INVARIANT AUDITORY WORD PATTERNS IN SPEECH PROCESSING

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ABSTRACT

It is proposed that one of the units of speech perception is an invariant auditory word pattern. This pattern consists not of the whole spectrum but a limited number of acoustic cues that are auditorily salient, together with those that are less salient but carry contrasting function in the language. Speech processing takes place by pattern recognition and pattern matching. For this two levels of representation are postulated, a phonetic level, LRI, and a lexical-phonological level, LR2. The auditory signal is abstracted into patterns; these are checked against patterns at LRI. If they match, they are then matched with patterns at LR2 and identifications of the word is arrived. The organization of patterns in a network is shown for a sample of a child's phonological system, and how recognition of some words takes place is illustrated. An example of a misperception is also given to show how confusions occur between words of same pattern.

It is known that there is much redundancy in speech and that speech processing is very rapid. Context, intonation, the language, knowledge of the topic, shared knowledge, etc., are acknowledged to play a role in the interpretation of speech. Because speech processing is so rapid, it is clear that integration of the whole signal representation is impossible. For this reason, listening is not possible. Furthermore, no one-to-one acoustic correlation can be made with any segment of the word. Word by word processing is still allowed, however, when each segment of the speech is processed. It is possible that the auditory processing of speech is similar in nature to visual processing in the interpretation of written texts by reading. It is recognized that in reading attention is not given to the total word, nor even to each individual word and that scanning takes place—not in a serial progression, but in a series of eye movements back and forth as they abstract the most essential information from the meaning of the message. Words have visual shapes which aid recognition. It seems that one may similarly look for auditory shapes of words that can be recognized in auditory perception of an acoustic signal. There may similarly be auditory shapes of words that can be recognized in auditory perception of an acoustic signal. There may similarly be auditory shapes of words that can be recognized in auditory perception of an acoustic signal. There may similarly be auditory shapes of words that can be recognized in auditory perception of an acoustic signal. There may similarly be auditory shapes of words that can be recognized in auditory perception of an acoustic signal.

The acquisition of patterns is illustrated. An example of a misperception is also given to show how confusions occur between words of same pattern.

In the case of a child, the early forms are based mainly on the auditorily salient features of words which are fleshed out within his current capabilities and in a way that fits his current needs. In the previous day's conversation (shared knowledge) about a 'train', in fact, B was referring back to the previous day's conversation (shared knowledge) about a 'train', and train times and did not realize the change of topic, and as B and her husband often came for weekends, arriving on Friday night and usually taking some train today.