

On the Pronunciation of English /ɹ/ and /l/ by Japanese Speakers

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Abstract

One of the major tenets of the Speech Learning Model (SLM) is that “if two L2 sounds differ in perceived dissimilarity from the closest sound in the L1 inventory, the more dissimilar of the L2 sounds will manifest the greater amount of learning” (Aoyama et al. 2004:248). Given that certain studies have provided “evidence of greater learning for [ɹ] than [l] by N[ative]J[apanese] learners of English” (2004:246), the SLM hypothesis can only be upheld if English [l] is more similar to Japanese [r] than English [ɹ] is. However, this is clearly counterintuitive since, by most accounts, [r] represents a central flap, [l] a lateral approximant, and [ɹ] a central approximant. In this study, it will be argued that English laterals cannot be more similar to Japanese /r/ than English rhotics are, as the SLM would have it, unless the Japanese sound contains a lateral component such as that which is found in the flap [ɹ]. As it happens, a number of phoneticians and phonologists have argued that this is indeed the case with Japanese /r/, as will be shown, and this is something that the proponents of the SLM would need to acknowledge if their theoretical stance is to be maintained.

1. Introduction

The widespread use of the symbol [r] in cross-linguistic studies to represent the Japanese rhotic consonant gives a vastly oversimplified view of the actual phonetics of this segment,¹ one that has the potential of altering some of the predictions that have been put forth regarding its influence on the perception of the English approximants [l] and [ɹ] by Japanese L2 learners of English. In entitling his study “It’s not just a liquid, it’s a stew: Phonetic variation in Kansai Japanese /r/”, Magnuson (2008) succeeded in encapsulating most eloquently its articulatory and distributional complexities, and this is what will be examined here.

The ultimate goal will be to show (1) that the *central flap* [ɹ] is only one of the manifestations of a phonetically diversiform segment in Japanese that has been widely recognized to have a *lateral* variant [ɹ̥], and (2) that this can have important implications for theories such as the Speech Learning Model (SLM) that have disregarded this fact. More specifically, it will be argued that English laterals cannot be more similar to Japanese /r/ than English rhotics are, as the SLM would have it, unless the Japanese sound can be shown to contain a lateral component.

2. The Japanese Rhotic as [r]

In their study of the perception of English [l] and [ɹ] by Japanese learners of English, Aoyama et al. (2004) begin by trying to show that “English [ɹ] may be more dissimilar phonetically from Japanese [r] than English [l] is” (234). In other words, even though [ɹ] and [r] are normally considered to be rhotics to the exclusion of [l], they propose that [l] and [r] can be viewed as more similar than [ɹ] and [r]. They cite the three following experiments as evidence for this claim:

In a study by Takagi (1993), Japanese speakers rated English [l] and [ɹ] tokens in terms of goodness of fit as an instance of Japanese [r] using a scale ranging from 0 (“not like [r] at all”) to 7 (“perfect [r]”). The Japanese speakers gave lower ratings to [ɹ] than [l] when tokens of these sounds occurred in syllable-initial, initial cluster and intervocalic positions. Komaki et al. (1999) also reported lower goodness-of-fit ratings for English [ɹ] than [l] with respect to Japanese [r]. In addition, Japanese speakers identified synthesized [ɹ] tokens as Japanese [r] less often than they identified [l] tokens as Japanese [r] (71% vs. 90%) in a study by Iverson et al. (2001). The goodness ratings as Japanese [r] were also lower for [ɹ] than for [l] tokens in the Iverson et al. study (2004:234).

Moreover, production experiments by Riney et al. (2000) apparently showed that “Japanese [r] is substituted for English [l] more often than for [ɹ]” (246).

¹ This segment is most often phonemicized as /r/ though Okada (1991:xx), for one, uses /d/.

This purported “evidence . . . that English [ɹ] is phonetically more dissimilar from Japanese [r] than English [l]” (Aoyama et al. 2004:235) seems counterintuitive since, by most accounts, [r] represents a central flap, [l] a lateral approximant, and [ɹ] a central approximant. Now Cutler et al. (2006) allege that “place of articulation is closer for /l/ and /R/ than for /r/ and /R/” (272) since the first two share the feature alveolar while the other two do not, /r/ [i.e., [ɹ]] being postalveolar according to them. However, the latest IPA consonant chart clearly identifies [ɹ] as an *alveolar* approximant, which makes this consonant and [r] identical from that viewpoint.³ Thus, it is not obvious on what articulatory basis English [l] and Japanese [r] would be more similar than English [ɹ] and Japanese [r] since two phonetic properties separate the first pair while the second pair differs by only one, as shown below:

SEGMENT	FEATURES	DIFFERENCE
[l]	lateral approximant	more different
[r]	central flap	
[ɹ]	<i>central</i> approximant	less different
[r]	<i>central</i> flap	

If objective phonetic criteria lead to the inescapable conclusion that English [l] is not more similar to Japanese [r] than English [ɹ] is, then one must ask what would lead anyone to make such a claim. The only plausible reason seems to be that this constitutes a theory-driven attempt to support the SLM which predicts that “if two L2 sounds differ in perceived dissimilarity from the closest sound in the L1 inventory, the more dissimilar of the L2 sounds will manifest the greater amount of learning” (Aoyama et al. 2004:248). More specifically, given that certain studies, including their own, have provided “evidence of greater learning for [ɹ] than [l] by N[ative]J[apanese] learners of English” (2004:246), the hypothesis of the SLM can only be upheld if English [l] is found to be more similar to Japanese [r] than English [ɹ].

Now if it is indeed the case that Japanese learners of English have a greater propensity to identify the Japanese rhotic as English /ɹ/, one might suspect that something more is involved. As it turns out, there exists overwhelming evidence that [r] is by no means the uniform representation of the Japanese rhotic it has been made out to be, and that statements to the effect that “the Japanese /r/ is phonetically an apico-alveolar tap [r]” (Aoyama et al. 2004:234) misrepresent the multifaceted nature of this sonorant. What the various analyses of this segment reveal is that most if not all Japanese speakers pronounce it as a variety of phones that are well-nigh unpredictable in terms of their distribution. In fact, judging by the number of contradictory descriptions that have been put forth, it is even difficult to ascertain exactly what the phones themselves are. However, there is one crucial articulatory commonality not present in [r] that these analyses uniformly agree all speakers share, as will be shown in the next section.

3. The Phonetic Properties and Distribution of the Japanese Rhotic

As noted above, one of the most remarkable aspects of the Japanese rhotic is just how inconsistent and divergent its description has been both in terms of its phonetic properties and the distribution of its variants. Consider the following (non-exhaustive) list of estimations:

- Pullum & Ladusaw (1996:166): the voiced alveolar lateral flap [ɹ] is “a common variant of the /r/ sound of Japanese”;
- Bloch (1950:108): “[r] short voiced alveolar flap” . . . “[l] short voiced alveolar lateral flap” (p. 101) . . . All the environments of [l] are shared by [r], but [r] has environments not shared by [l]”;
- Okada (1991:xx): “Between vowels [r] may be more frequent. A postalveolar [ɹ] is not unusual in all positions”;
- Akamatsu (1997:106): “Although . . . [r] (voiced apico-alveolar tap) frequently occurs in intervocalic context while a ‘variant of [r]’ . . . (voiced apico-alveolar lateral tap) occurs in postpausal context,⁴ it should be borne in mind that depending on individual native speakers of Japanese, any of these can occur, albeit systematically, in either of the

² Cutler et al. (2006) have phonemicized [ɹ] as /r/ which is clear from their reference to “the English voiced postalveolar approximant /r/” (272).

³ The consonant chart of *The International Phonetic Alphabet (Revised to 2015)* is available from the IPA website at <http://tinyurl.com/gt4zsc2>.

⁴ Akamatsu represents this sound with a non-IPA symbol which is hard to decipher but it seems clear that it is meant to be the equivalent of [ɹ] even though he qualifies it as a tap rather than a flap. For an overview of the widespread interchangeability of these two terms in the literature, see Picard (1997).

above-mentioned contexts”;

- Shimizu & Dantsuji (1987:16): “Some Japanese use both a lateral approximant [l] and a flap [ɾ] as completely free variants. Some Japanese use a lateral approximant [l] in the word initial position and use a flap [ɾ] in the inter vocalic position. Some use a lateral approximant [l] in each position. Others use a retroflex voiced stop [ɖ] in addition to these sounds”;
- Isei-Jaakkola (2004:12-13): “The Japanese *r* is often transcribed as a voiced alveolar flap or tap like [ɾ], but is rather closer to a voiced postalveolar lateral flap [ɭ]. In rapid speech [ɭ] can become [ɾ]”;
- Magnuson (2008): “A wide variety of phonetic variants were observed in the data . . . Aside from flaps, there were instances of voiced stops ([d]) as well as both rhotic and lateral approximants ([l]’s and [ɭ]’s), and even variants which were both rhotic and lateral at the same time”;
- Jones (1967:206): “One of the most noteworthy cases of a variphone is ‘the Japanese *r*.’⁵ In the pronunciation of many if not most Japanese this ‘sound’ is very variable; they sometimes use a sound resembling an English fricative *r* (ɹ), sometimes a lingual flap (ɾ), sometimes a kind of retroflex *d* (ɖ), sometimes a kind of *l*, and sometimes sounds intermediate between these”.⁶

4. Conclusion

Despite the important differences in the nature, number, and distribution of the various phones of the Japanese rhotic that are found in the descriptions of phoneticians and phonologists, there is one prominent constant in all of them: native speakers are all deemed to have a *lateral* variant in their repertoire, whether it be an approximant [l] or, what is more likely, a flap [ɭ] which, as noted by Ladefoged & Maddieson (1996), “is auditorily reminiscent of both *r* and *l*” (243).

This provides a sound phonetic basis for the goodness-of-fit ratings Japanese L2 learners give to English [ɭ] over [l], and allows for the case to be made that this is not because “English [l] is perceptually more similar to Japanese [ɾ] than English [ɭ] is” (Aoyama et al. 2004:246) but because a common manifestation of this segment has a lateral quality that rings a bell, as it were. Consequently, because of the pervasiveness of this lateral variphone, one could just as well refer to the Japanese rhotic as the Japanese lateral, and replace its canonical representation [ɾ] by the lateral flap [ɭ].

In sum, if Japanese learners have “more success acquiring English /r/ than /l/” (Aoyama et al. 2004:233), then [ɾ] cannot be the segment they are starting from since it is clearly more similar to [ɭ] than to [l], as was argued above. On the other hand, if the Japanese segment is deemed to be [ɭ], the SLM-based claim that “the more distant an L2 sound (phonetic segment) is from the closest L1 speech sound, the more learnable the L2 sound will be” (Aoyama et al. 2004:233) can be upheld since it is more dissimilar to [ɭ] than to [l], as shown below:

SEGMENT	FEATURES	DIFFERENCE
[ɭ]	central approximant	more different
[ɭ]	lateral flap	
[l]	<i>lateral</i> approximant	less different
[ɭ]	<i>lateral</i> flap	

⁵ Variphones are “‘unstable’ sounds — sounds which are liable to ‘variation’ independently of their phonetic context” (Jones 1967:205). They are thus different from allophones which are found in constant and predictable environments.

⁶ Jones (1967) adds that “[o]ne result of this is the well-known difficulty they have in hearing or making the difference between *r* and *l* when they speak European languages” (206).

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