OPTIMAL INTONATION CONTOURS FOR POLISH SPEECH SYNTHESIS

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This paper is focused on the selection of interrogative and
declarative synthetic intonation contours which in the opinion of
listeners provide the most naturally sounding statements and yes-
no questions. In contrast to the previous studies (1, 2) that were
utilized as a basis for the present investigation, the synthetic
stimuli varied not only in the fundamental frequency but were
generated by means of a set of rules which permitted a simultaneous
control of pitch, intensity and duration.

Procedure

Synthetic stimuli were generated by rule on a computer simu-
lated formant series synthesizer. The experimental material con-
sisted of two phrases: CVCV ("jola") and VCVCV ("uleje"), on which
different intonation contours were superposed. The fundamental fre-
quency (\(F_0\)) pattern was obtained from the glottal excitation am-
plitude (\(A_0\)) pattern by means of the following rule:

\[
F_0 = F_0 \frac{A_0 + a}{1 + a}
\]

where FO is the \(F_0\) target value (Hz), and \(a\) is a numerical coeffi-
cient. A phrase intonation contour, \(F_{oc}\), was obtained by multi-
plying \(F_0\) by the intonation function \(F_k\), approximated by a linear
function. The stimuli were tape-recorded, randomized and presented
to a group of listeners who evaluated the stimuli for naturalness.

Conclusions

The results of the experiments permitted to establish the
simple rules generating the intonation contours for interrogative
and declarative short phrases of Polish synthetic speech. An im-
portant conclusion resulting from the experiments is that the reali-
zation of interrogative and declarative intonation takes place in
a relatively short final segment of a phrase and because of that
it is not necessary to calculate the intonation function for the
total duration of a phrase.

References

   frequency...", JASA 45, 450-457.
   guistic processes...", L&S 16, 293-313.