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SPEAKER AGE-RELATED EFFECTS ON THE INTONATION OF SIMPLE DECLARATIVE PARATONES IN EKEGUSII

Samwel Komenda, Jane A. N. Oduor and Prisca Jerono
University of Nairobi

This paper provides an analysis of intonation-related features in Ekegusii simple declarative paratones using the PRAAT speech analysis software. Ekegusii is a tonal Eastern Bantu language spoken in Kisii and Nyamira counties, Kenya. The analysis was meant to explain the influence of age in the realization of the paratones under analysis. Four simple declarative paratones selected by one of the authors who is a native Ekegusii speaker were used in the analysis. These paratones were read out by twenty-four other native speakers. Their speech was recorded and analysed following the basic tenets of the ToBI annotation system. Voice fundamental frequencies and auto-pitch graphs were automatically extracted from the recorded utterances by using the PRAAT software. Mean fundamental-frequency ranges and intonemes for the different age groups were compared. Two major findings were made: (a) simple declarative paratones in Ekegusii were characterised by declination, initial intonemes like downstep and final lowering; (b) the participants' F0 values decreased from child age to youth age and middle age but increased once again in the advanced age for both males and females.

Key terms: Acoustics, boundary tone, declination, fundamental frequency, intoneme, paratone

1. INTRODUCTION

This paper is on the acoustic features of intonation in Ekegusii. According to Cammenga (2002: 20-21), Ekegusii is classified as E.42 and is related to Logooli (E.41) and closely related to Kuria (E.43). It is a tonal Eastern Bantu language of Kenya that has a bitonal system distinguishing between lexical low and high target tones (Nash 2011: 170). The use of tone in Ekegusii is described in research works by Bickmore (1999: 109-153), Cammenga (2002: 66-71) and Nash (2011: 60-67). However, the use of intonation in the language is yet to be documented despite Ladefoged & Disner's (2012: 24) observation that tonal languages use pitch of voice "to produce different tones which change the meanings of words" and that "all languages also use pitch to produce different intonations which show the clause structure and other grammatical aspects of the sentence". It is the interaction between the target tones and intonation that this paper set out to establish.

According to Collins & Inger (2013: 140), intonation is an aspect of pitch that operates "over an extent greater than a single word, usually over complete clauses or sentences". As Ladefoged & Disner (2012: 14) observe, intonation is "a difference in pitch that changes the meaning of a group of words". Among other functions, intonation can convey post-lexical meanings like "marking the boundaries of syntactic units" (Ladefoged & Johnson, 2015: 254) and distinguishing between syntactic structures like statements and questions. Following Hirst & Di Cristo (1998: 15), we have taken the voice fundamental frequency (F0) as "the primary parameter" in determining the intonation of a language structure. Measured in hertz (Hz), voice F0 denotes the rate of vibration of the vocal folds per second in speaking (Gussenhoven, 2004: 2).

This paper has two objectives: first, to shed light on the nature of intonation for simple declarative paratones[1] in Ekegusii; second, to describe how individual Ekegusii speakers of different age groups vary in their voice fundamental frequency (F0) ranges. In relation to the first objective, the paper discusses the realization of intonation features like declination (i.e., "a phonetic characteristic of utterances consisting of a continuous lowering from the beginning to the end of the intonation unit" [Hirst & Di Cristo, 1998: 21]) and intonemes (i.e., the "minimal units of distinctive intonation contours associated with particular functions" [Caron, 2015: 11]). As Caron (2015: 11-14) observes, intonemes are either terminal (fall, rise, level, and rise-fall) or initial (step-down and step-up). In this paper, we analysed terminal intonemes in terms of boundary tones and the initial intonemes as downstep and upstep. We considered the initial intonemes as

[1] According to Caron (2015: 6), "a paratone corresponds to an utterance, i.e. a functionally complete speech act" and is "followed by a pause and a pitch reset, ends in a Fall, and is characterized by overall declination". A distinction is made between simple and complex paratones with simple paratones having one intonation unit (IU) and complex ones consisting of more IUs. Caron (2015: 6) uses the term IU to refer to "a functional, coherent segmental unit, be it syntactic, semantic, informational or the like".

the result of the interaction of intonation tones. Following Caron (2015: 6), we also took declination and intonemes as the categories through which “intonation influences the realisation of post-lexical tones” in simple declarative paratones in Ekegusii.

A simple declarative paratone is one that gives information about the state of things in the universe of discourse, as in the English sentence, *Ten percent of the world population is infected with the corona virus*. An Ekegusii declarative can either be affirmative or negative (Cammenga, 2002: 400). The affirmative declaratives, like (1) below, have the syntactic structure: Subject-Verb-Object (SVO).

(1) *Deveney nariete ritoke*. ‘Deveney ate a banana’

The negative ones, like (2), are signalled either morphologically or modally (Cammenga, 2002: 400).

(2) *Deveney tarieti ritoke*. ‘Deveney did not eat a banana’

In (2), we realise that negation is marked morphological by the addition of the negative affix /ta-/ in the verb <-*riet*->. According to Cammenga (2002: 400), in finite verbs, the negative affix /ti-/ and a final vowel /i/ instead of the usual FV/e/ can also be used to mark negation.

With regard to the second objective, the PRAAT speech analysis software (Boersma, 2001; Boersma & Weenink, 2012) was used to extract voice fundamental frequencies for each participant. The software has been extensively used to analyse the acoustic properties of other languages in the world, including Xhosa (Jones, Louw & Roux, 2001), a Bantu language. However, the present study is the first one to have used it in an attempt to account for the age-related differences in the pronunciation of simple declarative paratones in Ekegusii. These are differences both in the production of voice fundamental frequencies and those other intonation features like declination, and the final and initial intonemes. Our investigation of the age-related variability in the production of intonation features was motivated by Ladefoged & Johnson’s (2015: 254) observation that “Many kinds of information can be conveyed by variation in pitch. As is the case with other aspects of speech sounds, some of this information simply indicates the personal characteristics of the speaker. The pitch of voice usually indicates whether the speaker is male or female and, to some extent, what his or her age is".

2. METHODOLOGY

2.1 The participants

The data analysed in this paper were collected from twenty-four Ekegusii native speakers who were selected through purposive sampling. These were people that one of the authors knew very well and frequently interacted with in his rural home at Riangabi, Kisii County. Participants that would read in Ekegusii were selected for the study. They belonged to four age groups: children (9-13 years), the youth (17-25 years), the middle-aged (40-50 years) and the advanced-age group (from 60 years and above). There were six participants from each age group with an equal representation of males (3) and females (3).

2.2 Data collection procedure

A list of four declarative utterances generated by one of the authors (who is also a native speaker of Ekegusii) was used to obtain data. Only four utterances were used since the aim was to give a detailed phonetic labelling of each utterance. The utterances generated are given in set (3):

(3) a) /naβaβwatania koβa omosatʃa no omokuŋu/
'S/he united them to be husband and wife'

b) /tareteti kende pi/
'S/he did not bring anything'

c) /βatʃire kwojia eŋombe/
'They have come/ gone to take/ bring a cow.'

d)/omonto oɣokora eɲaŋi nesese/
'A person doing a wedding with/is a dog'

Each of the 24 participants read each one of the four utterances three times and as clearly. The three readings were necessary because they gave the researchers an opportunity to choose the pronunciation which they felt was near to natural speech for analysis. The speech of each participant was recorded in PRAAT and saved as wave files on a computer. In total 288 utterances were made and recorded (4 utterances x 24 participants x 3 repetitions).

2.3 Data analysis procedure

The individual participants' files were opened as long sound files and used for the automatic extraction of audio waveforms, spectrograms, and F0 values using a few commands in PRAAT. They were interpreted within the Autosegmental-Metrical (A-M) Theory which was originally used in Pierrehumbert (1980) to describe English intonation but which has since been modified and extended to describe other world languages as well. The basic tenet of the A-M Theory that was adopted in the interpretation of intonation features is the Tones and Break Indices (ToBI)[2], proposed by Beckman et al. (2005: 9-54). Using the ToBI annotation, distinct tones in the declarative paratones in the present study were identified by listening and labelled in the Tones tier. Boundary tones were marked by (%) placed at the beginning and the end of a paratone.

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[2] According to Beckman et al. (2005: 19-22), a ToBI presentation of an utterance has "two continuous phonetic records" and "four symbol [parallel] strings" (also called tiers). The continuous phonetic record shows "an audio recording of an utterance" and "some representation of the fundamental frequency (f0) contour". The four symbolic tiers are: the Tones tier that shows "a symbolic transcription of the intonation contours"; the Words tier that gives an "orthographic transcription of each word in the utterance, placed at the word's end which is marked with a time index"; the Break Indices tier which indicates "the perceived degree of boundary strength for each of the labels in the Words tier" and a Misc[ellaneous] tier which is used "for events such as coughs or disfluencies". Since we used read-aloud speech material only in this paper, we excluded the Misc tier in our analysis. We also posited a Phonemes tier between the Tones tier and the Words tier to meet the demands of our analysis. Beckman et al. (2005: 23) observe that the labelling in the Break Indices tier can be done using four break index values (0-4). The value 0 shows a "very close inter-word juncture" (i.e., two words are produced so that the boundary between them is indeterminate); 1 indicates "ordinary phrase-internal word end" (i.e., there is at least a small pause between prosodic elements); 3 shows "intermediate phrase end, with phrase accent" and 4 to show an "intonation phrase end, with boundary tone". Break index 2 signals a "perceived 1 with unexpected tonal marker, or lengthening etc., suitable for break index 3 or 4 without the phrase accent and /or boundary tone".

Acoustic analyses were carried out to reveal the phonetic structure of simple declarative paratones and the inter-speaker variability in the production of fundamental frequencies. Auto-pitch graphs were used to present the intonation patterns of the individual participants' pronunciations. The pitch contours were manually marked in the annotated PRAAT text grids.

To account for the age-related variations in the F0 production, the mean F0 and standard deviations of the different age groups in the production of each declarative paratone were calculated using the SPSS tool.

3. RESULTS PRESENTATION AND DISCUSSION

In this section, we present results of the analysis on the intonation features of simple declarative paratones and the influence of age on the realisation of such features.

3.1 The nature of intonation in simple declarative paratones in Ekegusii

To show the nature of intonation in simple declarative paratones in Ekegusii, we display the pitch tracks extracted from PRAAT for the production of the utterance /naßaßwatania koßa omosaʧa no omokuŋu/. The pitch tracks represent the actual pronunciation of the paratone by different participants. They specifically indicate the waveforms (top window), the fundamental frequency values (the number after the line at the right-hand side in the middle window) and the ToBI transcription (bottom window). For example, a 75-year-old male and a 61-year-old female pronounced the utterance as shown in the pitch tracks in Figures 1 and 2 respectively.

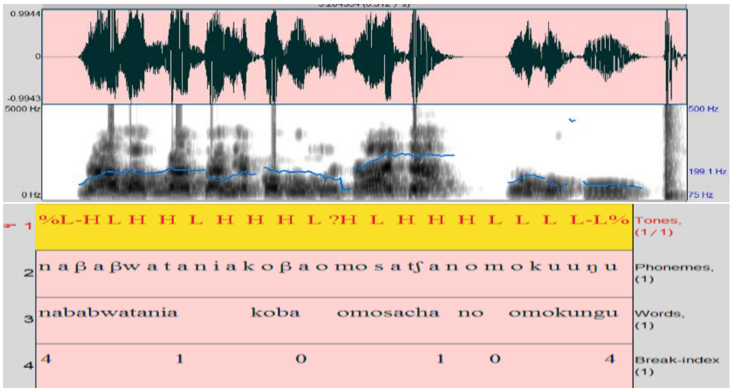

Figure 1: Audio waveform, F0 contour and ToBI label for utterance /naßaßwatania koßa omosaʧa no omokuŋu/ produced by a 75-year-old male

Figure 2: Audio waveform, F0 contour and ToBI label windows for utterance /naßaßwatania koßa omosaʧa no omokuŋu/ produced by a 61-year-old female

From the windows in Figures 1 and 2 above, we note that the geriatric participants produced the utterance with their vocal folds vibrating at Fundamental frequency ranges of about 199 Hz and 223 Hz, respectively. The Tones tiers indicate that the utterance had an initial upward pitch adjustment marked by % LH boundary tone and a fall terminal intoneme marked by LL% boundary tone. Equally, the H-tones following L-tones (LH) in the renditions are lowered in both participants. This phonological process is called downstep. The process is triggered by floating tones. For example, the vowel /a/ of the word /koßa/, 'to be', gets deleted because of the following vowel /o/ in the word

/omosaʧa/. However, the L-tone associated with it is not deleted. The floating L-tone makes the H-tone of the pre-prefix /o/ to be lowered. At the same time all H-tones immediately before L-tones (HL) are automatically raised in a phonological process called upstep. This should be expected for, as Gussenhoven (2004: 108) notes, “languages with downstep may also have upstep”.

From the windows in figures 1 and 2, we also noted that there was a gradual lowering of the pitch over the course of the intonation unit. Readings from the tonal tiers show that each successive L- and/ or H-tone in the utterance is produced at a lower level than the preceding one. This process has been described in the literature as “declination” (Ladefoged & Johnson 2015: 269 and Fox 2007: 198/212). The downstep trends induce the paratone’s declination. Lastly, at the end of the paratone, there is a final lowering added to declination. This yielded the LL% final boundary tone.

The analysis of the break-index tiers shows that there are intonation phrase boundaries at the utterance-initial and terminal positions as shown by the break index of 4. Normal word-juncture boundaries marked by the break index of 1 are kept between the words /naßaßwatania/ and /koßa/and between /omosaʧa/ and /nomokuŋu/. The break index of 0 between the words /koßa/ ‘to be’ and /omosaʧa/ ‘man’ indicates minimal juncture between the words. This is due to the deletion of the final vowel /a/ of the word /koßa/. A 0-break index is also noted between the words /*no*/ and /omokuŋu/ as a result of the merging of the two similar vowel segments at the boundary between the two lexical items.

The observations above are compared with the middle age participants’ pronunciation of the same utterance as illustrated in Figures 3 and 4.

Figure 3: Audio waveform, F0 contour and ToBI label windows for utterance /naßaßwatania koßa omosaʧa no omokuŋu/ said by a 46-year-old male

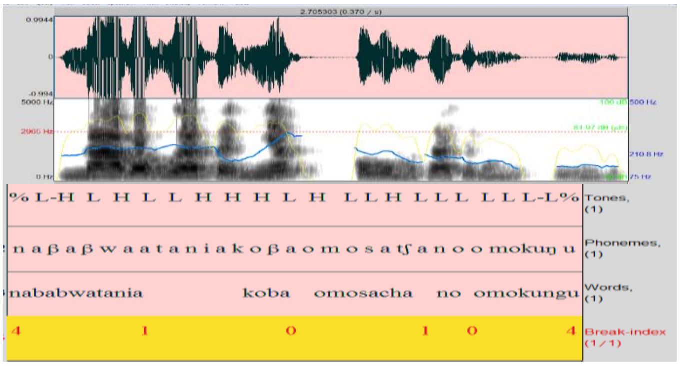

Figure 4: Audio waveform, F0 contour and ToBI label windows for utterance /naßaßwatania koßa omosaʧa no omokuŋu/ produced by a 48-year-old female

From the pitch track in Figure 3, we noted that a 46-year-old male participant produced the utterance at an F0 of 120.3 Hz. This was lower than the 199 Hz produced by the 75-year-old male in Figure 1. Similarly, the middle-aged female (48 year-old) produced the utterance at a lower F0 (210.8 Hz) than the advanced age female (223.1 Hz). Despite the differences in F0, similar patterns of downward lowering of voice in the course of the paratone, the downward pitch adjustment at the utterance onset (marked by % LH boundary tone), downstep, H-raising and the final lowering (marked by L-L% boundary tone) as rendered by the advanced age participants were also reported with these participants. There was also a similar disjuncture between words as displayed in the Tones and Break Indices tiers. However, the deletion of segments that induced downstep did not occur in the pronunciation of the middle-aged participants except at the juncture between /no/ and /omokuŋu/. Again, there are also differences in the steepness of the declination. For instance, the middle age female participant had a steeper declination in the later part of the paratone than the advanced age female participant. This shows that the middle-aged and the advanced-age participants share certain characteristics in their speech but also differ in other aspects.

The analyses have also indicated that youth participants produced higher F0s than the middle-age participants. For example, a 20-year-old male participant produced the utterance used in the graphical displays above at an F0 range of about 135 Hz while a 20-year-old female produced it at 236 Hz. The F0 value for the youth male participant is slightly higher than what the middle-age male participant (120.3 Hz) realized but it is lower than that of the advanced age male participant (199 Hz). However, the young female participant's F0 range is higher than that of both the advanced age (223.1 Hz) and the middle age (210 Hz) female participants.

The production of the same utterance by children reveals drastic differences with those of older participants. Their pitch tracks are presented in Figures 5 and 6.

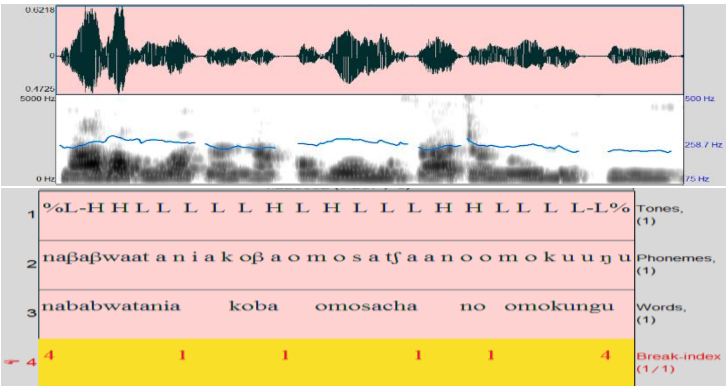

Figure 5: Audio waveform, F0 contour and ToBI label windows for utterance /naβaβwatania koβa omosatʃa no omokuŋu/ said by an 11-year-old male

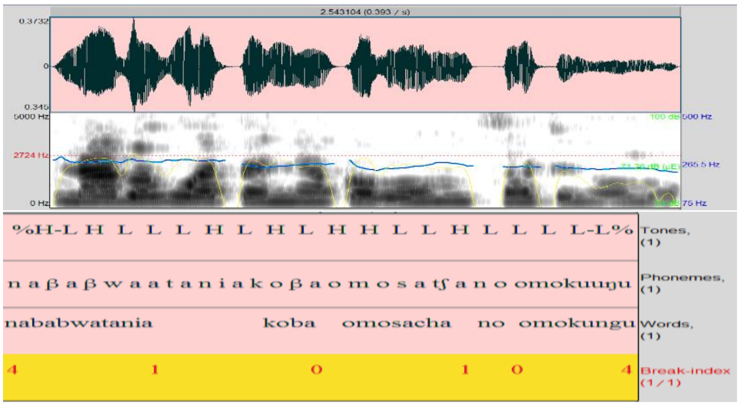

Figure 6: Audio waveform, F0 contour and ToBI label windows for */naβaβwatania koβa omosatʃa no omokuŋu/* produced by a 9-year-old female

From Figure 5, we note that the 11-year-old male child produced the paratone at an F0 range of 258.7Hz. On the other hand, Figure 6 shows that the nine-year-old female child pronounced the utterance at 265.5Hz. The children's F0 ranges reported above were the highest in all the participants. As with the other participants, children had similar initial raising intonemes (%LH), terminal fall intonemes (LL %), downward lowering of pitch, downstep and upstep. However, their pitch tracks show differences in the word junctures in that they maintained internal word juncture break-indices of 1 as shown in the ToBI windows. This was partly due to the absence of deletion of segments in their pronunciation. This proves that age as a sociological factor influences the pronunciation of an utterance in Ekegusii.

The analyses above indicate that the pronunciation of a simple declarative paratone in Ekegusii is characterised by downtrend intonation features such declination, downstep and final lowering. The analyses have also indicated that individual participants show variability in F0 production. In order to remove individual differences and make generalizations on the realization of F0 ranges in all the paratones in (3), we carried out descriptive statistics whose results are discussed in Sub-section 3.2.

3.2 The effect of age on F0 production

In the statistics tables that follow, we compared the F0 means and standard deviations for each of the four declarative utterances as produced by the 24 participants. The summary presented in the tables show that participants produced varied F0 values. For example, data in Table 1 which is a summary of the mean F0 production based on the utterance */naβaβwatania koβa omosaʧa no omokuŋu/*, reveal that children recorded the highest F0, followed by the advanced age and the youth. The middle-aged participants produced the lowest F0 values.

Table 1: Comparison of F0 Means for /naßaßwatania koßa omosaʧa no omokuŋu/

Age	Mean	Std. Dev.
Child	228.2000	30.37459
Youth	175.6000	44.36517
Middle-aged	151.4467	50.53304
Advanced-aged	183.1333	32.92699
Overall	184.5950	47.15507

As can be seen in Table 1, children produced the utterance at a mean F0 range of 228.2 Hz. The advanced age group produced it at a mean F0 of 183.1 Hz while the youth produced it at 175.6 Hz. The middle age group had a mean F0 range of 151.5 Hz. The difference in F0 between the children and the youth was about 52.6 Hz while that between the youth and the middle age group was about 24.2 Hz while that of the middle aged group and the advanced age group was about 31.7 Hz. The implication of this is that major changes in the F0 range of a speaker occurred during the youth ages. The high F0 ranges for children reported in this study have been attributed to the higher rates of vibration of their vocal folds. As already noted, differences in the size and length of the vocal folds determines the F0 range of the speaker. It is established that children’s vocal folds are shorter and thinner and consequently vibrate faster and thus produce higher F0s than the older speakers. The F0 variations noted in the pronunciation of the above paratone are further prove that the F0 range of an Ekegusii speaker lowers with increase in age up to middle age. At above 60 years, the F0 range of a speaker again starts to increase. These age variations in the F0 production for this utterance are graphically presented in Figure 7.

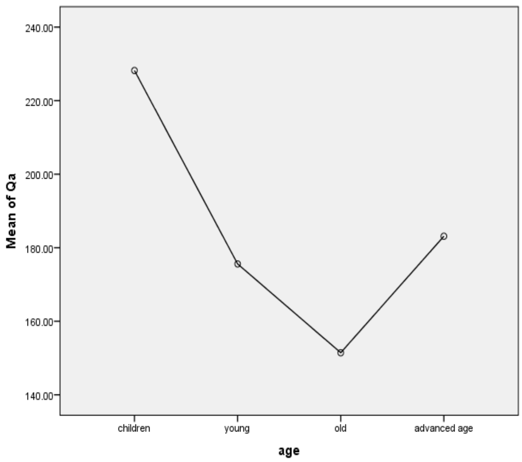

Figure 7: Age differences in the production of /naβaβwatania koβa omosaʧa no omokuŋu/

A comparison of means for the negative declarative utterance /taɾeteti kende pi/, equally reveals inter-speaker variability in the F0 realisation. Children, the youth, the middle-aged and advanced-aged participants recorded different F0s. These differences are summarized in Table 2.

Table 2: Comparison of F0 Means for /taɾeteti kende pi/

Age	Mean	Std. Dev.
Children	225.0500	32.08780
Youth	179.7833	49.37758
Middle-aged	147.3500	52.97614
Advanced-aged	193.3167	40.22807
Overall	186.3750	50.27090

From Table 2 we note that children produced the utterance at an F0 range of 225 Hz. This was considered the highest F0 range for this utterance. The advanced age group produced it at the second highest pitch range of 193 Hz while the youth produced it at an F0 range of about 180 Hz. The middle age group once more had the least F0 range of 147. These differences are presented in Figure 8.

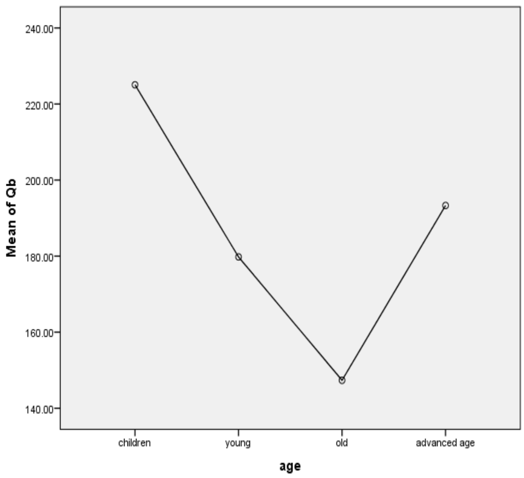

Figure 8: Age differences in the production of /tareteti kende pi/

In conclusion, we note that the above paratone can be said to have been produced with the vocal folds vibrating at an average F0 range of about 186 Hz. This range is almost similar to the 185 Hz recorded for the paratone analysed earlier. The summary statistics that follow display the mean F0 production for the third declarative utterance /ßaʧiɾe kwojia eŋombe/.

Table 3: Comparison of F0 Means for /ßaʧire kwojia eŋombe/

Age	Mean	Std. Dev.
Children	223.6833	31.74596
Young	171.0500	52.04866
Middle-aged	150.5567	48.97452
Advanced-aged	181.4167	35.46003
Overall	181.6767	48.42744

Just like in the other utterances, children produced the highest F0 range (224 Hz) in this declarative utterance. They were followed by the advanced-age group (181Hz). The youth group realized 171 Hz while the middle age group had the lowest F0 value (151 Hz). The data above reveal a similar trend in age variability in the F0 production in the utterance just like in the earlier declarative utterances. These differences are further shown in the profile plot in Figure 9.

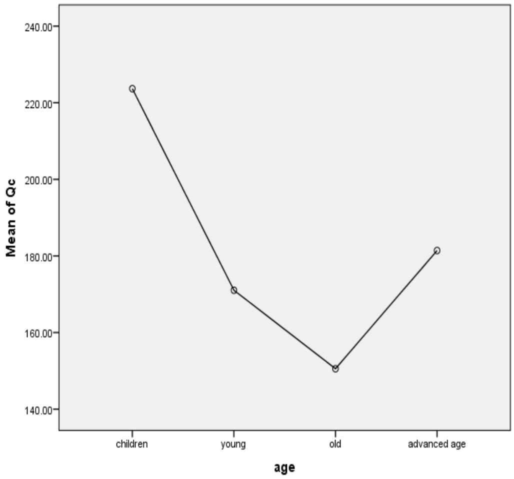

Figure 9: Age differences in the production of the paratone /βaʧire kwojia eŋombe/

The results reported above are similar to the earlier ones and to those in Table 4 based on the utterance /omonto oɣokoɾa eɲaŋi nesese/.

Table 4: Comparison of F0 Means for /omonto oɣokora eɲaŋi nesese/

Age	Mean	Std. Dev.
Children	228.9500	32.58262
Youth	178.8667	49.32888
Middle-aged	143.1550	44.71433
Advanced-aged	191.1833	30.51343
Overall	185.5388	48.75440

From Table 4 we note age variability in the F0 production of this declarative utterance. Results indicate that children realized the highest F0 range (229 Hz). The advanced age group produced the second highest F0 range (191 Hz). The youth group had an F0 range of 179 Hz while the middle-aged participants had the lowest F0 range of 143 Hz. The age differences noted for this declarative utterance are displayed in the profile plot in Figure 10.

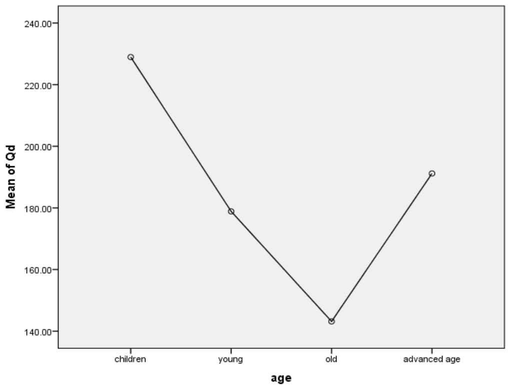

Figure 10: Age differences in the production of /omonto oɣokora eɲaŋi nesese/

In summary, an estimated marginal mean for the four declarative paratones discussed above shows that the utterance in 3 (a) was produced at an F0 of 185 Hz; 3 (b) at 186 Hz; 3 (c) at 182 Hz and 3 (d) at 186 Hz. Taking the average of the four utterances, we, therefore, conclude that an Ekegusii declarative utterance is produced with the vocal folds vibrating at an F0 of about 185 Hz.

4. SUMMARY OF FINDINGS AND CONCLUSION

The analyses in this paper have revealed two things: first, there is a progressive downward lowering in pitch (intonation) when saying an Ekegusii declarative utterance. This downtrend affects both H- and L- tones such that the H- and L- tones at the beginning of the declarative utterance are higher than they are at the end. The trend is an effect of the phonological process of tone sandhi[3] and contributes to the overall declination witnessed in the simple declarative paratones analysed. Declination in communication is utilized in what Gussenhoven (2004: 89) calls the production code. The production code associates high pitch with utterance beginnings and low pitch with utterance ends. Similar findings of declination have been reported for related tone languages like Kikuyu (Clements & Ford 1979: 179-210 and Yip 2002: 96), Hausa (Ladefoged & Johnson 2015: 269) and Akan (Kugler 2016: 101-112). Analyses of other languages like Luganda,

[3]According to Ladefoged & Johnson (2015: 258) tone sandhi refers to “changes of tone due to the influence of one tone on another”.

however, indicate that declination takes a different pattern in that “the low tones remain at about the same level throughout the sentence so that the declination affects only the high tones at the beginning of the utterance” (Ladefoged & Johnson, 2015: 259). Gussenhoven (2004: 98) looks at downstep as a phonological phenomenon and declination as a gradient phonetic pitch lowering.

Second, the age of an Ekegusii speaker affects the F0 production of an utterance. Ekegusii data have shown that children produced the four declarative utterances at the highest grand mean F0 range (227 Hz). They were followed by the advanced-age group (187 Hz). The youth had F0 range slightly less than that of the children and advanced-age groups (176 Hz). The middle-age group realized the lowest mean F0 value (148 Hz). This implies that the F0 range of an Ekegusii speaker decreases from the children to the youth and the middle-age groups but once more increases at the advanced age period. The observed changes in F0 for the different age groups can be attributed to the size, length and tension of the vocal folds. According to Gussenhoven (2004: 80), ‘lower pitch suggests that the organ producing the vocalization is larger’ and by extension higher pitch correlates with smaller vocalization organ. Ladefoged & Johnson (2015: 264) and Ladefoged & Disner (2012: 22-23) have also observed that when the vocal folds are stretched, the pitch of the sound goes up.

From the above observations, we conclude that the child-age group produced the highest fundamental frequencies than any other group because their larynxes are small with short and thin vocal folds that vibrate quickly. The youth and middle-age groups produced lower F0s because they have longer and massive vocal folds which are less elastic and thus vibrate slowly. As observed in Chatterjee et al. (2011: 65-70) and true to the findings in our study, the high F0 values for the advanced-age group males and females can be attributed to vocal cords atrophy, thinning of the vocal folds, ossification of the framework cartilages of the larynx and tissue stiffening. This results in high sounding pitch.

In conclusion, the present study’s results of the analysis of the intonation patterns of simple declarative paratones in Ekegusii have shown that the paratones are characterized by declination which is an effect of initial intonemes like downstep and terminal intonemes like final lowering. The downstep witnessed in this paper is an effect of tone sandhi. This observation is phonologically important for it indicates that, in Ekegusii declaratives, there is an intertwined relationship between the lexical tones and the surface intonation patterns. Results have also shown that intonation in Ekegusii is important as it can signal speaker identity in terms of age. Therefore, this paper has demonstrated that Ekegusii just like other tonal languages employs intonation to express meaning.

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Authors' email addresses

Samwel Komenda
Email: samwelkomendag@gmail.com

Jane Oduor
Email: odour_jane@uonbi.ac.ke

Prisca Jerono
Email: prisca.jerono@uonbi.ac.ke