Performance of Elderly Hearing-Impaired Clients: Tests of Social Interaction and Auditory, Visual, and Auditory-Visual Reception of Speech

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The purpose of the study was to investigate the relationship between performance on four tests of social interaction and performance on tests of auditory, visual, and combined auditory-visual perception of words and sentences. Twelve hearing-impaired individuals with a mean age of 67 years served as subjects. Significant correlations were found among one of the tests of social interaction and the three modes of speech perception. The tests of word perception figured in more significant correlations than did the tests of sentence perception. One of the tests of social interaction that dealt with communication apprehension was involved in more significant correlations than the other two tests of social interaction. These results indicate that low communicative apprehensiveness is associated with high scores on the three modes of perception of words. Such information can be of value in deciding the type of therapy approach to be used in an aural rehabilitation program.

Clinicians working in the area of adult aural rehabilitation usually assume that active participation in social interaction can be used as an important indicator of clients' orientation to the development of the communication skills required in the auditory-visual reception of speech. Studies of geriatric populations and populations of adult hearing-impaired individuals indicate that such individuals tend to withdraw from social interaction (Bennett, 1980; Goetzinger, 1967; Havighurst, 1968; Maddox, 1964). Jacobs-Condit (1985) stated that anxieties about actual or perceived cognitive decline may lead to withdrawal from communication situations and Phillips (1968) has labeled such withdrawal as "communicative reticence." Phillips further indicated that anxiety about participation in oral communication outweighs the individual's projection of gain from the situation. Biggers and Masterson (1984) reported that communication apprehension is related to the oral communication aspects of

situations while Lawton and Moss (1987) stated that social interaction is an instance of behavioral competence. Janowsky, Kraft, Clopton, and Huey (1984) and Strupp (1986) believe that information about interpersonal behavior is of value in planning any therapeutic situations.

According to Thomas and Gilhome Herbst (1980) and Gilhome Herbst (1983), hearing-impaired adults show evidence of social isolation which may be due to communication problems. Thomas (1988) also suggested that successful rehabilitation of an adult with acquired hearing loss requires knowledge of the person's life style. In a similar vein, Meadow-Orlans (1985) stressed that it is of value to know the level of socialization of an individual prior to the onset of hearing loss in order to better understand the effects of hearing loss upon adjustment.

In regard to an aural rehabilitation program with elderly clients it may be necessary to determine how well an individual adapts to communicative situations in order to develop a program of management. Havighurst (1968) postulated that the adaptive process in the latter part of the life cycle can be described in terms of six areas, a major area being social interaction. According to Giolas (1982), hearing-impaired persons rank social situations as one of the major sources of difficulty. He further stated that clinicians working in an aural rehabilitation program should be interested in helping their clients develop effective compensatory communication strategies. Initially, however, one must determine if an individual has a positive attitude toward interpersonal communication. The purpose of this study was to determine if aged individuals with a hearing impairment exhibit attitudes toward interpersonal communication which would relate to performance in such communication behaviors as speechreading, auditory reception, and auditory-visual reception of words and sentences.

METHOD

Subjects

Twelve subjects were used in this study. They ranged in age from 58 to 81 years with a mean age of 67 years. All had acquired sensorineural hearing losses. Five wore hearing aids with the length of ownership ranging from two months to six years. All were enrolled in an evening aural rehabilitation program at the University of Illinois. Their enrollment was the result of "word of mouth" reports from previous enrollees as well as media announcement of the program. The eight males and four females had a mean pure tone average of 48 dB HL for the right ear (ranging from 15 dB to no response) and 44 dB HL for the left ear (10 dB to no response). Mean speech reception scores obtained with the recorded CID Auditory Test W-1, Lists A-C, were 38 dB HL for the right ear (5 dB to no response) and 36 dB HL for the left ear (5-105 dB). Speech scores represent aided performance for those individuals wearing hearing aids.

Auditory, Visual, and Combined Auditory-Visual Measures

Two speech tests were administered to each subject in three modalities. The Semi-Diagnostic Test (Hutton, Curry, & Armstrong, 1959) is a multiple choice word test with four alternatives per item that can be used to test auditory (A), visual (V), and combined auditory-visual (AV) speech perception. Lists 1A, B, and C were utilized in a test-retest format. The test consists of 50 familiar words which are placed in six lists with 25 items per list with 18 vowel and 32 consonant discrimination items in each list. The CID Everyday Sentence Test (Davis & Silverman, 1970) consists of 100 sentences in 10 lists that represent everyday American speech. Lists A, B, and C were used to evaluate A, V, and AV recognition respectively for all subjects.

The A, V, and AV tests were presented in counter-balanced order with subjects seated at a distance of 6 ft from the examiner. Subjects were tested individually while using their hearing aids. For the auditory portion, subjects sat with their backs to the examiner, but for the other two conditions they faced the examiner. Visual-only materials were presented without voice, while auditory materials were presented with conversational voice. Examiners were observed through a closed circuit TV system to insure that they maintained a constant level of voice and avoided "mouthing" during presentation of visual-only materials. The examiners were selected from individuals who during a previous semester had evidenced reliability in test-retest administrations and a high degree of inter-examiner validity. The test setting was a well-lighted room used for speechreading training. All tests were administered during the first two clinical sessions.

Social Interaction Scales

Four instruments that measure social interaction were used. A previous study by Brandy, Deck, and O'Neill (1983) provided a foundation for the present study in that it had evaluated an array of tests of interpersonal communication. The results indicated that several of the tests appeared to have flexibility and standardization data. These were the Affective Communication Test (ACT), the Personal Report of Communicative Apprehension (PRCA), and the Predisposition Toward Verbal Behavior (PTVB).

ACT is a self-report measure of a subject's expressiveness and consists of 13 items with each item being rated on a 9-point scale (Friedman, Prince, Riggio, & DiMatteo, 1980). The PRCA (McCroskey, 1978) is a self-report measure that consists of 24 statements that evaluate a subject's feelings about communication with other people. Each item is rated on a 5-point scale. A third scale, the PTVB, is a 25-item self-report with each item being rated on 7-point scale (Mortensen, Arnston, & Lustig, 1977). On an additional scale, the Social Activities Scale, subjects rated their social activities in terms of 11 items that deal with the frequency of their contact with other individuals in a variety of settings (Branch, 1980). The first three instruments have been standardized on young

adult populations and considerable data have been collected with various other populations (Friedman, Prince, Riggio, & DiMatteo, 1980; McCroskey, 1977; Mortensen, Arnston, & Lustig, 1977).

All tests of social interaction were administered by one of the experimenters during the first two weeks of the aural rehabilitation program. The tests were presented in the same order for all subjects. Instructions were provided via written materials and oral description until subjects indicated they understood the task. The scoring of the tests involved only the tabulation of correct responses, and no interpretation of test responses was required.

RESULTS AND DISCUSSION

Scores obtained for the three administrations (A, V, and AV) for the Semi-Diagnostic Test and The CID Everyday Sentences Test are listed in Table 1. Sentences were scored on the basis of correct recognition of key words. As would be expected, performance improved from V to A to combined AV conditions on both of the tests. Higher scores were obtained for the CID Sentences compared to words.

Table 1

Percent Correct on Two Tests of Speech Perception

		Test Modality		
		Visual	**Auditory**	**Auditory-Visual**
Semi-Diagnostic Test	List	1a	1b	1c
	M	38.1	69.9	80.3
	SD	17.5	23.8	17.1
CID Everyday Sentences	List	A	B	C
	M	33.6	81.1	91.2
	SD	26.0	31.4	18.4

Note: $N = 12$.

The scores obtained on the social interaction scales are listed in Table 2. When test scores are evaluated in terms of comparison test groups it appeared that only a limited number of the subjects evidenced problems in the area of social activities. Investigation of scores obtained on the Social Activities Scale, where a total score of greater than 35 indicates the individual's needs are being met with no apparent problems, showed that only one of the subjects scored below 37 and the mean score was 45.3. On the ACT, 7 of the 12 subjects obtained scores that were quite similar to the mean score for the comparison test group. From the results of these two tests, it can be stated that the majority of the elderly subjects in this study gave evidence of expressiveness and normal

frequency of social contacts. While both of the tests were standardized on young adults, the findings can be given consideration in light of the statement by Costa and McCrae (1978) that the stability of personality throughout adulthood suggests that tests and norms developed on young adults may be used with elderly subjects.

Table 2
Scores on Scales of Social Interaction

	Possible Score	*M*	*SD*
Social Activities	55	45.6	4.5
Affective Communication Test	117	67.8	20.1
Personal Report of Communication Apprehension	120	56.9	21.6
Predisposition Toward Verbal Behavior	175 yes 97 no	92.4	27.6

Note: $N = 12$.

For the PRCA, a high score is indicative of a person who is lacking in self-control or self-esteem. Seven of the subjects had such a score and the group mean was such that it could be concluded that the majority of the subjects evidenced some degree of lack of esteem.

In the instance of the PTVB, no published norms are available. In one of the validation studies reported by Mortensen, Arnston, and Lustig (1977), subjects were grouped on the basis of obtained standard deviations. A high group (characterized by positive attitudes) was represented by 1.24 standard deviations above the mean, a mean group (neutral in attitude) by a standard deviation of .25, and a low group (negative in attitude) by 1.25 standard deviations below the mean. When such a categorization was used with the data from this study, 10 subjects were placed in the high category and 2 were placed in the low category, indicating that the majority of the subjects were very positive in their attitude toward verbal communication.

Social Interaction and Performance with Words and Sentences

Because of the small sample size as well as the nature of the data, the Spearman Rank Correlation statistic was utilized in the analysis of the data. The resulting correlations are listed in Table 3. Significant results were obtained in the instance of seven of the computations. The Semi-Diagnostic Test figured in more significant correlations than did the CID Sentences. This finding would seem to indicate that the Semi-Diagnostic Test was testing some skill that relates better to the results of tests of social interaction than does the CID Sentences test. In terms of tests of social interaction the PRCA was involved in more sig-

nificant correlations than were the other three tests. Significant correlations were distributed fairly equally among the visual, auditory, and combined auditory-visual test results. The results for the PRCA were significantly correlated with each of the administrations of the Semi-Diagnostic Test of speech perception.

Table 3

Correlations Between Scales of Social Interaction and Performance on Visual, Auditory, and Auditory-Visual Tests of Speech Perception

	ACT	PRCA	PTVB	Social Activities
Semi-Diagnostic Test				
Visual	.45	-.51*	.22	.06
Auditory	.51*	-.85**	.35	.11
Auditory-Visual	.72**	-.71**	.54*	.18
CID Everyday Sentences Test				
Visual	.00	-.14	-.11	-.63*
Auditory	.40	-.55*	.42	.15
Auditory-Visual	.14	-.04	.49	.06

Note: ACT = Affective Communication Test. PRCA = Personal Report of Communicative Apprehension. PTVB = Predisposition Toward Verbal Behavior.

*$p < .05$

**$p < .01$

The performance of individual subjects was fairly similar to that of groups used for developing norms, with one subject doing quite poorly on tests of social interaction but performing quite adequately on the various tests of speech perception.

The measures of social interaction used in this study have not been utilized previously in the evaluation of hard-of-hearing individuals. It was of interest to find significant correlations between subtests of the Semi-Diagnostic Test and the PRCA in that McCroskey (1977) has indicated that the PRCA is the only reliable and valid instrument that measures oral communication apprehension. The negative correlations mean that high scores on the PRCA (lack of self-esteem) were associated with low scores on the Semi-Diagnostic Test; that is, conversely, subjects low in communication apprehension (CA) received higher scores on the Semi-Diagnostic Test. Such findings are of value in planning a therapy program. Barnes (1976) has indicated that individuals with high CA scores should not be placed in situations that reinforce the anxiety state. Also, McCroskey (1977) reported that persons with high CA scores had a lower probability of success in an academic setting. These findings would have some significance in terms of deciding the type of therapy approach that might be used with individuals in a program of aural rehabilitation.

In the instance of the Affective Communication Test there were moderate positive correlations with scores on the auditory and combined auditory-visual administrations of the Semi-Diagnostic Test. This finding could indicate that expressive people tend to do well on the auditory aspects of speech perception.

In summary, on the basis of the results of this study, performance on the Semi-Diagnostic Test and the PRCA appears to be a good indicator of a person's orientation to communication. Knowledge of such orientation might be utilized in a program of aural rehabilitation.

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