The Productivity of Postnasal Voicing in Japanese

Some researchers (e.g. Zuraw 2010; Ernestus & Baayen 2003) argue that the grammar of a language is shaped by the lexicon. They have conducted experiments that show that patterns of lexical variation present in the lexicon are followed by speakers in new material, which shows that the patterns in the lexicon have come to affect the grammar of the language itself. My research on Sino-Japanese classifiers finds results that are somewhat contradictory with these theories, as the minute place-effects of postnasal voicing found in a dictionary study were not realized in a further experimental study. These results suggest that certain minute lexical effects may not be picked up by the grammar when larger patterns are in play.

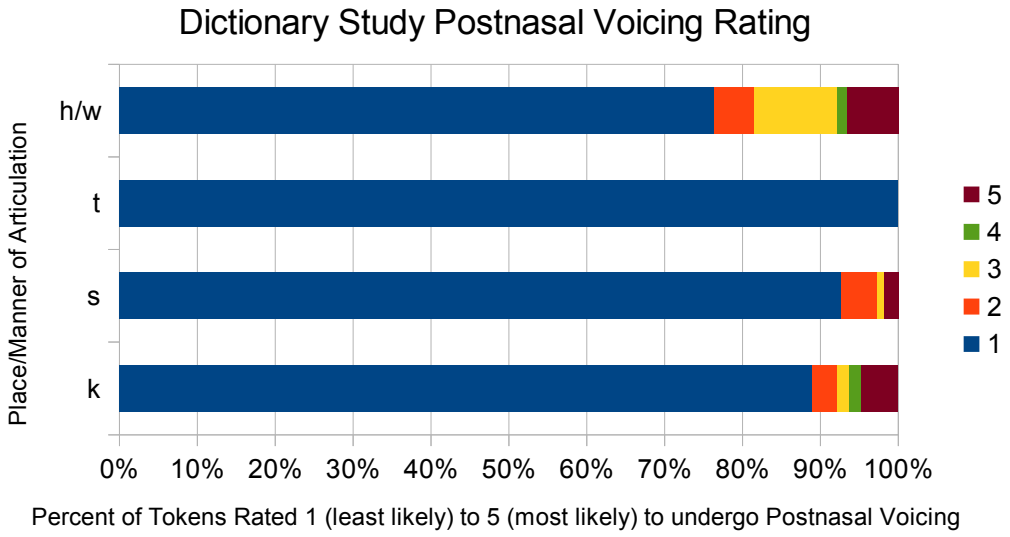
Japanese postnasal voicing is a voicing assimilation phenomenon where obstruents immediately following a coda nasal are voiced. For example, in the word *yon-da* (read-PST), the past tense suffix, normally *-ta*, is voiced and realized as *-da.* This process is categorical among native Japanese words, or Yamato words (Itô and Mester 1995), but lexically determined among Chinese loanwords, or Sino-Japanese words (Ohno 1995), which make up a significant part of Japanese vocabulary. The Sino-Japanese number system provides a convenient way of examining postnasal voicing in Japanese because the combination of the numeral 3, *san*, with a numerical classifier will induce postnasal voicing on the classifier if the classifier allows it, but the numeral 2, *ni*, does not induce such postnasal voicing.

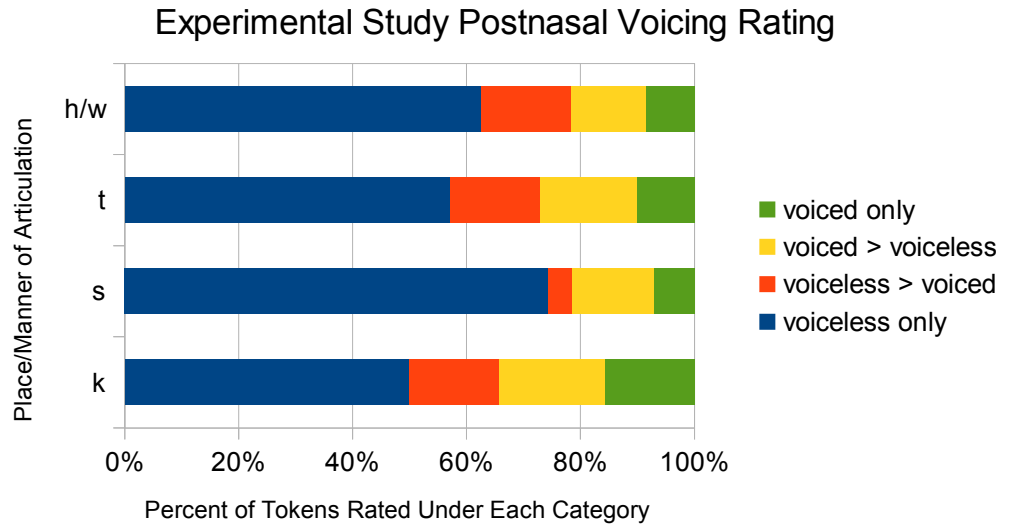
1) a. san + soku => sanzoku '3 (pairs of things to wear on feet)' (Ohno 1995)
   b. ni + soku => nisoku '2 (pairs of things to wear on feet)'

A dictionary study was conducted to see if any linguistic factors affect the occurrence of postnasal voicing. The dictionary contained 369 entries for classifiers that took a Sino-Japanese numeral. Two native Japanese speaking consultants looked through the dictionary and gave ratings on application of postnasal voicing for words they knew (202 and 178 words for each consultant). The results found that an overall low rate of postnasal voicing, but classifiers with a *h*-initial had the highest mean rate of undergoing postnasal voicing. (The *h*-initial voices to *b*.) A linear model found the effect of place to be significant ($p<0.000$). The coefficients show the *h*-initials had a significantly higher mean than all other initials (*k* ($p=0.006$), *t* ($p<0.000$), *s* ($p<0.000$)), and the *k*-initials had a significantly higher mean than the *t*-initials only ($p=0.032$).

A further experimental study was conducted on 14 native Japanese-speaking participants to see whether the patterns in the lexicon are extended to the grammar or not. Stimuli chosen were real words found in a dictionary that were extremely rare and unlikely to be familiar to most of the participants, and therefore used to examine the speakers' underlying application of the postnasal voicing grammar in novel forms. The results found an overall low rate of postnasal voicing like the dictionary study, but unlike the dictionary study, no specific place of articulation had any significant effect on the rate of voicing over another place of articulation.

The results of these two studies show that certain minute lexical patterns may not necessarily always shape the grammar of the speakers. The dictionary data found a significant place effect on the application of postnasal voicing, but these patterns were not seen in a further experimental study. This could be because the minute place-effects found in the lexicon were unable to be extended into the grammar. Perhaps this is because more general pattern of non-application of postnasal voicing is more robust. In a way participants did adhere to some overall pattern from the lexicon as they generally responded in the direction of non-application of postnasal voicing. When they did give responses affirming application of postnasal voicing however, it was was done seemingly randomly, and seemingly unaffected by the more minute place-effect patterns found in the lexicon.





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