Acoustic cues to vowel identification: The case of /ɪ iː/ and /ʊ uː/ in Saterland Frisian

Saterland Frisian has a complete set of closed short tense vowels: /i y u/ (Sjölin 1969, Fort 1980). Together with the short lax vowels /ɪ y u/ and the long tense vowels /iː y uː/ they constitute series of phonemes that only differ by length and/or tenseness. For /ɪ iː/ and /ʊ uː/ even minimal triples are available, such as [ᵻɪ] ‘full’, [ᵻʊ] ‘rotten’, and [ᵻuː] ‘much’. Previous research suggests that besides spectral features and vowel duration the timing and scaling of f0 may contribute to vowel identification (cf. Lehnert-LeHouillier 2010, Yu 2010, Cumming 2011, van Hoof & Verhoeven 2011). To identify the phonetic parameters that Saterland speakers use to keep /ɪ iː/ and /ʊ uː/ distinct we carried out two production tests that were designed to elicit ‘normal speech’ and ‘clear speech’. In the ‘normal speech’ condition speakers read the target words in random order with intervening filler words. In the ‘clear speech’ condition speakers were asked to make the word forms identifiable for a listener sitting opposite the speakers but lacking eye contact. Results show that in ‘clear speech’ short tense vowels were kept distinct from both short lax and long tense vowels. In ‘normal speech’ short and long tense vowels were merged. Our data also suggest that Saterland speakers use f0 variation to enhance the contrast between short and long tense vowels. These results are discussed in light of current theories of phonetic enhancement (cf. Kingston & Diehl 1994, Stevens & Keyser 2010) and hyper- and hypoarticulation (cf. Lindblom 1990).

References