

Use of Internal Speech in Reading by Hearing and Hearing-Impaired Students in Oral, Total Communication, and CS Programs¹

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It is a sad commentary indeed that, in spite of seventy years of concentrated effort, the reading achievement of hearing-impaired students has not appreciably improved. Since the first national survey (Pintner and Patterson, 1916) of hearing-impaired readers, reading performance has not improved from its initial low level. Then, as now, most hearing-impaired individuals, regardless of age, were considered "retarded readers." Recent studies (Quigley and Paul, 1984; King and Quigley, 1985; Allen, 1986) indicate that the average hearing-impaired high school graduate reads at the 4th grade level or lower.

This study investigated the relationship of recall in short-term memory (STM), use of internal speech (IS) as a SIM coding strategy, and reading comprehension. It compared the reading achievement of hearing-impaired students in Oral, Total Communication (TC), and Cued Speech (CS) communication modes with that of students with normal hearing. The study replicated parts of the Conrad (1979) study, using his materials, procedures, and lists of acoustically similar and visually similar words.

The design utilized hearing-impaired students from three communication modes (Oral, TC, CS) and two levels (severe, profound) of hearing impairment. A hearing group was used for comparison. In all, 213 students, ages 7-16 years, were tested in order to select 30 hearing students, 30 from Oral programs, 30 from TC programs and 30 from CS programs. Each group of 30 hearing-impaired students included 15 in the profound-loss category (PTA 90 dB or more in the better ear) and 15 in the severe-loss category (65 to 89 dB). Each subgroup (communication mode/decibel level) was balanced for decibel loss, general cognitive ability, years in communication mode, sex, and parent education level. Additional factors were racial/ethnic origin, educational placement, communication support at home, and hand preference for writing. The hearing-impaired students were randomly selected from several public school districts throughout the country that offered all three (Oral, TC, CS) communication modes, had offered those tracks for at least three years, and administered the Stanford Achievement Tests (SAT). All potential subjects had to meet additional criteria of no secondary disability, the ability to read the stimuli words, and English as the primary language spoken at home. In addition all hearing-impaired potential subjects had to have a prelingual bilateral hearing loss and to have used the relevant communication mode for at least three years.

The Raven Standard Progressive Matrices (RSPM), the 1982 SAT reading comprehension test, and the Conrad tests were administered to all 120 subjects. The Conrad task was to read a series of one-word cards and write each word in order, from memory.

Results indicated that the 90 hearing-impaired students, as a single group, attained significantly lower scores on the Raven, more errors on the Conrad test, lower SAT reading comprehension scaled scores, and lower internal speech (IS) ratios than did the 30 hearing age-mates. The performance of the TC group was significantly lower on all these measures than the Oral and CS groups. No significant differences were noted between the two combined decibel-category groups (45 profoundly and 45 severely hearing-impaired). It is noteworthy, however, that there was no statistically significant difference in reading achievement between the hearing and CS-profound groups; that is, the two groups attained essentially the same scores on the reading comprehension subtest of the SAT. Subjects in the CS-severe group did not attain reading scores comparable to the hearing and CS-profound groups.

The STM span was correlated with: (1) IS ratio in all hearing-impaired groups, and (2) reading in all four groups. Reading was correlated with IS ratio for the Oral and TC groups, but not for the CS or hearing groups, possibly because the hearing and CS groups employ processing strategies in reading that are different from those of the Oral and TC groups.

The dissertation also discusses characteristics of the sample, communication support at home, coding strategies, and Type I and Type II coding. Major questions on results of the study are posed and then answered. Implications for further research are also presented.

¹ Wandel, Jean E. (1989). **Use of internal speech by hearing and hearing-impaired students in oral, total communication, and Cued Speech programs.** Unpublished doctoral dissertation, Teachers College, Columbia University, New York.

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