EFFECTS OF UNILATERAL HEARING LOSS ON TEACHER RESPONSES TO THE SIFTER

Eighteen school children with unilateral hearing loss were compared to their peers through administration of the Screening Instrument for Targeting Educational Risk (SIFTER) to their teachers. Results indicate that children with unilateral hearing loss are given SIFTER scores significantly lower than their peers in all five SIFTER areas of academics, attention, communication, participation, and behavior. Such results support previous findings regarding teachers' attitudes toward students with unilateral hearing loss and indicate a need for in-service education for the classroom teacher and special attention to the educational risks of such children.

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Among every 100 school age students in the United States, 16 to 19 have unilateral hearing losses with potential educational significance (Berg, 1986; Lundeen, 1991). Unilateral hearing loss effects on classroom performance are significant, with language, academic, and behavioral difficulties reported (Clark & Richards, 1966; Boyd, 1974; Klee & Davis-Dansky, 1986; Brookhouser, Worthington, & Kelly, 1991). Up to 50% of students with unilateral loss either repeat a grade or receive special services (Bess, 1986). In addition, teachers' ratings of such students tend to be negative (Bess and Tharpe, 1986; Culbertson and Gilbert, 1986). Because the teacher's perception of student performance is an important factor to any student's ultimate success or failure, Anderson (1989) developed the Screening Instrument for Targeting Educational Risk, or SIFTER.

The purpose of the SIFTER is to provide a valid and standard method by which children with hearing problems can be educationally screened for potential difficulties with the use of three questions in each of five major areas: academics, attention, communication, class participation, and school behavior. The SIFTER's overall profile chart designates either pass, marginal, or fail within each content area. According to SIFTER guidelines, students placed in the marginal area are at risk for failing and should be monitored while student's failing in a content area should be considered for further assessment by the appropriate professionals.

The present study investigated the effects of unilateral hearing loss on school age children as shown by their teachers' responses to the SIFTER. Questionnaire data were gathered to answer the following questions:

		Hearing Loss			
		Mild*	Moderate	Severe-Profound	Totals
Hearing Aid	Male		3	2	5
	Female		1	1	2
ALD FM System	Male		1	2	3
	Female		1	2	3
None	Male	1		3	4
	Female		1		1
	Totals	1	7	10	18

*Mild: 40 dB or better; moderate: 45 to 60 dB; severe-profound: 65 dB or better.

Table 1
Profile of Unilateral Hearing Loss Subjects

Table 2
Means, Standard Deviations, and T-values of the 15 SIFTER Questions for Subject and Control (S-C)

Questions	S-C Means	S-C SDs	t-values
Class standing	2.50-3.61	1.47-0.78	2.97**
Achieving potential	3.17-3.72	1.34-0.83	1.53
Reading level	2.58-3.72	1.34-0.75	3.41**
Distractibility	2.67-4.17	1.33-0.79	4.51**
Attention span	2.39-3.72	1.14-0.75	4.56**
Oral directions	2.50-4.00	1.20-0.59	4.36**
Comprehension	2.56-3.56	1.42-0.58	3.43**
Vocabulary	2.56-3.56	1.25-0.70	2.66*
Story telling	2.61-3.67	1.09-0.69	3.54**
Volunteers info	3.11-4.06	1.18-0.73	2.56*
Completes work on time	2.78-4.22	1.26-0.88=	4.47**
Difficulty starting	3.11-4.22	1.13-0.73	3.77**
Unusual behaviors	3.44-4.33	1.25-0.77	2.69*
Frustrated easily	4.11-4.44	1.23-0.86=	0.96
Get along with others	3.72-4.50	1.18-0.86=	2.37*

= equal population variances.
* significant at the .05 level of confidence.
** significant at the .01 level of confidence.

1. Are there significant differences in teachers' scores on the 15 questions of the SIFTER when children with unilateral hearing loss are compared to an average peer in their same classroom?

2. Are there significant differences in teachers' scores within the five content areas of the SIFTER when children with unilateral hearing loss are compared to each teacher's average classroom child?

3. Are students with unilateral hearing loss more at risk educationally than an average classroom child based on their overall SIFTER profiles?

Method

Subjects

By reviewing audiological charts at Arkansas Children's Hospital in Little Rock, Arkansas, for children with unilateral hearing losses as documented by an audiologist holding the Certificate of Clinical Competence in Audiology (CCC-A), 33 potential subjects, ranging in age from 5 to 17 years were identified. The sample included twelve males and six females. Out of the eighteen subjects, nine are right ear affected and nine are left ear affected. Table 1 summarizes information regarding the severity of hearing loss and subjects' use of Assistive Listening Devices (ALD).

SIFTER questionnaire were sent to the subjects' teachers at public schools in the state of Arkansas. All teachers participating in the study were the subjects' full-time regular teachers in grades 1 through 6, or students' regular homeroom teachers for students in grades 7 through 12. All teachers held a minimum of a bachelor's degree with current Arkansas teaching certificates. Each teacher was asked to complete two SIFTER questionnaires, one concerning the child with unilateral hearing loss and one concerning an average child with normal hearing within the same classroom. Average was defined as students performing in the middle range of grade achievement in comparison to their peers, across all subjects.

Scoring and Statistical Analysis

The Sifter[1] questionnaire consists of fifteen questions subdivided into five content areas: academics, attention, communication, class participation, and school behavior. The five content areas are comprised of three related questions answered through a ranking scale, from one to

five. For each question, respondents are asked to circle the number that best represents their perception of the student's behavior. Scoring the SIFTER involves summing the responses of the three questions in each content area. Responses are then placed on a chart to develop a profile of the subject.

For this study, average ratings of the students with unilateral hearing loss on the SIFTER's fifteen questions were compared with the average ratings for average peers. In addition, the average scores within each of the five content areas were compared for students with unilateral hearing loss versus the average students. Finally, the overall ratings of pass, marginal, or fail for each group were determined and compared by using a chart provided with the SIFTER. Data were statistically analyzed using either a t-test for independent means with equal population variances or a t-test for independent means with unequal population variances, depending upon the results of initial F-tests. All results were considered significant at the .05 level of confidence.

Results

Table 2 shows means, standard deviations, and t-values of the 15 questions of the SIFTER. Note that in all cases the "average" students had mean scores above the median of 3; in contrast, students with unilateral hearing loss had mean scores below 3 on more than half the questions, 9 of 15. Further, students with unilateral hearing loss scored significantly lower than controls on 13 of the 15 questions of the SIFTER. The only two questions not significantly different related to the teacher's ratings of students working up to their potential (question #2) and students not being easily frustrated (question #14).

Table 3 shows means, standard deviations, and t-values within the five content areas of the SIFTER, with 9 being the median score. In all areas, the mean scores of children with unilateral hearing losses were significantly lower than the mean scores of the average controls. On the SIFTER's profile chart, subjects with unilateral hearing loss fell into the marginal category in the three areas of academics, attention, and communication; they received passing but significantly lower scores than the controls in the areas of class participation and school behavior. Control subjects passed in all five areas.

Content Area	S & C Means	S & C SDs	t-values
Academics	8.22-11.06	2.75-2.04	2.94**
Attention	7.56-11.89	3.52-1.18	5.09**
Communication	7.72-11.11	3.37-1.64	4.08**
Participation	9.00-12.50	9.00-2.38	4.56**
Behavior	11.28-13.28	2.89-2.27	2.36*

= equal population variances.
* significant at the .05 level of confidence.
** significant at the .01 level of confidence.

Table 3
Means, Standard Deviations, and T-values for Subject and Control (S-C) SIFTER Scores Within the Five Content Areas

Chi-Square Analysis

To determine if differences among subjects in the experimental group were associated with gender, affected ear, degree of loss, or variation in assistive listening devices (treatment types), a series of chi squares were conducted. No significant differences were found for males versus females [χ^2 (4,N = 18) = 4.41, $p > .05$]; right ear versus left ear [χ^2 (4,N = 18) = 6.68, $p > .05$]; moderate versus severe-profound hearing loss [χ^2 (4,N = 17) = 0.47, $p > .05$]; or treatment type [8,N = 18) = 5.24, $p > .05$].

Discussion

Data from the present study show that classroom teachers consistently rate students with unilateral hearing loss lower in academics, attention, communication, class participation, and behavior than their average classroom peers. The results are consisted with previous findings (Bess & Tharpe, 1986; Culbertson & Gilbert, 1986) and may be related primarily to the teachers' low expectations for students with unilateral hearing loss. Despite the lower performance ratings for students with unilateral hearing loss, teachers perceive them as performing as well as other students in regard to their expected potential (question #2, under academics). This rating indicates that teachers perceive the academic potential of their hearing-impaired students as lower than that of other students. It is ironic that teachers also rate the students with hearing loss as no more easily frustrated than controls (question #14), under school behavior); the teachers' lowered expectations could lead, in fact, to the withholding of challenges that promote not only the possibility of frustration but also that of learning and growth. In turn, students who perceive that teachers expect less may adjust to the notion that they are not capable of more, and thus, accept their "lot" in the classroom to perform at a lower level than their peers with normal hearing and be less anxious about this lack of performance.

It is imperative that teachers receive in-service education on the effects of hearing loss in general and unilateral hearing loss in particular on the student's classroom performance. Al-

though much can be done to increase any child's classroom performance if needed (Flexer, Wray, & Ireland, 1989; Kenworthy, Klee, & Tharpe, 1990), teachers' attitudes must also be addressed, specifically relating to the normal learning potential of children with unilateral loss. Ultimately, educational audiologists working in concert with the classroom teacher can help eradicate the negative attitudes toward students with hearing loss that hinder their success in the classroom.

The current study focused only on teachers' perceptions of children with unilateral hearing loss and is limited by the lack of random selection for both the experimental and control groups as well as small sample sizes. Additional follow-up studies are planned to example more closely teachers' ratings of students in relationship to degree of unilateral hearing loss, grade point average, student IQ scores and parental involvement. These limitations, however, do not negate the finding that for this sample of students with unilateral moderate to severe-profound hearing loss teachers generally rated them as below-average students. Moreover, gender affected ear, degree of hearing loss, and treatment type are independent of the scores received in academics, attention, communication, participation and behavior.

Endnote

[1] The SIFTER is a well-established and statistically sound instrument. The reader is referred to Anderson (1989) for additional information. In the current study there was a 55% questionnaire return rate, resulting in the final sample of 18. Due to time constraints in the school's term, a second mailing was not attempted.

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