

SOME ACOUSTIC DETERMINANTS OF SYLLABICITY

John T. Hogan, Department of Linguistics,
University of Alberta, Edmonton, Alberta, Canada

This paper reports a series of experiments on the perception of syllabicity. The first experiment investigates the temporal durations at which 50 percent recognition for syllabicity versus non-syllabicity occurs. The words "stirring", "suing", "bottling", "lightening" and "rhythmic" were recorded by a male Canadian English speaker with the last three words pronounced with a syllabic [l̩], [ŋ̩] and [m̩]. These signals were processed by a PDP-12 computer and the relevant portions of the signal were isolated. The durations of the [ʃ], [u], [l̩], [ŋ̩] and [m̩] in the respective words above were manipulated by a digital gating and editing program to produce signals of four different decreased durations in the syllabic segments. The original plus the four altered signals were presented to fifteen subjects. Crossover boundaries for the five words ranged from 55 to 131 milliseconds. Amplitude increments were made on the shortened durations that occurred in the range where non-syllabicity was perceived. The crossover point was shifted towards a lower duration value at the boundary but no change was observed for the end-point stimuli. An experiment similar to the first was carried out to test whether the loss of tone perception on the syllable occurs within the temporal range of the syllabic/non-syllabic boundary. Finally, temporal summation experiments using the above segments are currently underway to measure the time constant for temporal summation of syllabic segments. Any observed temporal summation with these stimuli may indicate that summation processes are instrumental in the perception of syllabicity.