日本語促音の「位置効果」について
On the 'positional effect' on consonant gemination in Japanese

Haruo KUBOZONO*, Hajime TAKEYASU** and Mikio GIRIKO*
*National Institute for Japanese Language and Linguistics, **Mie University

Japanese loanwords from English display many interesting phenomena concerning the occurrence or non-occurrence of *sokuon*, or geminate obstruent. One of them concerns the so-called 'positional effect' by which gemination tends to restrictively occur in word-final position. One typical example is the English word *picnic* [piknik], which yields a geminate consonant only in the original second syllable when borrowed into Japanese: /pi.ku.nik.ku/, */pik.ku.ni.ku/, */pik.ku.nik.ku/. Other examples are given in (1) and (2). Words in (1) have a geminate obstruent, whereas those in (2) do not.

(1) cap → kyap.pu, dock → dok.ku, mix → mik.ku.su, sax → sak.ku.su, box → bok.ku.su, fax → fak.ku.su

(2) captain → kya.pu.ten, doctor → do.ku.taa, mixer → mi.ki.saa, saxophone → sa.ki.so.fon, boxer → bo.ku.saa, facsimile → fa.ku.si.mi.ri

The primary question we would like to address in this talk is where this positional effect comes from. There are at least two possibilities. One hypothesis is that the phonological position itself is a pivotal factor to which native speakers of Japanese are sensitive. According to this hypothesis, native Japanese speakers hear a geminate consonant in word-final position, but not in other positions, for purely structural/positional reasons. Alternatively, it is possible that phonetic properties in the input English words differ between word-medial and final syllables and that native speakers of Japanese display the positional effect in question by reacting to these phonetic properties sensitively. To test these two hypotheses, we first conducted a perception experiment where we examined how native Japanese speakers reacted to three types of nonsense stimuli: (i) CVC monosyllables, e.g. /dap/, (ii) CVCCVC bisyllables, e.g. /dap.ter/, and (iii) CVC monosyllables that were produced by deleting the second syllable of the CVCCVC bisyllables, e.g. /dap.~~ter~~/. This experiment revealed that native Japanese speakers readily hear a geminate consonant in (i), but not in (ii) and (iii). This result indicates that the main factor behind the positional effect is not the position itself but is some phonetic features that are characteristic of word-final position (as opposed to non-final positions) in the input speech.

The final syllable in the English word *picnic*, i.e. [nik], can be phonetically different from the non-final syllable, i.e. [pik], in both duration and pitch, when the word is pronounced in isolation. As for the pitch, the non-final syllable generally has a level pitch, whereas the final syllable is pronounced with a falling pitch. With this background, we looked at the effect of pitch in our second experiment, by comparing CVC monosyllables with different pitch patterns, i.e. level vs. falling. Our subjects reacted to this phonetic difference very sensitively, perceiving a geminate consonant in stimuli with a falling pitch significantly better than in those with a level pitch. This result suggests that the falling pitch in final position is responsible (at least in part) for the positional effect in question.