The number of identifiable vowel stimuli

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B. THE NUMBER OF IDENTIFIABLE VOWEL STIMULI

Auditory tests of vowel identification are in progress to obtain a measure of the maximum number of non-confusable vowels which can be generated by orthogonal variation of synthetic vowel dimensions. The dimension currently under test is the frequency, $F_2$, of the second formant resonance in vowels generated by the series analogue model of the vocal tract, OVE II. Six vowel stimuli were generated by setting $F_1$ at 300 c/s and $F_2$ at one of six equidistant positions: 700, 980, 1260, 1540, 1820, or 2100 c/s. Four experienced listeners (the experimenters below) have attempted to identify each stimulus 50 times with knowledge given as to the correct stimulus after each identification response. A measure of the information transmitted indicates that the mean listener can identify without error the equivalent of about 4 1/2 positions on the $F_2$ dimension.

Another set of six vowel stimuli was prepared by using $F_1$ of 500 c/s with the positions of $F_2$ used above. Identification tests with the second set indicate that performance may be somewhat better than for the first set. Further tests are planned using more positions and various distributions over the $F_2$ range.

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