

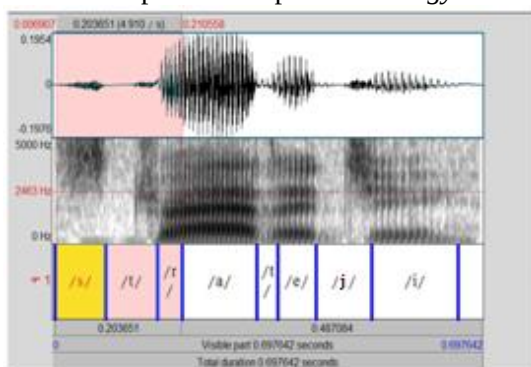
Title: Vowel Epenthesis in English Bilateral and Trilateral Consonant Clusters; A Socio-phonetic Study on Native Japanese Speakers' English Pronunciation

Category: phonetics/phonology, discourse/pragmatics/sociolinguistics

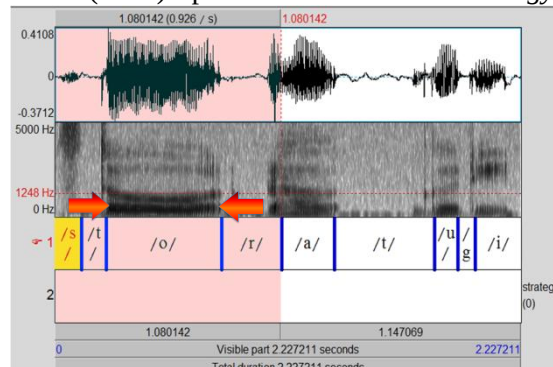
Abstract: The purpose of this research project is to investigate differences in native-Japanese English learners' pronunciation of bilateral and trilateral onset clusters across multiple levels of proficiency. Being a moraic language, Japanese phonology is known for having a relatively strict CVCV syllabic structure in which it is rare to have bilateral and especially trilateral consonant clusters. This is evident in the Japanese loanword system which takes words that previously contained multiple consonant clusters and inserts epenthetic vowels where there were none prior. Due in part to the perception process, language learners exhibit a tendency to map surface L2 acoustic structures which are "illegal" in their L1 onto the closest native structure (Pepperkamp, 2007). This disparity in pronunciation patterns avoids what Vance (2008) calls a *systematic gap*, or phonetically impossible word, in the language. For example, the baseball term *strike* which contains a trilateral consonant cluster becomes /sutoraiiku/ as it is Katakana-ized into the language because Japanese does not allow for a CCCV syllabic sequence. As we can see from this brief example, vowels have been inserted into the trilateral onset to more closely match the Japanese phonemic structure. To native-Japanese speakers, the pronunciation of bi- and trilateral consonant clusters is as challenging as it is necessary to the purpose of achieving communicative competence within native-English speaking speech communities.

Within the framework of Markedness Theory (Trubetzkoy, 1939; Jakobson, 1941; Eckman, 2004) this research begins with an analysis of the phonemic differences between Japanese and English with respect to their consonant-vowel structures. It follows 8 male and 8 female native-Japanese students who are studying on the University of Arizona campus at three levels of proficiency, low intermediate, high intermediate, and advanced. Students first took a background questionnaire addressing the factors of gender, age, years of formal English instruction, languages spoken & corresponding levels of proficiency, level of education, city/town where they were raised, methods of English study, and other experiences/durations abroad. Participants were then presented with a random series of sentences which contain words that have singleton, bilateral, and trilateral consonant clusters. Several research studies (Honma, 1981; Eckman, 1991; and Carlisle, 1998) have called for a focus on onset consonant clusters because particular onsets (English /st/, /sp/, /sk/ and all trilateral onsets) were found in violation of Universal Canonical Syllable Structure (UCSS). Onset clusters which violate UCSS are determined to be modified significantly more than those that don't. The items, which were embedded in sentential context to help L2 users perceive temporal cues associated with segmental contrasts (Strange et al., 2001), were read aloud and recorded using Praat acoustic analysis software. Following the initial experiment and recordings, a spectral analysis was conducted by locating instances of epenthetic vowel insertion in the bi- and trilateral consonant clusters and measuring durations in milliseconds.

Ex. 1: Sample native speaker *strategy*



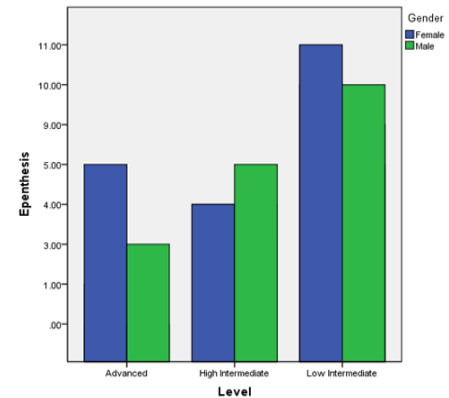
Ex. 2: (NNS) Epenthetic Vowel /o/ in *strategy*



This study asks the following research questions:

1. At what level of English proficiency do native-Japanese speakers acquire the ability to effectively pronounce bi- and trilateral consonant clusters in English with little-to-no epenthetic vowel insertion?
2. What other background factors such as gender, length of stay in America, and exposure to native-like pronunciation influence accuracy in production?
3. How can knowledge of these influencing factors be utilized to increase non-native speakers' chances for achieving higher levels of communicative competence in English?

An acoustic analysis of 270 bilateral and 270 trilateral items (540 total items) uncovered a significant difference between the low-intermediate and both upper level groups, which suggests that extended exposure to native-like pronunciation of English bi- and trilateral consonant clusters aids native-Japanese speakers in reducing epenthetic effects by the high-intermediate level. Mean durations times for each proficiency group also reflect a gradual decline correlated with length of stay in America. No markedness effects were found in Japanese participants' production of bi- and trilateral onset clusters, which seems to suggest that they are to be introduced simultaneously in the speaking classroom; however, more research is needed at the intermediate levels to determine the credibility of this claim. Regarding gender, no significant differences were uncovered in their accuracy of production at any of the three levels; however, it is interesting to note that a considerable number of epenthetic vowel insertions occurred in the /sk/ group at the low-intermediate level. This may be due to differences in articulatory distance. (/st/ alveolar fricative to alveolar stop and /sp/ alveolar fricative to bilabial stop, but /sk/ alveolar fricative to velar stop) The latter requires more simultaneous movement of the tongue over a greater distance in the oral cavity. An increased focus on the accurate articulation of English bi- and trilateral consonant clusters may be effectively introduced at the low-intermediate level. Intensive practice with native-like pronunciations of these consonant clusters would serve to help Japanese learners of English to move beyond the phonemic mapping stage and reduce epenthetic effects in their speech, thus increasing their opportunities for achieving higher degrees of communicative competence in English-speaking speech communities.



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