Lexical & Lyrical Acoustic Prominence in Estonian folksongs

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August 31, 2022

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> compare vowel perception with perception of musical stimuli. categorical perception of major/minor triad discrimination pairs on continuum, using both "natural" and "tempered" frequency intervals also for comparison major/minor contrast similar to vowels in that they differ based on the relationships of the components, not a specific frequency value. A minor, A major, natural/tempered scale intervals of 4 and 8 mels of middle note for listening and MNN results identification: some subjects cannot distinguish clear boundary ratings part interesting but need to read more later 8 mel was too easy discriminate best in boundary area nonmusical subjects performed more poorly on discrimination and categorization of chords compared to musicians, but vowel categorization did not show this asymmetry across music experience groups. poor categorizers tended to have boundary at same location, but were still bad more similarities than differences twixt chord and vowel categorical perception. extensive training in our language, but not everyone extensive training in music.

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Eesti-Ingelse PVI paper, novelly used measurement in both syllable AND foot. English had a lower PVI: the authors analyse this finding as refelcting "radical reduction" of unstressed syllables in polysyllabic feet. Relation to this: If Estonian doesn't *temporally* reduce as much as English does, is it possible that it reduces elsewhere, i.e., in vowel space? Reason to measure vowel space area: reason to think Estonian would reduce on another dimension, as one of the main cues to prominence is the presence of a lack of prominence in the phonological environment. The size of the container and the dispersion of the vowels are available to the singer: the lyrics prescribe the word shapes, the music prescribes the f0 and the timing. Now we know that f0 (cue for both stress *and* Q3) will not be as variable in the song. But the emphasis placed on the various vowel contrasts is only beholden to the singer's interpretation. Thus,

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larger vowel space more intelligible than reduced

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> suggested that degree depends on duration, stress, and tenseness. no Q2 monosyllables Q1 (function word) monosyllables lexical monosyllables are all Q3 influence of factors determining quantity exceeds contrastive segment length, extends to the whole foot (or syllable in monosyllables). contrast is in: primary stressed first syllable primary AND secondary stressed non-initial syllables in compound words, foreign words, and *gradational suffixes*
>
> emphatic lengthening only available on Q3 syllables: meaning doesn't change, only adds emphasis. However Q1 and Q2 lengthening is unavailable as it would change them into differing quantity category.

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foot quantity paradigm short-long not separate phonological categories. long monophthongs behave like diphthongs, geminates as consonant clusters (in english, short and long vowels have different qualities: Wiik 1965 (stressed syllables) Q3 largest area, Q1 most centralized in F1xF2 plane.

when f3 and f4 are removed from spectrum, /i/ is perceived as /ü/, /e/ as /ö/ state that contrast twixt above two vowel pairs on basis of f3. authors say that f3 being close to the strong f2 in round-front is 'amplified' the cumulative of f2 and f3. conclude perceptual param f2 describes well the perceptual phenom governing this contrast. "effective" f2' values?? calculate with: Bladon, Fant 1978: 3 long and short vary very little in quality, defining as different phonemes based on length is not justified. Q3 more "prototypical" or best-contrast version of vowel phonemes in space of stressed syll in unstress: Q1 *least* central, unstressed following Q3 init most centralized. V in sylls following Q2 intermediate between others. (ok, they are analyzing these with the "feet" as having the quantity.. /i/ most resistant to centralization

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doctrine of ternary contrasts, lol a: three contrastive segmental lengths b: segment structure *and* prosody of stressed syllable c: in the foot

domain of prosodic patterns is the foot, but only the structure of the primary stressed syllable is relevant in determining the Q degree of both syllable and foot. (i.e., there is no Q3 foot that does not contain a Q3 syllable as its initial.) Q1 and Q2 must have at least two syllables, may have three (trochee, dactyl). Having a third syll does not effect quantity. This is in contrast to finnish trisyllables in folksongs, which were 40% longer than disyllables. Second syllable does not influence the quantity of the first. If the duration of second syllable is predictable from Q of first syllable, this is what phonologists refer to as dependent features. !!!RATIO

ARGUMENT monosyllabic Q3 feet in succession in connected speech *'khev 'kõhn 'poiss 'läks 'kepp 'käes; 'tõu 'suur 'selts 'kond 'likkus* ratio theory initially proposed by Lauri Posti in 1950. length of the vowel of the second syllable is redundant, dependent, and predictable. Q3 is monosyllabic foot, making "disyllables" technically trisyllables... from segments toward long syllables is turning point, segments are a failure (lol)

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> domain of syllabic quantity is evident whre the first, stressed syllable increases in duration with increasing degree of quantity, the following unstressed syllable decreases. Lehiste's duration ratios. Different f0 patterns in Q2 and Q3: early peak, dramatic fall in 3, late peak and no fall in 2 (contradicts that asymmetry paper that still saw falls in all three... that could be related to the Q/A issue! Dang.) Laboratory speech usually confirms temporal and tonal characteristics, but conversational speech shows only duration (ratio) as stable, with Q3 fall often absent. RQ: can quantities in conversational speech be distinguished by acoustics alone, or are listeners making use of semantic context. disyllabic words from recorded conversational speech presented without context. Q3: V1 durations had strongest influence on listener decisions, followed by f0 change within V1. duration ratio had a weaker influence, was only significant for stimuli of single speaker. f0 movement across intervo aclic consonant not significant in any case. similar results for recognition of Q3 when presented in combination. For combined Q1 and Q2, only duration of V1 significant across speakers, duration ratio only relevant for (same as earlier) speaker. f0 peak position had no significant effect in the cases where it was present. for good recognition of all three quantities, duration of first vowel important. differences in V1 duration robust, even in changing speaking rate. "characteristic" fall in f0 of Q3 neutralized. listeners did not recognize the majority of Q3 syllables in the absence of context. certain minimum duration of V1 needed for high recog rate of Q3, these were all words that could change in meaning with degree of quantity,

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power density spectra, autocorrelates of frequency bands..no analysis of data presented??

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no difference between average period in differing quantity degrees. When the degree increases, the asymmetry of period distribution increases in stressed syllables, but becomes MORE SYMMETRICAL in unstressed syllables. Q2 and Q3: assymetries of period roughly the same, in Q1: stressed smaller asymmetry, unstressed larger(??)

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REASON TO RE-EXAMINE VOWEL FORMANTS/SPACE IN REGILAUL!!! also, data to support "vowel space" as an available acoustic modification (measurable) in singing, evidence favors reduction in word-level-weak syllables AND off-ictus are reduced, but to what extent, and how compared across ictus-stress and ictus-quantity? TLDR are vowels reduced in singing compared to speech, or were those vowels reduced compared with strong positions of song, of word? etc. all these "long" notes are off-ictus: so the shorter notes are corresponding to HEAVIER and STRONGER syllables. singer's formant

in untrained female voice very unlikely. measure: LTAS for /a/,/e/, /i/, /u/. SPL of peaks around 3kHz 30-40dB less than that of the first formant in all four vowels. HOWEVER all vowels selected were in off-ictus– HUAT FIND THIS SONG NOW READING LIST: Rossing et al 1987- formant SPL in opera and choir singing: singer's formant usually closer to and sometimes converging on f1 SPL. SAMEAUTHORSAMESONG: no significant timing differences between performers with respect to note durations (Ross 1989) Sundberg 1989: caution against using f3 and f4 standard deviations standard dev for third and fourth formants less vowel dependent, more "personal," especially compared to standard dev of f2 and f2 f1 f2 which are *fairly* independent of subjects!!! inverse filter results to confirm T n S 87: f3 lower in singing? saw some similar patterns in with spoken data studies, but overall the size of the variation was small. For the third formant, deviations of the sung vowels from spoken tend to be minor and irregular n = 2 overall f1/f2: sung vowels cluster compared to spoken, specifically: f1 raised in everything but /a/, f2 lower in front, raised in back. So, gradient modification of vowel quality contrast (less different than in speech).. but I am getting an impression of a larger overall vowel space

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comparing questions and answers contextual factors on the f0 of the vowel, only /a/ used,

initial pitch, peak pitch, final pitch, median pitch

conditioning factors: number of syllables in the word, Q1 and Q2, in Q1, Q2, pitch of first syllable independent of number of syllables following it. pitch in Q3 monosyllables behaves differently than in Q3 disyllables!!! pitch in monnosyllables falls earlier, while pitch in disyllables exhibits a larger rise at the beginning falls near the end of the nucleus. geminate consonant results in steeper rise of f0 in syllable nucleus in Q2, progressively increasing falls in pitch from Q1, Q2, Q3 Q3 starts highest, falls lowest Q2 and Q1 start

level, rise, then fall. Q2 most dramatic of the two. Q3 tenser than Q2

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