Intonation of noun phrases in Unangan (Eastern Aleut)

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Abstract: This study examined sentence pitch contours in Unangan (Eastern Aleut) and found that sentences with relative constructions have exceptional pitch contours. Comparisons of pitch tracks of sentences elicited from eight native speakers suggest that this particular syntactic construction has a marked pitch contour within the sentence contour.

BACKGROUND

Unangan is a moribund member of the Eskimo-Aleut language family with approximately 200 native speakers, most over the age of fifty. Previous research on this language (1) revealed that each word has a pitch peak (high) near its beginning and a pitch trough (low) near its end and concatenation of these word contours combines with downtrends to form the characteristic sentence contour for this language: a pitch cascade, each word a step in the falls. These patterns hold for both declaratives and yes/no questions (2).

An exception to this cascade effect has been observed in a ‘relative’ construction internal to the noun phrase. A relationship between unexceptional intonation contour and this construction in many different sentence positions was noted throughout the data.

This investigation examines the acoustic characteristics of intonation in this relative construction as compared with the unmarked sentence contour. Relativizing constructions in Unangan are complex (3, 4, 5) so that the two examples examined in this investigation and given as 1. and 2. seem at first glance to be different cases; noun/adjective vs. possessor/possessed. (In the common orthography used here ñ= [ɔ], ñ=[k], ñ̃g=[g], d=[b].) However, both sentences have the same relativizing morphology relating the two words of the noun phrase to each other. (REL = relative case possessive suffix on the possessor. ABS = absolutive on the possessed. p = plural. s = singular.) The first word ends with the relative case possessive suffix morpheme -m; the second word ends with the plural absolutive morpheme -ngin.

1. AYaa + ada + m anguna + ngin ada + n. 'The big girls laughed.'
   girls like REL big. p ABS laugh. p
2. Uyuu + m uyuu + ngin ada + qla + ada + ku + n. 'Cormorants' necks are long.'
   cormorant REL neck p ABS long clumsy like pres p

METHOD

Eight native speakers, four men and four women, recorded in Unangan a list of around twenty sentences elicited by spoken English stimuli. Utterances were sampled at 10,000 Hz on a Kay Computerized Speech Lab (CSL) 4300B. Pitch tracks were generated using a frame length of 25 ms. and a frame advance of 20 ms. Numerical results of the entire pitch track for each sentence, with the exception of pitch perturbations caused by failure of the CSL algorithm, were entered into a database for analysis.

An ordinary least squares fit was run through the median of each word to determine the slope of sentences.

Batches of the same sentence spoken by several different speakers were smoothed statistically using the “lowess” function of the software S-PLUS, version 3.4, release 1 for Silicon Graphics Iris, IRIX 5.3:1996. To make words comparable, word durations were converted from time units (i.e., seconds) to word units.

RESULTS

A least squares fit through the median of each word gave the result that 161 of 181 sentences had a negative slope, resulting in a P-value well below .01. This result supports downtrending in the ‘cascade contour’ characterization of Unangan sentences, illustrated by Figure 1 a. across a four-word declarative sentence without relative morphology.
The bold curve is the result of smoothing six tokens of the same sentence spoken by several different speakers. After smoothing the highest point of each word is below that of the immediately preceding word and the lowest point of each word is below that of the immediately preceding word. Figures 1 b. and c. illustrate intonation contours in sentences containing the relative construction, confirming their contrast to the cascade contour; in each of these sentences the second word has a peak that is higher than that of the first word.

FIGURE 1. Smoothed pitch tracks of batches of the same sentence spoken by several different speakers. Word durations are converted from time units to word units, shown on the horizontal axis. Vertical lines indicate word boundaries. The continuous bold curve in each graph is the summary of the smoothing function. Broken curves are time normalized pitch tracks. The vertical axis is in Hz.

a. Amaadan akunin, igafaditi wajagakux.  
b. Ayagaadam angunangin aalufiaadan.  
c. Uyuurrgin uyuurgin aduqladakun.

‘When we were out there, the airplane came.’  ‘The big girls laughed.’  ‘Cormorants’ necks are long.’

DISCUSSION

Smoothing results support the impression that the second word is higher than the first in the relative construction discussed here. This is counter to the cascade contour wherein the peak of each following word is lower than that of its predecessor. One possible explanation is that by raising the intonation peak, speakers focus attention on the head of the NP. In Unangan, noun phrases such as ‘big girls’ have been treated (3:57) as participial phrases, i.e., ‘girls, being big,’ where ‘girls’ is adjunct to ‘being big’. Thus, a more accurate translation of the sentence might be, ‘Girls, the big ones, laughed,’ since angunangin, ‘big’ is the head of the NP. In 2. the same morphology is used for a possessor/possessed construction (4:149) where uyuu~jm, ‘cormorants’, is adjunct to the possessed head of the phrase uyuu~jm, ‘their necks’. Thus, in both 1. and 2., the second word is the NP head.

Another explanation might be that the first word of these relative constructions is outside the NP in a determiner phrase. Function words in Unangan have been impressionistically observed to be lower in pitch than content words. According to this hypothesis, ayagaadam, ‘girls’, and uyuu~jm, ‘cormorants’, are in functional rather than lexical phrases and as such are deemphasized intonationally by lowering their pitch peak.

In either case, we find mapping between a specific morphosyntactic structure, a subject NP consisting of two constituents, and a specific intonation contour, such that the pitch peak of the second constituent is higher than that of the first and explicit confirmation that this contour is not the same as that of basic declaratives.

REFERENCES