Tonal sound change in Kagoshima Japanese: Production of monosyllabic words

Lia Saki Bučar Shigemori, Yuki Asano
Institute for Phonetics and Speech Processing, Munich
lia@phonetik.uni-muenchen.de, yuk.asano@lmu.de

Keywords: varieties of Japanese, tonal sound change

The aim of this study is the analysis of the surface realisations of lexical pitch patterns by different speaker groups in two varieties of Japanese, Kagoshima Japanese (KJ) and Tokyo Japanese (TJ), with a focus on how the increasing influence of TJ affects the pitch patterns of younger KJ speakers.

Varieties of Japanese exhibit great differences in their word-prosodic systems [1]. Monosyllabic words in both KJ and TJ can be grouped into two groups regarding their accent patterns, however there is no general way to predict the accent pattern in one variety based on the other. Monosyllabic words in KJ produced in isolation are realized with a falling f0 if they belong to the Type A pitch accent group and with a flat f0 if they belong to the Type B group, regardless of whether the syllable is monomoraic (coda-less monosyllabic words with a short vocalic nucleus) or bimoraic (monosyllabic words with a long vowel, a diphthong, or a short vowel followed by a nasal coda). In TJ, monosyllabic words can have two lexically contrastive pitch accent patterns, namely the unaccented pattern, where there is no f0 fall, and the accented pattern, where there is a fall after the first mora of the syllable. In case of monomoraic words, the contrast is produced when the word is followed by a particle, but is neutralized when produced in isolation. In bimoraic monosyllabic words, the contrast is not neutralized, but the majority of words is accented.

For KJ previous studies have reported an ongoing tonal sound change due to the influence of TJ, the variety the standard is based on and is most widely used in the media, in particular in younger speakers [2, 3]. This tonal sound change observed for KJ has been interpreted as a recategorization of the mapping between the lexical item and its pitch accent categories. In the case of monosyllabic words, the resulting outcome of the sound change in KJ is the neutralization of accent patterns in monomoraic and bimoraic monosyllabic words. Younger speakers of KJ have been reported to produce monomoraic words with the Type B pattern, which can be interpreted as a transfer of the TJ pattern, and bimoraic monosyllabic words with the Type A pattern, which can be interpreted as a transfer of the generalized TJ pattern[1].

While in the previous studies, the results were based on the author's perceptive impression, in the current study we want to replicate the study by directly analysing the f0 of the recorded data. This might allow us to see additional fine grained differences.

35 KJ speakers and 35 TJ speakers read 32 monomoraic tokens and 14 bimoraic tokens in isolation. Table 1 shows the number of recorded tokens that belong to a certain accent group in KJ and TJ. Because the sound change in KJ has been described as being led by younger speakers who are more exposed to the standard, we divided the speakers into an older group (aged above 50) and a younger group. A discrete cosine transformation (DCT) [4, Chapter 21] has been carried out on the extracted f0 contours, and the first coefficient (k1), which reflects the steepness has been extracted. A k1 of zero indicates a horizontal f0, while the higher the k1 the steeper the fall of the f0.

The results, visualized in Figures 1 and 2, confirm what has been reported in previous studies: The traditional KJ accent pattern contrast is realized by the older KJ speakers for both monomoraic and bimoraic monosyllabic words. Type A words have a higher k1 than Type B words. The younger KJ speakers neutralize the monomoraic words just like the TJ speakers. The k1 mean is above 0 for both the TJ speakers and the younger KJ speakers, which might be due to the additional effect of sentence prosody. For bimoraic words, the contrast between Type A and Type B words is much less pronounced for the younger KJ speakers. TJ speakers do produce a clear contrast between accented and unaccented words. Although not visualized here, the data further revealed that the older KJ speakers seem to be affected by the TJ accent patterns, but in a contrary direction. Words that belong to the Type A group in KJ but are unaccented in TJ were produced with a higher k1, thus an even steeper slope. Possibly, older KJ speakers are well aware of the TJ accent patterns and hyperarticulated the falling f0 in Type A words which are produced with a flat f0 in TJ.

The findings provide a starting point to explore how suprasegmental features are categorized and stored when they differ in the language varieties and whether the extent or the way speakers are exposed to these effects also affects their awareness of the differences.

[1] In the case of monosyllabic words the sound change looks like an imitation of the TJ patterns, but based on other words, previous literature shows that the surface tonal realization of KJ is retained by the innovative speakers.

Table 1: Number of tokens for the TJ accented/unaccented (and ambigue, in case both patterns are correct) and KJ TypeA/Type B combination, on the left for monomoraic and on the right for bimoraic words.

	accented	unaccented	ambigue
Type A	5	10	1
Type B	12	2	2

	accented	unaccented
Type A	5	3
Type B	6	0

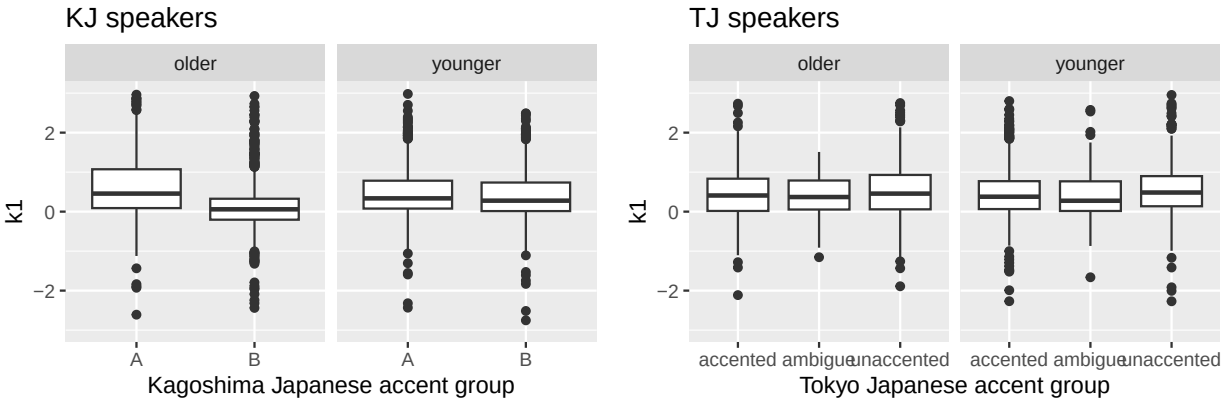

Figure 1: k1 values of the DCT analysis of the f0 contour for monomoraic words, KJ speakers on the left and TJ speakers on the right, separately for older and younger speakers. A higher k1 value indicates a steeper f0 fall, a k1 value of 0 indicates a flat f0 curve. The *ambigue* category stands for items for which both accent patterns are acceptable.

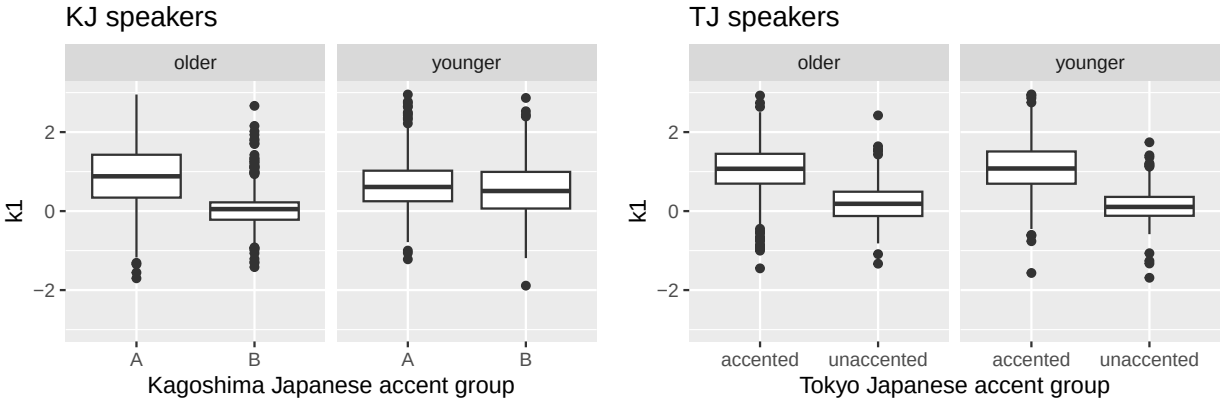

Figure 2: k1 values of the DCT analysis of the f0 contour for bimoraic words, KJ speakers on the left and TJ speakers on the right, separately for older and younger speakers. A higher k1 value indicates a steeper f0 fall, a k1 value of 0 indicates a flat f0 curve.

References

[1] Yosuke Igarashi. "Typology of Intonational Phrasing in Japanese Dialects". In: ed. by Sun-Ah Jun. Oxford university press, 2014. Chap. 15.

[2] Haruo Kubozono. "Postlexical Tonal Neutralizations in Kagoshima Japanese". In: *Tonal Change and Neutralization*. Ed. by Haruo Kubozono and Mikio Giriko. Berlin, Boston: De Gruyter Mouton, 2018, pp. 27–57. ISBN: 9783110567502. DOI: doi:10.1515/9783110567502-003.

[3] Haruo Kubozono. "Bilingualism and Accent Changes in Kagoshima Japanese". In: *Tonal Change and Neutralization*. Ed. by Haruo Kubozono and Mikio Giriko. Berlin, Boston: De Gruyter Mouton, 2018, pp. 279–329. ISBN: 9783110567502. DOI: doi:10.1515/9783110567502-011.

[4] Raphael Winkelmann. *The EMU-SDMS Manual*. 2022. URL: https://ips-lmu.github.io/TheEMU-SDMS-Manual.