

AUDITORY DISCRIMINATION OF RISE AND DECAY TIMES IN TWO
DUTCH VOWELS

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There are indications that differences in the rise or decay time of the amplitude envelope of vowels may have a distinctive function in some languages as regards their identification. Thus, in French (Malécot, 1975), steep vowel onsets and offsets give rise to glottal stop perception. In Dutch, (Cohen et al. 1963) differences in the decay times of vowels contribute to the perceptual difference between short, half-long and long isolated vowels.

Eight Dutch subjects matched the rise or decay time of a synthesized Dutch /a/ or /ɑ/ with that of a similar reference signal of unknown rise or decay time by means of a blind, 5-turn knob. Rise or decay time of the reference vowel varied between 0 and 100 msec, the invariant slope was fixed at 50 msec. Results show that Weber's Law applies to the responses, i.e. the ratio JND/rise or decay time of the reference signal is constant. The value of this ratio is about 25%.

Accuracy of adjustment, defined as the absolute of the difference between stimulus and response was significantly better in offset position than in onset position. This is due primarily to superior performance in the upper half of the range, 50-100 msec.

The perceptual importance of differences in the decay times in various Dutch vowels may be the cause for this increase in accuracy in the perception of vowel offsets of relatively long duration as compared to offset durations below 50 msec or to onset durations along the entire range used.

References

- Cohen, A., I.H. Slis and J. 't Hart (1963): "Perceptual tolerance of isolated Dutch vowels", Phonetica 9, 65-78.
- Malécot, A. (1975): "The glottal stop in French", Phonetica 31, 51-63.