

Intonation and Focus in West Greenlandic

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from Fortescue (1984)

North Greenlandic
750 speakers

West Greenlandic
45,000 speakers

East Greenlandic
3,000 speakers

... + ~ 9,000 Danes

1. Introduction – 2. Data – 3. Results – 4. conclusions

Language use

- Official language in Greenland (politics, administration)
- Used in schools, church services
- Radio, newspaper (Atuagagdliutit 1861)
- But elite mostly bilingual; monolingual Danish speakers
- Linguistic description since the 17th century

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Linguistic characteristics

- Inuit language (Eskimo-Aleut)
- Ergative, unmarked SOV
- Very productive morphology > morpho-phonological interaction

Nuummiittutullu
 Nuuk=mi +ik- -Tuq- =tut +lu
 Nuuk LOC.sg be one.who EQU.sg and
 “and like one who is in Nuuk” (from Sadock 2003:4)

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... and intonation

- No stress, no pitch-accents, no lexical tones
- Non-stress and non-lexical pitch-accent language / phrasal language
- Intonation is characterised by (normally) word-final tones
- Tone-bearing unit: vowel mora (Rischel 1974)

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Word contours: previous research

- Most words bear HL or HLH tones
- Other contours: raised-high, low-high, raised-low-level, level-low-high, no contour
- Phrase-final vs. phrase-internal contours
- Nagano-Madsen (1993):
HLH → HL (word) + H (phrase)

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Questions

1. How is prosody used to express focus in Greenlandic?
2. How should Greenlandic prosody best be described?

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The study

- 4 speakers (female students)
- 321 sentences (about 80 per speaker)
- Standard (SOV) word order
- Recorded in question-answer pairs inducing different focus structures

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Recorded sentences

Nanna_S angajuminut_{IO} inuusamik_{DO} sanavoq_V
 N.ABS older.sister-ALL doll-INSTR make-INTR-3SG
 "Nanna makes a doll for her older sister."

Aanaga_S Aviajamut_{IO} ulimmik_{DO} nuersaavoq_V
 Grandmother-my.ABS A.-ALL shawl-INSTR knit-INTR-3SG
 "My grandmother knits a shawl for Aviaja."

Anaanaga_S angaannut_{IO} nataarnamik_{DO} igavoq_V
 mother-my.ABS uncle-my.ALL halibut-INSTR cook-INTR-3SG
 "My mother cooks a halibut for my uncle."

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Variance

- Lexical items: 3 sentences
- Sentence length: S (IO) (DO) V
- Incorporation of the direct object:
 Nanna inuusamik sanavoq / Nanna inuusaliopq
- Focus type:
 - Broad focus
 - Narrow information focus
 - Narrow corrective focus
- Focus location

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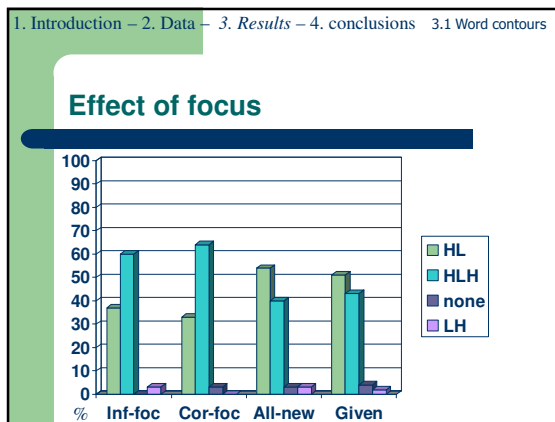
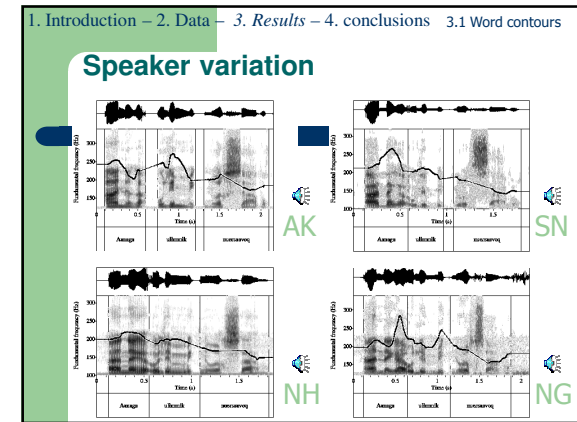
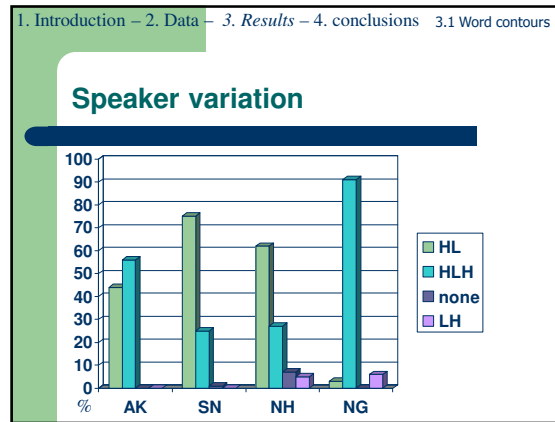
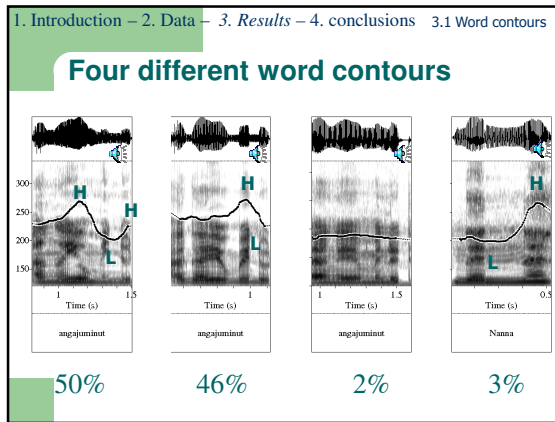
Analysis

- Recording and analysis in Praat (Boersma & Weenink 2007)
- Smoothed and time-normalised pitch (script by Xu 1999, 2005)
- Automatic measurement of pitch maxima, minima and span
- Normalisation relative to speaker's pitch range (Truckenbrodt 2004)
- Manual and automatic identification of pitch contours

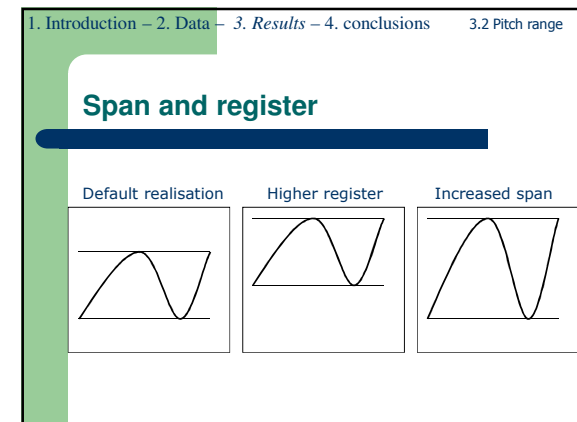
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Parameters

1. Tonal contour on words
2. Pitch range
3. Downstep / reset relative to the previous word



1. Introduction – 2. Data – 3. Results – 4. conclusions 3.1 Word contours
- ### Effect of focus
- Narrow focus increases HLH realisations (22% more)
 - Narrow focus decreases use of HL (20% less)
 - Variation between
 - speakers
 - Subjects, direct objects, indirect objects
 - position in the sentence



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Pitch range: effect of focus

- The overall picture shows that focus is marked through pitch range
- Larger span, higher register and a combination of both can mark focus, but not all are observed in every circumstance
- Large variation between speakers, constituents (-> position in the sentence), focus types (corrective vs. information focus)

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Pitch range & focus: Variation

Condition	Minimum	Span
Focus	~0.05	~0.75
A-new	~0.10	~0.60
Given	~0.05	~0.65

Condition	Minimum	Span
Focus	~0.05	~0.75
A-new	~0.05	~0.55
Given	~0.05	~0.35

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Pitch range: broad focus

- All constituents have a similar span
- Regular downstep

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Pitch range: focus on SUBJ

- Larger span
- Post-focal constituents are realised at a lower register

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Pitch range: focus on IO

- Larger span (not that clear)

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Pitch range: focus on DO

- Larger span
- Raised register

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How to define downstep/reset?

- Can we make a difference between declination and downstep?
- Which points should be referred to?
 - Possible contours are HL, HLH, LH and no visible tones
 - In HLH contours, the 1st or the 2nd H can be higher (speaker-preferences)

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Different scaling of HLH

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Definition of downstep and reset

- Downstep => pitch maximum is lower than the pitch maximum of the preceding word
- Reset => pitch maximum is the same or higher than that of the preceding word
- Only sentence-medial words (objects) were considered

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Downstep, reset and focus

Focus	Downstep (%)	Reset (%)
Focus	~55	~45
A-new	~80	~20
Given	~80	~20

- Reset occurs more often on focussed words
- No clear difference between all-new and given

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Marking of focus

- Three strategies:
 - Tonal contours -> more HLH
 - Pitch range -> larger span / higher register
 - Downstep -> more reset
- But tendencies rather than rules
- Variation: focus type, constituent / position in the sentence, speaker

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Analysis of word contours

- Previous suggestion (Nagano-Madsen 1993): HLH → HL (word) + H (phrase)
- But...
- Both HL and HLH occur frequently also in broad focus contexts and short sentences
- Speaker NG almost exclusively uses HLH

Analysis of word contours

- Variation relative scaling of H tones in HLH
- Reset does not occur more often after HLH than after HL
- How to analyse LH (lack of space?) & absence of visible tones
- Incomplete realisation

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Analysis of word contours

- Suggestion:
 1. All words are associated with an underlying HLH tone
 2. Variation is due to more or less complete realisation
- All contours can be captured in a unified way

Analysis of downstep/reset

- Tentative suggestion:
 - Domain of downstep = phonological phrase
- But more research should be done here...

Prosodic hierarchy

- *Word* – HLH
- *Phonological phrase* – reset
- Probably also *intonation phrase* – finality phenomena (creaky voice, very low pitch, clipping of final syllable)



References

- Boersma, Paul & Weenink, David (2007) Praat: doing phonetics by computer (Version 4.3.36) [Computer program].
- Fortescue, Michael (1984) *West Greenlandic*. London/Sydney/Dover, New Hampshire: Croom Helm.
- Nagano-Madsen, Yasuko (1993a) Phrase-final Intonation in West Greenlandic Eskimo. *Working Papers* 40 (1993). Lund University, Department of Linguistics, 145–155.
- Rischel, Jørgen (1974) *Topics in West Greenlandic phonology*. Copenhagen: Akademisk Forlag.
- Sadock, Jerrold M. (2003) *A Grammar of Kalaallisut (West Greenlandic Inuttut)*. München: Lincom. (Languages of the World/Materials 162)
- Truckenbrodt, Hubert (2004) Final Lowering in Non-final position. *Journal of Phonetics* 32:313–348.
- Xu, Yi (1999) Effects of Tone and Focus on the Formation and Alignment of f_0 Contours. *Journal of Phonetics* 27:55–105.
- Xu, Yi (2005) TimeNormalizeF0.praat (Version 2.3.2) [Praat script].