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Aural Perception and Descriptive Production by L1: Methodological Application

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Aural perception depends on the first language (L1) when an image of perception is expressed in written language. This study confirmed that linguistic reflections under phonological and morphological restrictions led to large differences in expressions between English and Japanese. Cultural reflections by language group should also be considered. Foreign language teachers should use such linguistic and cultural differences more explicitly to motivate learners. For example, many Japanese young people like cartoons. Japanese students can get involved in learning customary expressions in English through the use of cartoons in the classroom.

音声知覚は、その印象を書き言葉で表すと第一言語に依るところが大きい。そのなかには音韻的、形態的な制約という言語学的側面がある。また、言語話者間の文化的な側面も考慮すべきである。外国語教師は学習者を動機づけるために、そのような言語学的・文化的な差異をもっと活用すべきである。今回、日本語・英語間の知覚・表出差を強調し応用した具体的方策について述べる。特に、日本の若者がマンガ好きであることを利用して、英語慣用表現の練習に使用する。

Introduction

Different languages have different aural image labels, more or less. The same sound may be perceived differently by a student learning a language and a native speaker of that language. This study shows some differences in aural perception by L1 and presents ideas for a methodological application of those differences.

As a typical example of aural perception and descriptive production, Japanese speakers most naturally express the sound of a dog barking as “wan-wan”. On the other hand, French speakers consider the sound of a dog barking as “ouah-ouah”. In 2002 and 2003, 124 Japanese examinees in their first year of university rated the degrees of likeness in the bark of a dog with six written terms on a scale of 1 to 5. The surveyed terms were “wan-wan”, “bow-wow”, “ouah-ouah”, “meng-meng”, “gaf-gaf”, and “haf-haf”. Each term corresponds to

a typical expression for the bark of a dog in Japanese, English, French, Korean, Russian, and Czech, respectively. The terms written in Katakana characters, a phonetic scripting system of Japanese, were listed on a chart, and the rating sheet was given to each examinee. A rating of 5 indicated the highest likeness to the bark of a dog, and a rating of 1 indicated the lowest likeness.

As shown in Figure 1, the Japanese examinees tended to feel that "ouah-ouah" had a very low likeness to the bark of a dog. This kind of perception is deeply internalized in the mind. These differences, as shown in Figure 1, are historical properties of languages. In particular, many customary expressions are phonetically and morphologically unique, so it is hard to choose customarily acceptable expressions unless the learners know the vocabulary or patterns in the target language (Steinberg *et al.*, 2001, p. 383–84). Learners, especially at the beginning level, will sometimes coin unacceptable expressions based on their recognition of similar expressions in their first language and their extended ideas for universality. Such transfer or overgeneralization is certainly a barrier for foreign language learning.

Phonological experiment

The next survey was an acoustic experiment to obtain basic data concerning aural perception. The source consisted of six pitches of pure tones from 250 to 3,175 Hz to cover the main audio frequency range of humans (Liberman *et al.*, 1952; Liberman *et al.*, 1967; Asai *et al.*, 2003). Examinees were to listen to the six sounds, each of which had a length of 2 seconds, and then transcribe the sounds in their L1s. The full strings of the produced expressions were analyzed according to simplified grouping of phonemes of the six cardinal vowels covering five equidistant-peripheral and one interior articulatory areas and

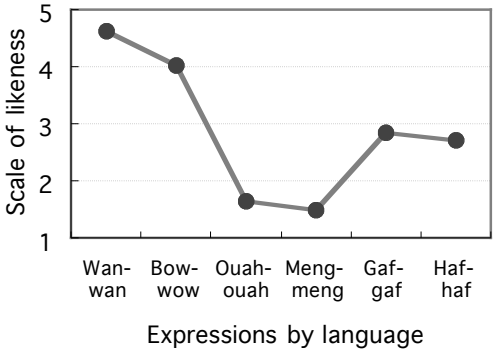


Figure 1. Mean degrees of likeness of expressions to the bark of a dog by Japanese speakers.

corresponding to the second popular vowel system of languages in the world (Crothers, 1978); two semi-vowels (the glides /y/ and /w/); twenty consonants, including the uvular nasal (/N/) and the syllable-final moraic obstruent (the doubled consonant symbol /Q/) in Japanese, and the two interdentals in English; and the vowel prolongation (the prolonged sound symbol [-]) for Japanese (Kindaichi, 1978, p. 105–108; Komatsu, 1981, p. 23–24; Fromkin & Rodman, 1998, p. 233). In addition, every palatalized consonant in Japanese was dealt with as the sequence of a consonant, a semi-vowel, and a vowel. This simplified grouping is thought to have appropriateness necessary in this evaluation with respect not only to pure tones but also to speech in several languages because of the scope of categorized perception (Peterson & Barney, 1952; Palermo, 1978, p. 86–89).

As a result, the average number of phonemes in the expressions produced by the 76 English speakers was 4.1 (the standard

deviation SD = 1.7), and that by the 650 Japanese speakers was 2.9 (SD = 0.9). Many of the Japanese productions consisted of three phonemes: a consonant, the following vowel, and the prolongation of the vowel or the uvular nasal at the end. In contrast, the English examinees had much greater difficulty in producing the expressions than the Japanese according to their responses throughout the experiment, and many English speakers wrote the same vowel repeatedly, for example, "wee" and "eeeiii". The appearance ratios of word-initial phonemes, which could best reflect the sound symbolism of input sounds (Komatsu, 1981, p. 100; Cruse, 1986, p. 34–35; Rhodes, 1994, p. 276–92; Takebayashi, 1996, p. 89–90; Asai *et al.*, 2003), in the obtained productions are shown in Figure 2. The English examinees used vowels and semi-vowels frequently in the word-initial position. On the other hand, the Japanese examinees used consonants for the most part. As for the other L1s' characteristics, the data for the 29 Korean speakers showed that their characteristics were between the Japanese and the English. Note that the number of Spanish speakers was only six, and the number of Tagalog speakers was also six. The Tagalog language has a five-vowel system similar to Japanese. On the whole, there was a certain degree of dependency on the sound pitch. However, there has so far been no significant influencing factor other than L1 in the profiles of the examinees.

Psycholinguistic experiments

A set of psychological experiments was conducted to find aural images in common situations. In the first experiment, 35 Japanese college students were instructed to write down on paper one or more general expressions that they would commonly use for the sound of a wind. The word-initial phonemes were then extracted from the produced expressions.

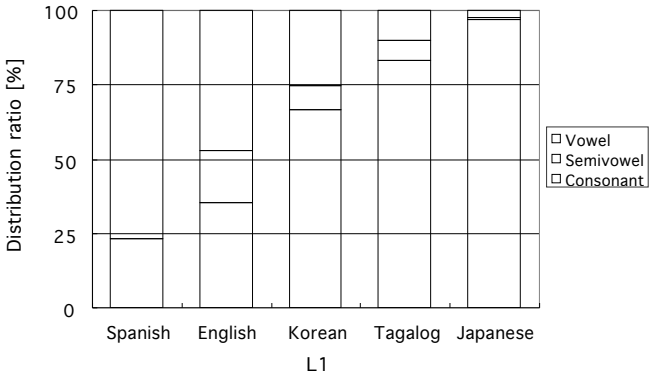


Figure 2: Word-initial phonemes in descriptive productions by L1

As shown in Figure 3, the Japanese examinees frequently produced /h/—the /h/ sound was a bilabial member in Old Japanese—and the bilabial phonemes /ɸ (or F)/, /p/, and /b/ in the word-initial position. This tendency agreed with previous lexical studies of sound symbolism (Heo, 1989; Hamano, 1998, p. 40–43). The Japanese speakers had almost no production with semi-vowel-initial and consonant-final expression, for example, "woo" and "whoosh", both of which frequently appeared among 31 English examinees. In short, Japanese speakers are likely to use the labial sounds in the word-initial position, but English speakers do not. This phonological domain is the first point in the learners' awareness of differences between the L1 and the target language.

The second experiment was conducted to discover the differences in the aural images of a tone signal in an answering

machine. Thirty-four Japanese students were allowed to write plural answers for how those expressions sound naturally to themselves. The resultant frequent expressions were "pii" and "puu" at 89% and 6%, respectively. Remarkably, all the productions had the open syllable structure starting with /p/. By contrast, 27 English examinees used "beep" most frequently. Many of the other expressions also had the closed syllable structure. The two frequent phonemes in the initial position were /b/ and /d/ at 59% and 26%, respectively. This morphological domain is the second point in the learners' awareness of differences in the two languages.

In everyday life, we can observe that Japanese speakers habitually coin onomatopoeic expressions to enrich their narration under the phonological framework, such as the limited choices of phonemes and their characteristic combination patterns. They can easily understand such coinage based on shared sound symbolic strata. As mentioned above, Japanese speakers tend to use the labial sounds, and thus they are likely to apply the tendency to literature and utterance in English. This implies, for instance, that Japanese speakers could say "pee" in a message to prompt native-English-speaking callers to start recording on an answering machine. Since customary expressions often consist of a small number of phonemes in every language, such a coincidence may occur. This kind of misuse could potentially cause a cultural conflict. This cultural domain is the third point in the learners' awareness of differences.

The third experiment involved a scratching sound or the state of something being scratched. From open-ended responses, 35 Japanese examinees used /b/ in the initial position, such as in "boribori", 45% of the time. The next most common response was /p/, which appeared 38% of the time, typically in "poripori". This

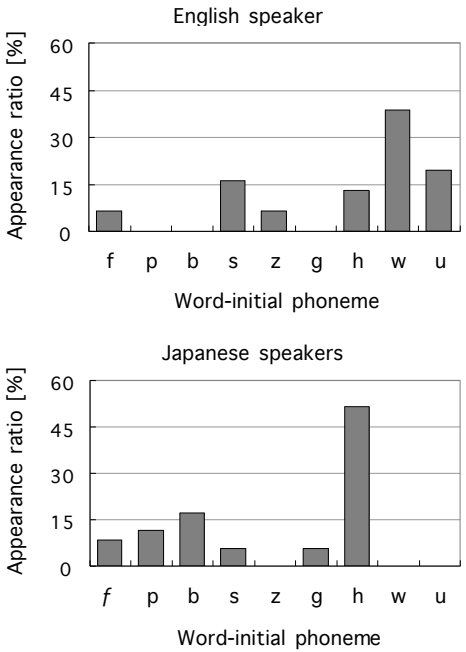


Figure 3: Phoneme choices between English and Japanese speakers

result supports the idea that Japanese speakers tend to produce adverbs of repetitive patterns that are likely to appear in mimetic words (Hamano, 1998, p. 12–20). On the other hand, English speakers are likely to use nouns or verbs, such as "scratch", to express the aural images (Izumi, 1976, p. 118–19). One can thus observe major differences also in the parts of speech, and this factor is important for learners. This grammatical domain is the fourth point in the learners' awareness of differences.

Development of lesson plans

It was found that Japanese speakers showed different tendencies in aural perception from English speakers when the characteristics were measured in the literal output. Those differences are an impediment to the establishment of a mental lexicon between a sound form and its meaning. This section introduces a methodological application of customary expressions.

Many cartoons contain supportive representation to effectively show aural images relating to sound or action. Cartoons can be good resources in the classroom, as many young Japanese enjoy them. Carefully designed cloze, matching, multiple-choice, and open-ended questions can motivate students. The Japanese students will learn in which situations the English counterparts are used.

An example of a matching exercise concerns the word "scratch". Many beginning-to-intermediate learners in Japan have no idea about the application of the word "scratch" other than scratch card games as giveaways at fast-food restaurants. This semantic narrowing in the word borrowing is thought to be a barrier to second-language learning. Exposure to such cultural differences can motivate the learners. In fact, 28 of the 34 examinees responded that they were interested in such differences.

The students answered multi-scaled questions for presented items including "scratch" in a similar way as examinees did for the previous survey relating to the bark of a dog, but this test contained limited choices on a scale from 1 to 4. On this scale, a rating of 2.5 represented the middle rank between likeness and unlikeness. "Scratch" showed a low degree of likeness to its image. The mean was 1.94, and the SD was .89. Note that the equalization of the intervals was not guaranteed in this

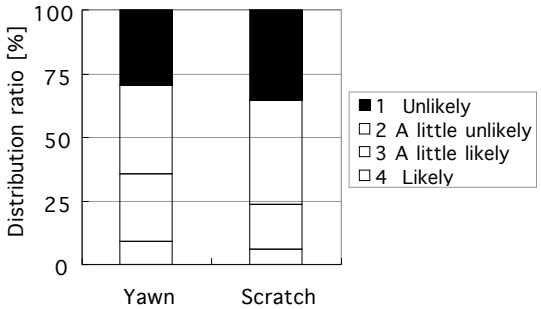
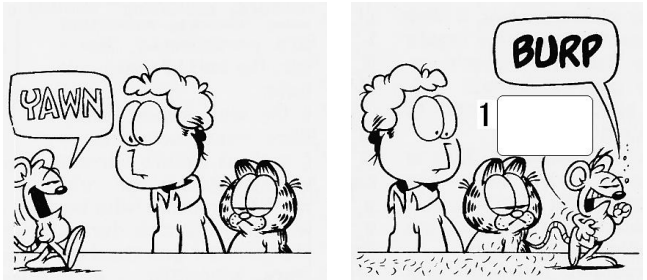


Figure 4: Scales of likeness in perception for aural images

ordinal scaling. Figure 4 shows the distribution of the choices and includes "yawn" for reference to another low degree of likeness, which averaged 2.15 (SD = .96). Consonant clusters—for example, /scr/ at the beginning of "scratch"—do not fit in Japanese phonetics. This structural factor leads to low likeness.

Next, a multiple-choice exercise can be developed, for instance, using the right-hand panel of Figure 5. The set of choices are (a) pepper, (b) scratch, and (c) keen. An underlying policy is to present a choice starting with /p/, /k/, or another phoneme that has a high degree of likeness for Japanese students. Another device is to offer a choice ending with a vowel or the uvular nasal. In addition, the correct answer "scratch" has a phonemic structure far different from its Japanese counterpart, "boribori" or "poripori". These devices in planning are considered to highlight differences in mimetic expressions between Japanese and English.



Garfield (R) by J. Davis. The Japan Times, Nov. 18, 2003. PAWS Inc. (C). Reproduced by permission of The Japan Times.

Choose the best answer to fill in blank 1:
(a) Pepper, pepper (b) Scratch, scratch (c) Keen, keen

Figure 5: Example of a multiple-choice exercise

Customary expressions with aural image labels are good resources and are occasionally adopted in foreign-language learning articles. *The Japan Times*, an English daily newspaper in Japan, publishes a serial article interpreting an onomatopoeic word every Thursday. Up to now, however, little analytic research has been done on this topic (Kubozono, 2002). Further discussions in foreign language learning are expected.

Summary

Diversity in aural perception by L1 speakers was confirmed according to the analysis of the descriptive productions. The Japanese productions clearly reflected linguistic and cultural aspects. The Japanese tended to use labial sounds in the word-initial position of sound symbolic expressions. Most of the expressions were adverbs with the open syllable structure or the uvular-nasal final structure. On the other hand, many of the English productions were nouns or verbs. The highly limited choices for word-initial phonemes in the Japanese productions might lead to a coincidence with culturally avoided expressions in the target language because these expressions often consist of a small number of phonemes.

These factors should be considered in foreign language education. One methodological idea is to use cartoons that contain the representation of sound, state, or movement. Cloze, matching, multiple-choice, and open-ended exercises can effectively motivate students. Many Japanese students would like to learn customary expressions for practical communication reasons in addition to a desire to understand another culture. This kind of lesson could meet a large demand in the modern EFL classroom.

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