

Silent Articulation

Inner Speech and Thought. A. N. SOKOLOV. Translated from the Russian edition (Moscow, 1968) by George T. Onischenko. Translation edited by Donald B. Lindsley. Plenum, New York, 1972. x, 284 pp., illus. \$22.50. Monographs in Psychology.

Many older American psychologists will remember the sterile discussion of whether all thought is or is not implicit speech, differing in kind from normal articulation only in the extent to which it is audible. A number of workers demonstrated early in the 20th century that silent recitation, reading, problem solving, and the like may be accompanied by manifestations of activity in various parts of the speech musculature, although that demonstration failed to settle the controversy. This book represents a basic advance on such simple demonstrations, in that it attempts to describe and explain the circumstances under which activity will be present in the motor speech system. Two methods are used: first, electromyographic measures are made of articulatory activity; second, subjects are made to articulate aloud while simultaneously executing some other task, and the deterioration of the task is measured.

The electromyographic studies reviewed (both the author's own and those of other workers) represent a technological advance over earlier work. Sokolov clearly recognizes the difference between demonstrating a generalized heightened state of tension in the articulatory musculature and showing reduced articulation of specific word patterns. He produces evidence to demonstrate that patterned electromyographic activity, as well as generalized heightened tension, occurs in such activities as problem solving. However, more sophisticated techniques would be necessary, and are indeed only now becoming available, for detailed reading of the pattern of individual words.

Sokolov describes an interesting series of experiments which show that the

amount of articulatory activity in problem solving will depend on the nature of the problem (with more activity for problems with obvious verbal content) and its difficulty. He believes also that there are substantial individual differences in the use of articulatory processing. His experiments with "interference" show the same pattern of the effects of task difficulty. In addition he is able to show interesting interactions between the target and the interfering task. Simple repetition of a single syllable presumably keeps the motor side of the articulatory mechanisms as busy as more complex performance. The effects are not as destructive, however, as recitation of more complex memorized material. Sokolov discusses the meaning of this in connection with his hypotheses about the function of inner speech.

Two general points of view are possible about the function of inner speech. One is that the electromyographic indicators simply represent some kind of overflow phenomenon—they are interesting and useful simply as manifestations of activity at some higher level, and give hints of the possible content. A second possibility, which Sokolov supports, is that the presence of activity in the articulators stimulates sensory activity from the articulators and that this serves a function *per se* in problem-solving activity. It might conceivably be possible to differentiate these points of view by experimental interference with sensory feedback.

This book is interesting more for the inspiration it offers for future research than for the work it describes. The electromyography of speech is now a rapidly developing field. Sokolov's book is rich in suggestions as to how it might be used as a probe in studying the more elusive areas of problem solving, reading, and short-term memory.

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