

Listening Characteristics of Japanese Learners of English

Katsumasa Shimizu

Faculty of Foreign Languages
Nagoya Gakuin University

ABSTRACT - This paper describes listening characteristics of Japanese learners of English in three areas of comprehension: synthetic /r - l/ continuum, internal open juncture, and syntactically ambiguous sentences. Intermediate ESL learners have a different mode of listening for /r/ - /l/ continuum from native speakers of English, have a difficulty in identifying subtle allophonic differences and show a difference in identifying between sentences of surface- and deep-structure ambiguities. Implications on these observations are discussed in terms of perceptual strategies.

INTRODUCTION

Listening proficiency is one of the important factors in learning English as a second/foreign language (ESL/EFL) and has been a major topics in ESL/EFL studies. Much has been done to clarify and to solve the problems in listening proficiency, and, based on the experimental and pedagogical studies, many teaching and learning materials have been developed for the instruction of listening proficiency.

In teaching ESL listening proficiency, it can be examined in terms of several linguistic levels such as phonemes, syllables, words, sentences, paragraphs and discourse. These levels are closely correlated with one another and may be partially successive as well as partially parallel, and running speech sounds are considered to go through these levels for speech processing. Listening proficiency is considered to involve consolidated linguistic processes of perceptual strategies and the learners have to acquire these processes to attain a good performance.

Based on empirical studies in teaching English, it is generally known what trouble spots are for learning listening proficiency. It is known that Japanese learners of English have a difficulty in producing and identifying the segments which are not contrastive in Japanese phonemic system and in understanding syntactic structures which are different from those in Japanese, and several proposals have been made to improve the proficiency. Still, however, there is a strong need to examine the problems of listening proficiency on a more objective ground and to examine the characteristics of the learners. Viewing from these points, I would like to present the results of some of the listening experiments and to examine the characteristics to improve the listening proficiency.

PERCEPTION OF SYNTHETIC /r/ - /l/ CONTINUUM

It is well known that Japanese learners of English have difficulty in identifying the /r/ - /l/ contrast, and the distinction of these sounds has been of special interest among many ESL researchers and teachers. As is well-known, the learning problem of /r - l/ distinction is that Japanese has only one type of liquid which may be termed as voiced alveolar tap, and Japanese learners often confuse /r/ - /l/ with the tap in production and perception.

The difference between English and Japanese speakers in the perception of /r/ and /l/ contrast has been experimentally studied. Miyawaki et al. (1975), Mochizuki (1981), Shimizu and Dantsuji (1983) and Yamada and Tohkura (1992) carried out the listening experiments using synthetic speech sounds to Japanese and English speakers and showed that the two subject groups had a completely different type of perception. The listening test by using the synthetic speech sounds prepared by manipulating the starting frequencies of the third formant (F3) and the second formant (F2) was carried out for English and Japanese speakers, and the results can be shown in Figure 1.

Figure 1 shows the results of the pooled identification test for Japanese and English-speaking (American) subjects. The two subject groups showed quite different patterns in the identification of

/r - l/ continuum. It can be said that Japanese subjects showed a gradual shift of identification curve as the stimulus shifts from 3 to 7, while English-speaking subjects showed an abrupt shift of the curve in the stimulus range from 5 to 8. The difference in the identification can be substantiated in the discrimination test as shown in Figure 2. In case of Japanese subjects, the accuracy was in the range from 50 - 65 percent across the continuum, and there is no remarkable change in accuracy in the stimulus pairs of 1 - 4 and 4 - 7. In case of English-speaking subjects, however, the accuracy was below the chance at 1 - 4 pair, but sharply rose to near perfect at 5 - 8 pair. From these results, it can be said that Japanese speakers perceive the */r - l/* continuum in a continuous mode, while American subjects do the continuum in a categorical mode.

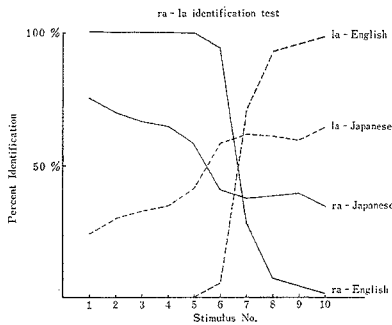


Figure 1. Pooled identification of Japanese- and English-speaking subjects

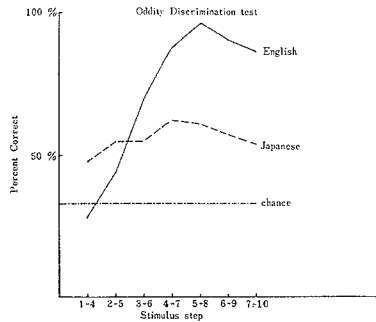


Figure 2. Pooled discrimination of Japanese- and English-speaking subjects

The findings that the two subject groups have a different type of perception of synthetic */r - l/* continuum have several implications. First, a listener disregards acoustic differences of stimuli within a phonetic category identified as the same phonetic one. Second, the difference of perception mode between the two groups can be attributed to the one of linguistic experiences of the two groups; i.e., Japanese does not have a contrast between the two liquids while English does. Although further studies remain to be done on teaching this distinction, it is expected that Japanese learners of English are able to categorize the two liquid sounds into appropriate ones, as their proficiency improves (Flege, et al., 1995).

PERCEPTION OF INTERNAL OPEN JUNCTURE

In order to understand words in listening, the learners have to know where they begin and end. Junctures indicate the division in the stream of speech and are considered to indicate the cues for word boundaries. Since native speakers of English discriminate "ice cream" from "I scream" in perception without any difficulty, there must be some phonetic cues in discriminating such pairs. Much has been done on the phonetic cues which signal the presence of word juncture, and, based on the studies, it is known that some of the cues are allophonic ones such as the aspiration of voiceless stops, glottal stops, and burst of the consonants.

In order to examine how Japanese learners of English perceive internal open junctures, the listening test was carried out to Japanese learners. The test materials were 30 minimal pairs, consisting of almost the same segmental phonemes with contrastive placement of the internal open juncture, and 107 college students studying English took part in the experiment. The result can be shown in Table 1, and the figures indicate the percentage correctly identified by subjects.

The results show that Japanese learners of English identified many pairs with a relatively high performance, and they could identify word juncture without any difficulty. However, such pairs as 5, 12, 14, and 24 were poorly identified. In order to see what phonetic cues contributed to the correct identification of the contrastive pairs, acoustic analysis was made on such pairs as high and low performance pairs.

Pair	Percentage correctly identified
1. a) I scream	*b) ice cream 73.4%
2. *a) an aim	b) a name 68.1
3. *a) no notion	b) known ocean 94.7
4. a) you thread	*b) youth read 64.9
5. *a) gray tape	b) great ape 24.5
6. a) white shoes	*b) why choose 98.9
7. *a) white shoes	b) why choose 98.9
8. *a) freed Annie	b) free Danny 98.9
9. *a) see zoos	b) seize ooze 92.6
10. a) be quiet	*b) Beck Wyatt 96.8
11. *a) be quiet	b) Beck Wyatt 95.7
12. *a) it sprays	b) it's praise 36.2
13. a) up our	*b) a power 95.7
14. a) get a board	*b) get aboard 20.2
15. *a) pirates of Anna	b) Pirate Savannah 89.2
16. a) scrappy racer	*b) scrap eraser 96.8
17. a) ruin dwarf	*b) ruined wharf 98.9
18. *a) grasp lot	b) grass plot 91.5
19. *a) mask ash	b) mass cash 98.5
20. a) mask ash	*b) mass cash 100.0
21. *a) a nice man	b) an iceman 76.6
22. a) grade A	*b) gray day 80.9
23. a) hoe-maker	*b) home-acre 96.8
24. a) keeps ticking	*b) keep sticking 43.6
25. *a) night rate	b) nitrate 93.6
26. a) night rate	*b) nitrate 93.6
27. *a) plum pie	b) plump eye 96.8
28. a) seal eyeing	*b) see lying 93.6
29. a) seem able	*b) see Mable 94.7
30. *a) two lips	b) tulips 92.6

Table 1. Identification of word juncture by Japanese speakers

In the acoustic analysis of such pairs as "free Danny" and "freed Annie", there are clear differences between the pairs in pause duration, the degree of intensity, and the presence or absence of voice bar. These factors may contribute to high percentage of correct identification of the pairs. On the other hand, in the analysis of such low performance pairs as "it sprays" - "it's praise", the aspiration of voiceless stop /p/ in the latter phrase was clearly observed, but, despite the existence of such allophonic cue of [p^h], Japanese learners showed a difficulty in identifying the pairs. This indicates that aspiration which is considered to be a strong cue for English speakers may not be a major cue for Japanese learners. Therefore, there are some differences between the two subject groups of English and Japanese in the strength of such allophonic cues to signal word juncture, and the Japanese are not sensitive to the subtle differences in aspiration of voiceless stops.

PERCEPTION OF SYNTACTICALLY AMBIGUOUS SENTENCES

It has been one of the problems in ESL studies how Japanese learners of English understand the syntactic structures in listening. A number of studies have been done on the relationship between syntactic structures and phonetic features. It is known that a speaker uses some phonetic cues to make the meaning of a sentence explicit, and a listener uses them in listening. For instance, in such a sentence as "The old men and women stayed at home.", it has two meanings and it is not clear whether the adjective "old" modifies "men" only or "men and women". It is pointed out in Lehiste, et al. (1976) that the total duration of "men and women" was longer when "old" modifies "men" than it does "men and women". That is, a speaker uses phonetic features which can be realized as an acoustic difference of duration, and a listener extracts such difference in the decoding process of listening.

Through many studies and experiments, it is known that such phonetic cues as duration (timing factor), pitch (Fo contour) and intensity (dB contour) are relevant to identifying the syntactic structure, and especially, duration and pitch contours show some characteristic features to signal the syntactic boundaries. In connection with this, the problem is how Japanese learners of English extract such cues in listening and how they utilize such cues to understand syntactic structures of English. In order to examine such problems, listening test and acoustic analysis were made to Japanese learners. 87 Japanese college students and 3 native speakers of English took part in the listening experiment. They listened to the paired sentences with two intended meanings and were asked to identify which meaning of the paired sentences occurred first. The results of the experiment can be shown in Table 2. The figures in English-speaking subjects indicate the number of subjects out of three who correctly identified the pairs, while the ones in Japanese subjects indicate the percentage of subjects who correctly identified the pairs.

Test Sentences	English (3)	Japanese (87)
1a) John doesn't know how (good meat) tastes.		
1b) John doesn't know (how good) meat tastes.	3	66.7 %
2a) The porter took your bags and weighed your luggage.		
2b) The porter took your bags and Wade your luggage.	3	82.8
3a) Mary greeted the girl with a smile. (The girl smiled.)		
3b) Mary greeted the girl with a smile. (Mary smiled.)	3	72.4
4a) Dancing girls are pretty and attractive. (Professional dancers)		
4b) Dancing girls are pretty and attractive. (Girls who are dancing)	2	64.4
5a) John doesn't drink because he is unhappy. (John drinks.)		
5b) John doesn't drink because he is unhappy. (John doesn't drink.)	2	62.1
6a) Visiting friends can be troublesome. (To visit friends ...)		
6b) Visiting friends can be troublesome. (Friends who visit ...)	3	47.1
7a) All the men didn't go. (None of the men went.)		
7b) All the men didn't go. (Not all the men went.)	2	75.9
8a) My uncle Abraham presented his talk naturally. (natural manner)		
8b) My uncle Abraham presented his talk naturally. (Of course)	3	47.1
9a) (The old men) and women stayed at home.		
9b) (The old men and women) stayed at home.	3	85.1
10a) (Steve or Sam) and Bob will come.		
10b) Steve or (Sam and Bob) will come.	3	85.1
11a) We gave her (dog-biscuits).		
11b) We gave (her dog) biscuits.	3	78.2

Table 2. Identification of syntactically ambiguous sentences

The results indicate that sentences 2, 3, 7, 9, 10, and 11 were identified with a relatively high percentage, while sentences 4, 5, 6, and 8 were identified with a rather low percentage. Among eleven test sentences, sentences 1, 2, 3, 9, 10, and 11 are the ones of surface structure ambiguities and can be represented by distinct surface bracketings. On the other hand, sentences 4, 5, 6, 7, and 8 are the ones of underlying structure ambiguities and can not be represented by surface bracketings. Based on the results, it can be said that the former type of sentences are more correctly identified than the latter type of sentences. That is, the sentences of surface structure ambiguities are more correctly identified by Japanese learners than those of underlying ambiguities.

These sentences were acoustically analyzed in terms of duration and Fo contours. From the spectrographic analysis, it has become clear that the sentences of surface structure ambiguities can be differentiated by the difference in duration of pause and segments, while the sentences of underlying structure ambiguities can be differentiated by the difference in Fo contours. Examining the results of the listening experiments and acoustic analysis, it can be said that durational cues are better identified than Fo contours in listening. This implies that Japanese learners of English have a difficulty in identifying Fo contours, and should be trained to perceive the variations of Fo contours in English.

SUMMARY

Listening strategies involve complicated processes of psychological and perceptual mechanisms, and can be examined on various levels which may be divided into traditional notions of linguistic analysis. The mechanisms of listening strategies in learning English have not yet been fully clarified, and the characteristics which we discussed here are some portions which learners have to take into consideration in improving the listening proficiency.

In examining the perception of /r-/l/ continuum, it has become evident that Japanese learners of English have a difficulty in identifying the sounds which do not contrast in Japanese phonemic system and they use a different mode of perception from native speakers of English. The learners should be aware of such differences in listening and should be trained so that they could internalize such phonological contrasts.

In examining the perception of internal open juncture, it was found that phonetic cues which signal the presence of the juncture for English speakers may not be primary ones for Japanese speakers. The listening experiments and acoustic analysis have revealed that they have a difficulty in perceiving subtle differences in the degree of aspiration and segment duration, unlike native speakers of English. This implies that there are differences in sensitivity to allophonic variations in the running speech between the two groups of subjects.

In examining the relationship between phonetic cues and syntactic boundaries, it is understood that temporal and intonational factors have a function to signal the syntactic boundaries. In the listening experiments of syntactically ambiguous sentences of English, Japanese learners more correctly identified the sentences of surface structure ambiguities than those of underlying structure ambiguities. This suggests that durational cues are more influential than Fo contours to Japanese learners of English, and the learners should be trained to perceive the variations of Fo contours of English sentences.

REFERENCES

- Bond, Z. S. & Fokes, J. (1991) "Perception of English voicing by native and nonnative adults", *Studies in Second Language Acquisition*, 13, 471-492.
- Cooper, W.E. and Cooper, J. P. (1980) *Syntax and Speech*, (Harvard University Press :Cambridge)
- Christie, W.E.(1974) "Some cues for syllable juncture perception in English", *J.Acoust.Soc.Am.*, 55, 819-821.
- Dauer, R. M. (1995) "Applying phonetics to the teaching of English", *JCPHS95*, Vol.1, 282-285.
- Dunkel, P. (1991) "Listening in the native and second/foreign language: Toward an integration of research and practice", *TESOL Quarterly*, 25, 431-457.
- Flege, J. E. (1987) "The production of "new" and "similar" phones in a foreign language: evidence for the effect of equivalence classification", *J. Phonetics*, 15, 47-65.

Fllege, J. E., Takagi, N. & Mann, V. (1995), "Japanese adults can learn to produce English /ɹ/ and /l/ accurately", *Language and Speech*, 38, 25 - 55.

Lehiste, I., Olive, J.P. & Streeter, L.A. (1976) "Role of duration in disambiguating syntactically ambiguous sentences", *J.Acoust.Soc.Am.* 60, 1199-1202.

Miyawaki, K., Strange, W., Verbrugge, R., Liberman, A.M. Jenkins, J.J. & Fujimura, O. (1975) "An effect of linguistic experience: The discrimination of r and l by native speakers of Japanese and English", *Percep. & Psych.* 18, 331-340.

Mochizuki, M. (1981) "The identification of /r/ and /l/ in natural and synthesized speech", *J.Phonetics*, 9, 283-303.

Richards, J. C. (1983) "Listening comprehension: Approach, design, procedure", *TESOL Quarterly*, 17, 219-240.

Shimizu, K. & Dantsuji, M. (1983) "A study on the perception of /r/ and /l/ in natural and synthetic speech sounds", *Studia Phonologica*, XVII, 1-14.

Yamada, R. & Tohkura, Y. (1992) "Perception of American English /r/ and /l/ by native speakers of Japanese", *Speech Perception, Production and Linguistic Structure* ed. by Y. Tohkura, E. Vatikiotis-Bateson & Y. Sagisaka, 155-174 (IOS Press).