Neutralizations in vowel length and word accent in Japanese

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NEUTRALIZATIONS IN VOWEL LENGTH AND WORD ACCENT IN JAPANESE[1]

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1. INTRODUCTION

Tokyo Japanese (henceforth, 'Japanese' for short) has a contrast both in vowel length and word accent. While both types of phonological contrasts are preserved quite well at the lexical level, their behavior at the postlexical level remains largely understudied. With that background, this paper aims to clarify where and how the two types of contrasts are preserved or lost in a vocative chant of Japanese baseball.

This paper is organized as follows. Before we go into the main discussion, we describe in the rest of this introductory chapter the two types of lexical contrasts in Japanese. Section 2 sketches the basic phonological structures and principles underlying the baseball chant. This will be followed by an analysis of vowel length contrast in the chant (section 3) and that of word accent contrast (section 4). Section 5 gives a summary.

It is well known that short and long vowels contrast both in word-final and non-final positions in Japanese, as exemplified in (1). It is also known that some words tend to undergo word-final vowel shortening, as exemplified in (2), which may eventually lead to the loss of vowel length contrast in this position (Kubozono 2002, 2004). In (1) and (2) as well as in the rest of this paper, dots and hyphens indicate syllable and (major) morpheme boundaries, respectively, whereas apostrophes denote word accent, or the position where an abrupt pitch fall occurs. Words marked with superscript ^{0} are 'unaccented' words, or words that do not exhibit a pitch fall even if followed by grammatical particles like the nominative particle *ga*.

(1) a. bi'.ru 'building' *vs*. bi'i.ru 'beer'
b. ka.ra-bo'k.ku.su 'empty box' *vs*. ka.raa-bo'k.ku.su 'color box'
c. kan.ko'o-hi 'publication cost' *vs*. kan-ko'o.hii 'canned coffee'
d. pa'a.ma 'permanent wave' *vs*. pa'a.maa 'Palmer (personal name)'
e. syo'o.ta 'Shota (personal name) *vs*. syo'o.taa 'Shorter (personal name)'

(2) a. a.ri'.ga.too ~ a.ri'.ga.to 'thank you'
b. nyo'o.boo ~ nyo'o.bo '(my) wife'
c. kak.koo^0 ~ kak.ko^0 'appearance, clothes'
d. tyo'o.tyoo ~ tyo'o.tyo 'butterfly'

Similarly, lexical pitch accent is also distinctive in the language and serves to distinguish many pairs of words that would otherwise become entirely homophonous.

This is illustrated in (3). The contrast between finally-accented and unaccented words is salient when they are followed by one or more grammatical particles.

(3) a. ha'.na 'Hana (girl's name)' *vs*. ha.na' 'flower' *vs*. ha.na^0 'nose'
b. a'.ki 'autumn' *vs*. a.ki' 'tiresomeness' *vs*. a.ki^0 'vacancy'
c. a.ki.ta'-ken 'Akita Prefecture' *vs*. a.ki.ta-ken^0 'Akita dog'
d. a'.me 'rain' *vs*. a.me^0 'candy'

While word accent is distinctive both in terms of its presence/absence and its position, as can be seen from these examples, its distinctiveness is lost in some restricted phonological contexts. As often pointed out in the literature, it is lost between finally-accented and unaccented words when they are pronounced in isolation: the finally-accented words behave as if they were unaccented (Vance 1995).

(4) a. ha.na' 'flower' *vs*. ha.na^0 'nose'
b. a.ki' 'tiresomeness' *vs*. a.ki^0 'vacancy'

Distinctions in lexical accent also tend to be lost in monomoraic words, as accented words such as those in (5a) lose their accent and are, consequently, neutralized with originally unaccented words such as those in (5b) when pronounced in isolation.

(5) a. hi' 'fire', e' 'grip'
b. hi^0 'sun, sunshine', e^0 'picture'

Two points are worth emphasizing here. First, neutralizations in vowel length, i.e. (2), and word accent, i.e. (4) and (5), tend to occur in word-final positions as opposed to non-final positions. This positional asymmetry represents a universal tendency observed across languages: word-final positions are phonologically weak positions where phonological contrasts tend to be lost (Beckman 1998). Second, the accentual phenomena in (4) and (5) represent neutralizations rather than the merger of relevant accent patterns. This can be seen clearly from the fact shown in (6), where the accentual contrasts manifest themselves if the nouns are followed by a grammatical particle: accented words exhibit a clear pitch fall, while their unaccented counterparts do not.

(6) a. ha.na'-ga 'flower-NOM' *vs*. ha.na-ga^0 'nose-NOM'
b. hi'-ga 'fire-NOM' *vs*. hi-ga^0 'sun-NOM'

2. BASEBALL CHANT

A popular phrase chanted by baseball fans in Japanese stadiums is the *kattobase* phrase in (7) (Tanaka 2008). This chant involves a text-tune alignment whereby batters' names are inserted into the three X slots, $(X_1)(X_2)(X_3)$, each of which is essentially bimoraic in duration.

(7) *Kattobase XXX! Pittyaa taose-yo!*
'Hit a homerun, $X_1X_2X_3$. Beat the pitcher.'

Tanaka (2008) gives a descriptive generalization of how batters' names are actually chunked in the text-tune alignment. This generalization is given in (8) and exemplified in (9). In (9) and the rest of the paper, each of the three slots in the chant is denoted by a parenthesis.

(8) a. If the name is three moras long or shorter, the first and last moras are linked to the first and third X's, respectively.
b. If the name is four moras long, the first mora is linked to the first X and the last syllable to the third X.
c. If the name is five moras long or longer, the last syllable is linked to the third X, the second X consists of either two moras (a sole bimoraic syllable or a sequence of two monomoraic syllables) or three moras (a bimoraic syllable plus a monomoraic syllable), and the remaining materials are contained in the first X.

(9)	a. monomoraic	ri → (ri)(i)(i) 'Lee'
	bimoraic	rii → (ri)(i)(i) 'Lee'
		kan → (ka)(a)(n) 'Kan'
		kai → (ka)(a)(i) 'Kai'
		ya.no → (ya)(a)(no) 'Yano'
	trimoraic	ma.tu.i → (ma)(tu)(i) 'Matsui'
		po.pai → (po)(pa)(i) 'Popeye'
	b. four-mora	i.ti.roo → (i)(ti)(roo) 'Ichiro'
		daa.win → (da)(a)(win) 'Darwin'
		na.ga.si.ma → (na)(ga.si)(ma) 'Nagashima'
		oo.ta.ni → (o)(o.ta)(ni) 'Otani'
	c. five-mora or longer	ki.ta.bep.pu → (ki.ta)(bep)(pu) 'Kitabeppu'
		o.ga.sa.wa.ra → (o.ga)(sa.wa)(ra) 'Ogasawara'
		a.rek.ku.su → (a)(rek.ku)(su) 'Alex'
		ma.ku.do.na.ru.do → (ma.ku.do)(na.ru)(do) 'McDonald'

Tanaka's (2008) generalization needs some elaboration in order to fully describe the observed facts (see Ito et al. 2019 for a formal and principled analysis). For example, (8a) makes a wrong prediction as to monomoraic inputs: *ri* in (9a), for instance, copies its vowel, not the mora as a whole, onto the third slot. In addition, it must be specified what is contained in X_2: it is actually filled by the vowel of the first mora if the name is monomoraic or bimoraic, and by the second mora if the name is trimoraic.

More crucially, it is necessary to understand the similarity and difference between phonological length and phonetic lengthening, with the former referring to the underlying contrast between short and long vowels and the latter to vowel lengthening at the surface, phonetic level. On the one hand, phonologically short vowels are often phonetically lengthened in the three-slot template, resulting in neutralization in vowel length. For example, *se'.re.na* and *se.re'e.na* are phrased in the same way and segmentally neutralized with each other because of phonetic vowel lengthening in monosyllabic X slots: i.e. (se:)(re:)(na:) for *se'.re.na* and (se:)(ree)(na:) for *se.re'e.na*. In these examples, phonetically-lengthened short vowels, denoted with the length marker [:], are as long as underlying long vowels, denoted by double vowels, e.g. [ee].

On the other hand, pitch may provide an important cue to the distinction between short and long vowels despite this temporal neutralization, because phonetic lengthening does not change the location of lexical accent, or the position where an abrupt pitch fall occurs. Thus, (se:')(re:)(na:) *se'.re.na* can be differentiated from (se:)(re'e)(na:) *se.re'e.na*. in terms of the position of the accentual pitch fall.

In terms of pitch, all inputs involve an additional pitch fall in the final slot as a phonetic correlate of vocative intonation in the baseball phrase: (na:) is pronounced with a falling pitch pattern in the two words mentioned above. If we use a downward arrow /↓/ for this intonational fall in the final slot, the phonetic forms of the two words in question can be shown as in (10).[2] The vocative pitch fall in the final slot occurs in unaccented words, too, which differ from their accented counterparts only in the absence or presence of the pitch fall triggered by lexical pitch accent, as shown by the accented/unaccented pair in (11).

(10) a. se.re.na → (se:')(re:)(na↓:)
b. se.ree.na → (se:)(re'e)(na↓:)

(11) a. na'.o.ya → (na:')(o:)(ya↓:) 'Naoya'
b. na.o.mi^0 → (na:)(o:)(mi↓:) 'Naomi'

The above observation reveals that the text-tune alignment in the baseball chant involves not only chunking names into the three X slots in (7), but also lengthening vowels in certain contexts and assigning certain pitch features to the outputs. The last aspect actually embodies two pitch components, one concerning the abrupt pitch fall that manifests lexical pitch accent and the other regarding the postlexical pitch fall that always appears in the final X slot in (7) as a manifestation of vocative intonation. Recognizing this multi-layered structure of the baseball chant turns out to be essential for a correct understanding of how vowel length and lexical accent are neutralized, which we discuss in the next sections.

3. VOWEL LENGTH IN THE BASEBALL CHANT

3.1. Vowel length in word-final position

A careful observation of the vocative chant in (7) reveals that the contrast between short and long vowels is generally lost in word-final position due to the phonetic lengthening of vowels in the final slot. As described in section 2, the final slot is filled by the final mora if the word is bimoraic or trimoraic and by the final syllable if it is four moras long or longer. As shown in (12), phrasing given in (8) produces one and the same output for words that only differ in the length of the word-final vowel in the input. What is crucial here is that phonetically-lengthened short vowels, e.g. (ra:), are indistinguishable from underlyingly long vowels, e.g. (raa), if they appear in the final slot. This neutralization in vowel length occurs due to the combination of two factors: both short and long vowels are placed in the same slot according to the phrasing principles in (8), on the one hand, and monomoraic syllables attain bimoraic length according to the highly constrained temporal structure of the chant.

(12) a. syo’o.taa → (syo:’)(o:)(ta↓a) ‘Shorter’
b. syo’o.ta → (syo:’)(o:)(ta↓:) ‘Shota’

Neutralization in vowel length in word-final position admits one notable exception. This exception occurs in bisyllabic inputs whose first syllable is monomoraic. As illustrated in (13), word-final short and long vowels keep their length contrast because of different phrasing patterns assigned: specifically, the second slot is occupied by the second mora of the trimoraic input in (13a) and by the lengthened vowel of the first mora if the input is bimoraic as in (13b). This difference is reinforced by the presence or position of the accentual pitch fall if either or both of the inputs are lexically accented (see section 4).

(13) a. ma.maa → (ma:)(ma:)(a↓:)
b. ma.ma → (ma:)(: :)(ma↓:)

3.2. Vowel length in non-final position

While the baseball chant generally neutralizes vowel length in word-final position, it tends to preserve the contrast in non-final positions. In the first place, oppositions in vowel length are lost in non-final positions, too, if only one syllable is contained in a non-final slot. This is exemplified in (14) and (15), where pitch information is ignored to focus on the contrast in vowel length (we will see shortly those cases where pitch helps to keep the contrast). In both of these cases, vowel length is neutralized in monosyllabic slots because phonetically-lengthened vowels have the same duration as phonologically long vowels.

(14) a. se.re.na → (se:)(re:)(na:)
b. se.ree.na → (se:)(ree)(na:)

(15) a. o.baa.tyan → (o:)(baa)(tyan) ‘grandmother’
b. oo.baa.tyan → (oo)(baa)(tyan) ‘great grandmother’

While vowel length can thus be neutralized in non-final positions, just as in word-final positions, there are several cases where vowel length neutralization is blocked in non-final positions.

The first case preserves vowel length by virtue of phrasing given as in (8). This can be illustrated by the *otani*/*ootani* pair in (16), where pitch information—information on word accent and intonation—is omitted for the moment to highlight the difference in phrasing.

(16) a. o.ta.ni → (o:)(ta:)(ni:) ‘Otani’
b. oo.ta.ni → (o:)(o.ta)(ni:), *(oo)(ta:)(ni:) ‘Ohtani’

In (16a), each mora in the three-mora input is aligned with each slot in the output, with each mora undergoing phonetic lengthening to attain a bimoraic length in each slot. In (16b), in contrast, the long vowel in the initial syllable splits into two slots, with the first half of the long vowel phonetically lengthened in the first slot and the other half combined with the following light syllable into the second slot. This strange phrasing pattern has an effect of clearly distinguishing the long vowel in (16b) from the short vowel in (16a) in the output.

The peculiar phrasing in (16b) contrasts with the regular phrasing that occurs in other types of four-mora words with a long vowel. (14b), for example, contains a long vowel in the medial syllable, which occupies one full slot in the output. Similarly, (17b) has a long vowel in the final syllable and this long vowel occupies a slot by itself, without being broken into two slots in the output.

(17) a. i.ti.ro → (i:)(ti:)(ro:)
b. i.ti.roo → (i:)(ti:)(roo)

Comparison of (16b) with (14b) and (17b) highlights the peculiarity of the phrasing in the former. This peculiarity is responsible for the preservation of vowel length contrast between (16a) and (16b).

While the first case relies on phrasing to preserve vowel length, two other noteworthy cases employ word accent for the same purpose. The first of these two cases specifically uses the *position* of word accent in the sense that the difference in the position of the input accent is well preserved in the output and, consequently, serves to distinguish between the underlying short and long vowels in the input. This can be illustrated by the pair, *se'.re.na* and *se.re'e.na* in (18), which are accented on different syllables in the input by the default accent rule of the language (Kubozono 1995, 2008, in press).[3] The two inputs are phrased in the same way, thus producing identical temporal patterns. However, they are faithful to the accent difference in the input and manifest the accentual pitch fall in different positions in the three-slot outputs: i.e. immediately before the second slot in (18a) and in the midst of the same slot in (18b).

(18) a. se'.re.na → (se:')(re:)(na$^{\downarrow}$:)
b. se.re'e.na → (se:)(re'e)(na$^{\downarrow}$:)

Note that the pitch difference between (18a) and (18b) is lost if both words are lexically unaccented, as illustrated in (19). In this particular case, the two inputs yield entirely identical outputs both in phrasing and pitch. Stated reversely, short/long vowels in the input can be differentiated by pitch in the output as long as either of them is lexically accented.

(19) a. se.re.na^0 → (se:)(re:)(na$^{\downarrow}$:)
b. se.ree.na^0 → (se:)(ree)(na$^{\downarrow}$:)

Finally, let us consider the third case where vowel length contrast is preserved in non-final position. Like the second case we have just seen, vowel length is preserved with the help of word accent, yet not in terms of the position of the accent but by its presence or absence. This occurs when word accent is deleted due to the clash with the following intonational pitch fall. In (20), for example, the two inputs contrast with each other only in the length of the initial (or, better yet, penultimate) syllable. They are expected to keep the contrast in the output by the position of the accent. What actually happens is that (20a) undergoes accent deletion—or deletion of the accentual pitch fall in phonetic terms—to avoid a clash between the accentual fall (’) and the intonational pitch fall ($^{\downarrow}$) characteristic of vocative chant.

(20) a. ma’.ma → (ma:)(: :’)(ma$^{\downarrow}$:) → (ma:)(: :)(ma$^{\downarrow}$:)
b. ma’a.ma → (ma:’)(a:)(ma$^{\downarrow}$:)

The accent deletion in (20a) is a rather general process, as we will see in the next section (section 4.2). Because of this deletion, the two words in (20) come to contrast with each other in the output in terms of the absence or presence of a lexical pitch fall. Just as in (18), the two words in (20) apparently lose a vowel length contrast in the output. Here, too, however, pitch provides a decisive cue to the distinction between short and long vowels in the input.

It is important to emphasize here again that this preservation is dependent on word accent. The contrast in question is entirely lost if both input words are lexically unaccented or if the word with a long vowel, i.e. (20b), is lexically unaccented. The latter case is illustrated in (21).

(21) a. ma’.ma → (ma:)(: :’)(ma$^{\downarrow}$:) → (ma:)(: :)(ma$^{\downarrow}$:)
b. maa.ma^0 → (ma:)(a:)(ma$^{\downarrow}$:)

4. WORD ACCENT IN THE BASEBALL CHANT

4.1. Neutralization of word accent: Case 1

Let us finally discuss how accentual contrasts are lost or preserved in the vocative chant. Our analysis shows that contrasts in lexical accent are generally well preserved in the chant, as illustrated by the accented/unaccented pairs in (11) above, repeated in (22): lexically accented words have both accentual pitch fall and intonational pitch fall, while lexically unaccented ones have just the latter type of pitch fall in the output.

(22) a. na’.o.ya → (na:’)(o:)(ya$^{\downarrow}$:) ‘Naoya’
b. na.o.mi^0 → (na:)(o:)(mi$^{\downarrow}$:) ‘Naomi’

On the other hand, accentual contrasts are lost in two specific contexts, both of which involve deletion of lexical accent in a conflict with vocative intonation. One of the contexts is illustrated in (23).

(23) a. be.ru.gi’i → (be:)(ru:)(gi’$^{\downarrow}$i) ‘Belgium’
b. e.mu.zye’e → (e:) (mu:)(zye’$^{\downarrow}$e) ‘MJ’

In these examples, the input is accented on the final heavy syllable, which deviates from the default accent pattern that would be predicted by the accent rule of the language, i.e. *be’.ru.gii*, *e’.mu.zyee*. Since the final heavy syllables are assigned to the final slot of the chant according to the phrasing principles in (8), the ad-hoc lexical accent in these words is expected to manifest itself within the final slot, i.e. in the same position where an intonational pitch fall occurs. In the chant, however, this output is actually indistinguishable from the output of the unaccented input such as those in (24).

(24) a. be.ru.rin^0 → (be:)(ru:)(ri↓n) 'Berlin'
b. koo.tyoo^0 → (ko:)(o:)(tyo↓o) 'Headmaster (of a school)'

Specifically, the final slot in (23) exhibits just the same degree of pitch fall as the corresponding slot in (24). This suggests that the lexical accent in (23) is phonologically deleted to remedy a clash with the intonational pitch fall. This is illustrated in (25).

(25) a. (be:)(ru:)(gi'↓i) → (be:)(ru:)(gi↓i)
b. (e:) (mu:)(zye'↓e) → (e:) (mu:)(zye↓e)

This process is interesting if seen from a cross-linguistic perspective since it is reported in the literature that intonation generally wins over lexical word accent/tones across languages if they clash with each other (Gussenhoven 2018). The accent deletion in (25) supports this view.

4.2. Neutralization of word accent: Case 2

The other notable case where distinctions in word accent are lost also involves deletion of word accent, triggering accentual neutralizations. In this second case, however, the neutralization occurs not between accented and unaccented words in the input, but between two accented words. Accent deletion in this second case occurs if the accent appears adjacently to the intonational pitch fall or, more specifically, when the accentual fall occurs at the end of the second slot in the chant. Some examples are given in (26).

(26) a. ma'.ma → (ma:)(: :')(ma↓:) 'mama'
b. ri'i → (ri:)(: :')(i↓:) 'Lee'
c. pi.ka'.tyuu → (pi:)(ka:')(tyu↓u) 'Pikachu'

Note that these words are accented on the penultimate mora or syllable in the input. Because of this accent structure, they come to bear a lexical accent at the end of the second slot in the chant, with an accentual fall occurring between this slot and the final one—recall that an accentual fall is independent of phonetic vowel lengthening and actually occurs immediately after the phonetically-lengthened vowel. This accentual fall clashes with the pitch fall triggered by vocative intonation, which occurs in the middle of the third slot.

Unlike the first case of pitch clash illustrated in (23) above, pitch clash in this case occurs when two types of pitch fall—accentual (i.e. lexical) and intonational (i.e. postlexical)—appear adjacent to each other, with one mora in between. Logically speaking, it would be possible to realize both pitch falls at the surface, but in actual fact, only the intonational pitch fall surfaces in the output. This loss of lexical accent is illustrated in (27).

(27) a. (ma:)(: :')(ma↓:) → (ma:)(: :)(ma↓:)
b. (ri:)(: :')(i↓:) → (ri:)(: :)(i↓:)
c. (pi:)(ka:')(tyu↓:) → (pi:)(ka:)(tyu↓u)

The view that lexical accent is phonologically lost to remedy a conflict with a following intonational pitch fall can be borne out by the fact that the outputs in (27) are phonetically indistinguishable from those of underlyingly unaccented words as in (28).

(28) a. ba.ba^0 → (ba:)(: :)(ba↓:) '(Mr) Baba'
b. ki.ta.roo^0 → (ki:)(ta:)(ro↓o) 'Kitaroo'

Here, again, it is the lexical pitch property that is sacrificed, while postlexical pitch features remain intact. This reinforces Gussenhoven's (2018) view that postlexical tones win the competition with lexical tones across languages.

5. CONCLUSIONS

In this paper we looked at two types of phonological contrasts—those in vowel length and in word accent—and examined where and how they are neutralized in the postlexical phonology of Tokyo Japanese. We specifically analyzed the vocative chant used by Japanese baseball fans when they cheer up their favorite players.

As for vowel length, short and long vowels are neutralized in the output slots that contain only one syllable. Since the final slot usually corresponds to the final syllable of the input according to the text-to-tune mapping rules, vowel length is most prone to neutralization in word-final positions. On the other hand, it is less prone to neutralization in non-final positions, not simply because non-final slots in the output often consist of more than one syllable, but also because phrasing and pitch contributes to the preservation. We saw three such cases in this paper. In one case, long vowels undergo peculiar phrasing by which they split into two slots in the output as in (16b). In the other two cases, in contrast, the text-to-tune mapping rules yield one and the same phrasing pattern for short and long vowels, but the length distinction is preserved by pitch—by the locations of word accent in one case, as illustrated in (18), and by the presence or absence of word accent in the other case, as shown in (20). The latter case is worth special attention since vowel length is preserved at the sacrifice of an underlying lexical accent.

While neutralizations in vowel length thus exhibit positional effects, those in word accent are also sensitive to positional differences to a certain extent. We noted two specific cases where oppositions in word accent are lost in the baseball chant. One case involved deleting word accent that appears in the same place as the intonational pitch fall, while the other case involved deleting an accent when it appears immediately before the mora involving the intonational fall. These two cases share three basic features. First, they both neutralize accentual contrasts by deaccenting lexically accented words rather than assigning a new accent to lexically unaccented words. Second, accent deletion occurs in words that are accented near the end, that is, when the accent is linked to the very final slot or to the end of the medial slot in the output. In these structures, lexical accent competes with the postlexical pitch fall that occurs in the final slot. Third, it is the lexical pitch fall that is deleted, not the intonational pitch fall.

These findings have certain implications for cross-linguistic studies. First, it is important to note that word accent interacts with vowel length in interesting ways. Specifically, word accent helps to preserve the contrast in vowel length in cases where the text-to-tune mapping rules yield one and the same output in temporal terms, i.e. (18)

and (20). On the other hand, there seems to be no case where vowel length contributes to the preservation of accentual differences in the input. This suggests the hierarchy in (29), where vowel length in non-final positions is least prone to neutralization (and, hence, the most important in the hierarchy), followed by word accent and vowel length in word-final positions in this order.

(29) Vowel length (non-final) >> Word accent >> Vowel length (final)

Second, neutralizations in vowel length and those in word accent both show a positional effect whereby phonological contrasts tend to be lost in word-final positions. This agrees with the general observation that constituent-final positions are phonologically weak positions where neutralizations are most likely to occur (Beckman 1998).

Finally, the present study showed that word accent loses when it conflicts with the intonational pitch fall. In other words, postlexical requirements win over lexical ones when they compete with each other. This supports the view that postlexical tones generally win over lexical ones when they clash with each other (Gussenhoven 2018).

NOTES

1 An earlier version of this paper was presented at the Kobe-NINJAL-Oxford Linguistics Colloquium held at Kobe University on July 21st, 2019, and the 1st NINJAL-SNU Joint Workshop held at Seoul National University on October 17th, 2019. I am grateful to the audience of these conferences as well as Junko Ito and Armin Mester for their invaluable comments. The work reported here was supported by the JSPS KAKENHI Grant Numbers 19H00530, 16H06319 and 17K18502 as well as the NINJAL collaborative research project 'Cross-linguistic Studies of Japanese Prosody and Grammar'.

2 This pitch pattern is one of the three distinct patterns characteristic of vocative intonation observed in spontaneous speech in Tokyo Japanese, or the one called Pattern γ by Kubozono & Mizoguchi (2019).

3 Default accent in Tokyo Japanese falls on the rightmost, non-final foot: {se'.re}.na *vs.* se.{re'e}.na, where { } denotes a bimoraic foot. See Kubozono (2008) for more details.

REFERENCES

Beckman, Jill. 1998. *Positional faithfulness: An optimality theoretic treatment of phonological asymmetries*. Doctoral dissertation, University of Massachusetts at Amherst [Garland Press, 1999].

Gussenhoven, Carlos. 2018. On the privileged status of intonational boundary tones: Evidence from Japanese, French, and Cantonese English. In G. Buckley, T. Crane and J. Good (eds.) *Revealing structure: Papers in honor of Larry M. Hyman*. Stanford: CSLI. 57–69.

Ito, Junko, Haruo Kubozono, Armin Mester and Shin'ichi Tanaka. 2019. Kattobase: The linguistic structure of Japanese baseball chants. In *the Proceedings of Annual Meeting of Phonology (AMP) 2018* (online). The Linguistic Society of America.

Kubozono, Haruo. 1995. Constraint interaction in Japanese phonology: Evidence from compound accent. *Phonology at Santa Cruz (PASC)* 4, 21–38.

Kubozono, Haruo. 2002. Temporal neutralization in Japanese. In C. Gussenhoven and N. Warner (eds.) *Papers in Laboratory Phonology* 7. Berlin: Mouton de Gruyter. 171–201.

Kubozono, Haruo. 2004. Weight neutralization in Japanese. *Journal of Japanese Linguistics* 20, 51–70.

Kubozono, Haruo. 2008. Japanese accent. In S. Miyagawa and M. Saito (eds.) *The handbook of Japanese linguistics*. Oxford: Oxford University Press. 165–191.

Kubozono, Haruo. in press. Default word prosody and its effects on morphology. To appear in *the Proceedings of JK 26*. Stanford: CSLI.

Kubozono, Haruo and Ai Mizoguchi. 2019. The phonetics and phonology of vocative intonation in Tokyo Japanese. *Proceedings of ICPhS 2019* (online), Melbourne.

Tanaka, Shin'ichi. 2008. *Rizumu, akusento-no 'yure'-to on'in, keitai-koozoo* [Phonological/ morphological structure and "variant patterns" in rhythm and accent]. Tokyo: Kurosio Publishers.

Vance, Timothy J. 1995. Final accent vs. no accent: Utterance-final neutralization in Tokyo Japanese. *Journal of Phonetics* 23, 487–499.