Psycholinguistic studies on Rendaku*

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1 Grammatical vs. lexical?

(1) A general debate concerning Rendaku (and other morphophonological patterns in general): is it phonological or lexical?
   a. Position I: Rendaku is a productive phonological process, governed by the phonological component of grammar (Itô & Mester 1986, 2003; McCawley 1968; Otsu 1980). Rendaku should be subject to phonological analyses, and can bear on phonological theorizing.
   b. Position II: Rendaku is lexical. It is not governed by a productive linguistic system; whether a particular compound shows Rendaku or not is stored in memory for each compound. Application of Rendaku to novel compounds is determined based on lexical analogy. Analyses of Rendaku should not bear on phonological theories.
   c. I assume that this issue is discussed in more detail in some other chapter.

(2) Ohno (2000)
   a. An argument for the lexicalist view of Rendaku.
   b. The experiment used two N2s: Rendaku-undergoer ([+Rendaku]) kami ‘hair’ and non-Rendaku-undergoer([-Rendaku]) chi ‘blood’.
   c. The test is a two-way forced choice wug test (Berko, 1958) using new compounds consisting of real words.
   d. Even the [+Rendaku] item did not undergo Rendaku in some contexts (i.e. shiro-kami ‘white hair’).

*An outline for a chapter in the Rendaku Encyclopedia. Thanks to Nat Dresher (Rutgers) for collecting the papers that I needed. PLEASE LET US KNOW IF YOU KNOW OTHERS PUBLISHED EXPERIMENTS ON REN DAKU. I would like the chapter to be as comprehensive as possible.
e. Even the [-Rendaku] item underwent Rendaku in some contexts (i.e. mimi-di ‘ear bleeding’).

f. The claim: Rendaku application is determined by lexical analogy to existing compounds (shiro-kami—kuro-kami; mimi-di—hana-di).

(3) Fukuda & Fukuda (1994)

a. Children with specific language impairment (SLI) are known to fail to learn linguistic processes (whereas lexical information is unaffected) (Paradis & Gopnik, 1997).

b. Word formation experiment using children with SLI and control participants (children without SLI).

c. Children with SLI indeed applied Rendaku to non-frequent or novel compounds much less frequently than children without SLI.\(^1\)

d. This observation supports the idea that Rendaku is a productive phonological process.

e. However, children with SLI generally showed Rendaku for familiar compounds.

f. This result indicates that some familiar compounds with Rendaku are stored in memory.

g. Rendaku perhaps has a dual nature (lexical and productive) (Pinker, 1999).

2 Experiments on specific aspects of Rendaku

(4) Suzuki et al. (2000)

a. The application of Rendaku is generally limited to Yamato-like words (Itô & Mester, 1986, 1995, 1999; Otsu, 1980).

b. Is this restriction productive?

c. A larger question: is the lexical stratification of Japanese lexicon (Itô & Mester, 1995, 1999) psychologically real?\(^2\)

d. Experiment I compared nonce words that can be phonotactically Yamato words, and those that cannot be.

e. Non-yamato status was cued by voiceless stops after nasals (*NT-violation) and singleton [p]s (*[p]-violation) (Itô & Mester, 1995, 1999).

f. Result: No differences between the two conditions.

\(^1\)There was no evident difference in the effect of Lyman’s Law (see below) between the two groups of participants, however. Both groups of participants showed unexpectedly high rates of Rendaku-application despite the violation of Lyman’s Law—it seems as though they have not learned Lyman’s Law. See Kawahara (2008) for independent arguments that Lyman’s Law may not be a natural, innate constraint, but instead a learned, unnatural constraint.

\(^2\)See also Moreton & Amano 1999; Gelbart & Kawahara 2007 for other experiments addressing this question.
g. Concern: Nonce words that can be phonotactically Yamato words can be conceived as belong to any strata (Fukazawa et al., 2002; Ota, 2004).

h. Given a core-periphery model of Itô & Mester (1995, 1999), an element of a subset (Yamato) can also be a member of a superset (e.g. foreign words).

i. Nonce words may be perceived as foreign words anyway (see below, (13)).

(5) Tamaoka et al. (2009)

a. A more or less standard assumption: N1’s effect on the applicability of Rendaku is minimal or none (e.g. Itô & Mester 2003).

b. Extending on Murata (1984) and Ihara & Murata (2006), this study shows some effects of N1 on Rendaku application.

c. The shorter N1, the more likely N2 undergoes Rendaku—especially the distinction between one-mora words and longer words seems clear.

d. The likelihood hierarchy of Rendaku according to etymological types of N1: generally, Yamato > Sino-Japanese > Foreign.

e. N1 ending with /N/ is more likely to cause Rendaku than those ending with a vowel (This result replicates a lexical tendency concerning Rendaku; see Vance 2007, footnote 28 and references cited there).

(6) Tamaoka & Ikeda (2010)

a. Effects of five kinds of N1 (imo, kome, soba, mugi, kokutoo) on Rendaku with a fixed N2 (shoochuu).

b. Six different dialects (Kagoshima, Oita, Fukuoka, Yamaguchi, Hiroshima and Shizuoka) which differ in familiarity with these different kinds of shoochuu.

c. No substantial differences among dialects.

d. The overall order: *imo > kome > (=) soba > mugi > kokutoo*

e. The effects of length: the shorter, the more likely (which explains the lowest of applicability of Rendaku to kokutoo).

f. The presence of a voiced stop (in soba and mugi) may block Rendaku to some extent (although the authors doubt this possibility that a stronger version of Lyman’s Law is active).

(7) Kozman (1998)

a. Rendaku applies if N1 is a modifier of N2, but does not apply if N1 is a (syntactic) direct object of N2 (Sugioka, 1984).

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Familiarity has been used to explain some non-Yamato items undergoing Rendaku (Itô & Mester, 2003; Otsu, 1980) (cf. Ohno 2000).
b. Right-branching condition: Rendaku applies only to an element that is on a right branch (Otsu, 1980).

c. Given novel compounds, Japanese speakers were asked to guess their meanings (two-way forced choice).

d. Modifier (+Rendaku) vs. object (-Rendaku); at a right-branch (+Rendaku) vs. at a left-branch (-Rendaku).

e. The presence of Rendaku did not disambiguate the interpretation of N1 as a modifier.

f. The presence of Rendaku did not disambiguate the element being at a right branch.

g. What’s found instead: general preferences toward interpretation as direct object and being at a left-branch.

(8) Ihara et al. (2011)
a. A wug-test examining various segmental effects on Rendaku.

b. Consonantal effects on Rendaku-undergoing consonants: /h/ > /k/ = /l/ > /s/, or in other words, *[z] ≫ *[g], *[d] ≫ *[b].

c. Voiced fricatives seem cross-linguistically more marked than voiced stops (Lindblom & Maddieson, 1988).

d. The Rendaku hierarchy found in this experiment is also compatible with the aerodynamic difficulty hierarchy among voiced stops with different place of articulation (Hayes et al., 2004; Ohala, 1983).  

3 Experiments on Lyman’s Law and OCP(voice)

(9) Vance (1980), based on Vance (1979)

a. Wug-experiments on the effect of Lyman’s Law on Rendaku

b. Experiment I; N1=nonce words, N2=real words. Experiment II; N1=real words, N2=nonce words.

c. There is a large inter-speaker variability.

d. Nevertheless, all speakers applied Rendaku less often if it resulted in a violation of Lyman’s Law.

e. A locality effect was found such that the closer the blocker, the less likely Rendaku occurred.

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4 This effect of place of articulation is also evident in the devoicing likelihood of geminates in loanwords (Kawahara & Sano, 2012).

5 This experiment is the first extensive experimental work on Rendaku.
(10) Ihara et al. (2009)
   a. A wug experiment on whether the locality of Lyman’s Law violation affects the appli-
      cability of Rendaku.
   b. Locality does matter—the closer the voiced obstruent to the potential undergoer, the
      less likely that it actually undergoes Rendaku.
   c. This locality effect became weaker from the first experiment in 1984 to the second
      experiment in 2005.

(11) Kawahara (2012)
   a. Naturalness judgment experiments on the effect of OCP(voice) on Rendaku.\(^6\)
   b. The participants were presented with N1 (\textit{nise-}) and N2, together with N1+N2 with
      Rendaku. They were asked to rate how natural the form with Rendaku is for each
      form, using a 5-point scale.
   c. Japanese speakers judged OCP-violating Rendaku less natural than non-OCP violating
      Rendaku.
   d. The locality of the OCP-violation did not matter (the experiments were conducted in
      2011).

(12) Kawahara (2011a,b): Naturalness judgment experiments on the effect of OCP(voice) on
      devoicing of geminates in loanwords
   a. Experiments on OCP(voice)—or Lyman’s Law understood in a broader sense (see
      footnote 11a)—in other contexts.
   b. Nishimura (2003): voiced obstruent geminates in loanwords devoice when they co-
      occur with another voiced obstruent.
   c. Naturalness judgment experiments testing the productivity of this devoicing pattern.
   e. Kawahara (2011a, 2012): OCP(voice) makes devoicing of singletons more natural as
      well.

4 Remaining questions

(13) Do the experimental instructions matter? (nonce words or old native words?)
   a. Rendaku generally applies only to native words (Itô & Mester, 1986, 1995, 1999; Otsu,
      1980).

\(^6\)OCP(voice) is a phonotactic constraint that disallows two voiced obstruents with the same stem (Itô & Mester,
1986), and this markedness requirement underlies the blockage of Rendaku due to Lyman’s Law.
b. Nonce words are usually treated by native speakers as if they are loanwords (as evidenced by their accentuation patterns and the way they are written (i.e. kata-kana)).

c. Would it make sense to run experiments on Rendaku using nonce words?

d. Vance (1980) instructed the participants to treat nonce word stimuli as Old Yamato words.

e. Kawahara (2012) ran the same experiment with two different instructions (between-subject): in Experiment I, the stimuli were presented as Old Yamato words, whereas in Experiment II, the stimuli were presented as nonce words.

f. No substantial differences. Stimuli as Old Yamato words (3.42, 2.75) vs. Stimuli as nonce words (3.35, 2.79) (no-OCP-violation and OCP-violation, respectively).

g. This question is important, as it is related to a larger question of whether it makes sense to run nonce-word studies to probe aspects of Rendaku at all, and if so how.

(14) Methodology?

a. Generally limited to a wug-test (many) or naturalness judgment task (Kawahara 2011b et seq.) or meaning probing task (Kozman, 1998).

b. Experiments going beyond off-line judgments are hoped for.

c. For example, we could create a voiceless-voiced continuum. Would Japanese speakers show a boundary shift toward voiced responses in Rendaku environment? Would Lyman’s Law cause a similar boundary shift toward voicelessness?

(15) Other aspects of Rendaku to be tested in experiments.

a. Does the stronger version of Lyman’s Law (with a larger domain) (Sugito, 1965), which held in Old Japanese (Unger, 1975; Vance, 2005), also hold in the synchronic minds of Japanese speakers?

b. Tamaoka & Ikeda (2010) found a trend in this direction, but nevertheless raised doubts about this interpretation.

c. Dvandva compounds?

d. Interaction between accents and Rendaku?

e. Acquisition of Rendaku and Lyman’s Law, especially a longitudinal one.

(16) Some other topics to be tested experimentally


b. There are some real word examples of violations of Lyman’s Law. Would they be considered to be more acceptable than nonce words that violate Lyman’s Law?

c. Lyman’s Law as orthotactics? i.e. Japanese speakers avoid “two dots” within a morpheme. Not entirely impossible, as [p] can cause devoicing of geminates in loanwords
(e.g. *kyuupiddo, paddo*). Maybe Japanese speakers do not like to have two diacritics within a morpheme, whether they be *dakuten* or *handakuten*. 
References


Hayes, Bruce, Robert Kirchner, & Donca Steriade, eds. (2004) Phonetically Based Phonology. Cambridge: Cambridge University Press, (eds.).


