable that bears the accent (that is, the one preceding the drop). In Japanese, the accent is either high (H) for the accent-bearing unit or low (L) (Vance, 2008). Words follow pitch patterns and can be unaccented (LHHH = pitch raise on the second mora, no pitch fall), or accented on any mora (LHLL, LLHL etc.). The challenging aspect of Japanese pitch accent acquisition for L2 learners has been studied extensively (see Ayusawa (2003) for a comprehensive review). Its high functional load is reflected in the variety of minimal pairs it is involved in, as illustrated in (9) where the accent bearing unit is indicated with an apostrophe following a vowel. An accurate pronunciation of pitch accent is therefore essential for intelligibility and comprehensibility.

- | | | | |
|-----|---------|----|-------------|
| (9) | /ka'ki/ | HL | “oyster” |
| | /kaki'/ | LH | “fence” |
| | /kaki/ | LL | “persimmon” |

Because the present Japanese oral proficiency test is designed to examine specifically segmental aspects and length contrasts, items evaluating explicitly pitch accent are limited. However, an accurate pitch accent is not trivial and as such pitch accent accuracy throughout the paragraph can obviously be evaluated with the present test. The paragraph also includes the following minimal pair (10), but a separate test might be required for a comprehensive evaluation of pitch accent.

- | | | | |
|------|--------|----|---------|
| (10) | /a'me/ | HL | “rain” |
| | /ame'/ | LH | “candy” |

3.6 Other Difficulties

Lastly, some of the segment sequences that might constitute a challenge for learners were also included in the elicitation paragraph. The three items in (11), (12) and (13) were chosen based on impressionistic observations from the author's own experience as an L2 learner and might therefore not be relevant for learners with a different L1 background.

- (11) Vowel sequence: /aoi/ “blue”
 (12) Affricate sequence: /dzutsu/ “one of each”
 (13) /CjV/ vs. /Ci+/jV/ contrast: /bjo:ki/ “sick” vs. /bijo:in/ “hairdresser”

4. Conclusion

This paper reports the development of an oral proficiency test for Japanese L2 learners. The test itself is based on the principle of the SAA (Weinberger, 2015), and is an elicitation paragraph including the inventory of Japanese segments. The choice of the phonological characteristics of

Japanese to be evaluated in the test was made based on a comprehensive review of the literature on Japanese phonology and its acquisition by L2 learners. As such, phonological features specific to Japanese and well-known for being challenging for learners and for having a high functional load were included in the paragraph. I believe that it will constitute a useful tool to evaluate the pronunciation of Japanese L2 learners, a competence that has been left aside until now. The present test might still evolve in coming days in order to improve the quality of learners' pronunciation evaluation. Concerning the question of its actual use and of the rating of learners' performance, they will be discussed in a future paper.

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