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ABSTRACT

The study, based on L. Cronbach's Characteristics by Treatment Interaction model, investigated seven preschool programs for aurally handicapped children which variously employed the oral-aural method, the Rochester method, or the total communication method. Equipment, materials, grouping procedures, and activities were indicated for each program. Programs were compared for degree of parent involvement, adequacy of facilities and personnel, administrative organization of services, pupil populations, and degree of program structure. One hundred and two children from the programs were selected as the sample population. Data were reported from the Leiter Performance Test, the Illinois Test of Psycholinguistic Abilities, classroom observation, communication analysis, pupil records, the Brown Parent Attitude Scale, and a semantic differential measuring parent attitudes towards concepts related to deafness. Conclusions such as the following were drawn: children in structured programs tended to have higher IQ scores than those in unstructured programs; gestures were the most common mode of communication between children, regardless of the program's official methodology; communication from child to teacher most frequently involved the oral-aural mode; and no differences were found in speechreading abilities in the oral-combined and structured-unstructured comparisons. (GW)

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EVALUATION OF PROGRAMS FOR HEARING IMPAIRED CHILDREN: Report of 1970-71

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University of Minnesota

Research, Development and Demonstration
Center in Education of Handicapped Children
Minneapolis, Minnesota

December 1971

Department of Health, Education and Welfare
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Bureau of Education for the Handicapped

TECHNICAL REPORTS

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Department of Health, Education and Welfare
U. S. Office of Education
Bureau of Education for the Handicapped

RESEARCH AND DEVELOPMENT CENTER
IN EDUCATION OF HANDICAPPED CHILDREN
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The University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children has been established to concentrate on intervention strategies and materials which develop and improve language and communication skills in young handicapped children.

The long term objective of the Center is to improve the language and communication abilities of handicapped children by means of identification of linguistically and potentially linguistically handicapped children, development and evaluation of intervention strategies with young handicapped children and dissemination of findings and products of benefit to young handicapped children.

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EVALUATION OF PROGRAMS FOR HEARING IMPAIRED CHILDREN: Report of 1970-71

Donald F. Moores and Cynthia K. McIntyre

University of Minnesota

In the fall of 1969, the University of Minnesota Research, Development and Demonstration Center provided support for planning activities designed to evaluate the effectiveness of preschool programs for deaf children. The impetus for such a study comes from a number of sources. First, it is well known that high school age students of present educational programs are shamefully undereducated. Secondly, normal deaf adolescents and young adults in North America and Europe are unable to read at the fifth grade level (Furth, 1966; Norden, 1970; Wrightstone, Aranow, and Moskowitz, 1963), lack basic linguistic skills (Moores, 1970a; Simmons, 1962; Tervoort and Verbeck, 1967) and are incapable of expressing and receiving oral communication on anything but a primitive level (Montgomery, 1966; Report of the Chief Medical Officer of the British Department of Education and Services, 1964).

Consistent with the trends in general education, increasing numbers of educators of the deaf have come to look at the preschool years as being the cornerstone for later development, and the last decade has witnessed a proliferation of preschool intervention programs designed to minimize or eliminate educational and communication deficits.

Individuals interested in the development of new programs or the modification of ongoing ones quickly discover that almost no educational guidelines exist for effective preschool programs for the deaf. Several descriptions of preschool programs do exist in the literature but these, for the most part, cannot be considered research activities. In many cases, these descriptions attempt to explain and justify certain procedures, and when comparative data are presented, they take the form of post hoc comparisons.

Studies that have been conducted to evaluate the effectiveness of preschool programs for the deaf have reported either that no differences existed between deaf children receiving preschool training and deaf children not receiving preschool training (McCroskey, 1968; Vernon & Koh, 1970), or that initial differences existing between the two groups had dissipated by age nine (Craig, 1964; Phillips, 1963).

In the only direct comparison of methodology, Quigley (1969) reported that preschool children taught by the Rochester Method (the simultaneous use of speech and fingerspelling) were superior to children taught by the oral-only approach in measures of speechreading, reading, and written language. Recent research on the relative superiority of deaf children of deaf parents has had a great and growing impact on the field. These findings suggest that deaf children of deaf parents tend to be better adjusted, to achieve academically at a higher level, to have better language abilities, and to have equivalent speech development (Meadow, 1967; Quigley & Frisina, 1961;

Stevenson, 1964; Stuckless & Birch, 1966: Vernon & Koh, 1970) in relationship to deaf children of hearing parents.

In view of the above findings in favor of deaf children of deaf parents (which may have been the result of an exp igns from birth), and because studies of oral-only programs have shown no differences or only temporary effects, it has been argued that many preschool programs have failed because they have been restricted to oral-only instruction (Vernon & Koh, 1971). Perhaps, then, the addition of manual communication would improve results. Such reasoning has led to the development of many recent preschool programs utilizing a system, named Total Communication, which involves the use of signs, fingerspelling, and oral communication.

Although the evidence of the superiority of deaf children of deaf parents is substantial, it does not necessarily follow that the use of manual communication in preschool programs will produce better results. At present, no data exist on the comparative efficiency of the use of Total Communication as opposed to either an oral-only method or the Rochester Method.

This lack of data may be traced to its primary concerns. First is the extreme difficulty in evaluating the effectiveness of preschool programs which is further confounded by the added dimension of deafness. Second, and perhaps an even more inhibiting factor, is the highly emotional nature of the question of methodology with young deaf children. In a report to the Secretary of Health, Education and Welfare (Babbidge, 1965), it was noted that for more than 100 years emotion has served as a substitute for research in the education

of the deaf. Some educators firmly believe that the use of any kind of communication will prevent the development of speech and language and result in a mute subculture. Others believe, just as firmly, that depriving a deaf child of manual communication will cause irreparable linguistic, educational, and emotional damage. Given such a climate, most researchers prefer to investigate other questions.

In the authors' opinion, neither concern should stand in the way of a search for objective analysis. Educational decisions must be made daily, and if no information exists, these decisions will continue to be made on the basis of emotion and other, less desirable, factors.

This study is based on Cronbach's (1957) Characteristics by Treatment Interaction model which has as its basis the thesis that when results of educational research consist entirely of comparisons between groups they are of limited value. Such investigations may be neat and produce results but they frequently mask important interactions between individuals and different types of treatments or educational programs. The search should not be for the "best" method for all children but rather for the preferred method for a particular child at a particular stage. (For a more detailed explanation of this rationale see Moores, 1970b).

During the first year of the study (9/69 - 8/70) formal commitments were given and received from the participating programs following visitations and/or discussions with administrators and personnel. The majority of time was spent in the development and testing of assessment techniques. Testing was facilitated by the

proximity and cooperation of two preschool programs for the hearing impaired in the Minneapolis-St. Paul area.

In addition, an adivisory committee of qualified professionals was established and convened in November, 1969. This committee represents several viewpoints and disciplines, and was deemed essential for inputing technical assistance and maintaining objectivity. The committee is as follows:

T. Walter Carlin, Ph.D.
Director
Sir Alexander Ewing Clinic
Ithica College
Ithica, New York

Diane Castle, Ph.D.
Assistant Professor of Audiology
State University College
Geneseo, New York

Eric Lenneberg, Ph.D.
Professor of Psychology
Cornell University
Ithica, New York

McCay Vernon, Ph.D.
Professor of Psychology
Maryland State College
Westminster, Maryland

Late in 1970, researchers visited each program for several days. During this time, the Leiter Performance Scale was administered, background data were collected from the school records and observations were made in the classrooms. Activities during return visits in the early spring of 1971 were the administration of five performance subtests of the Illinois Test of Psycholinguistic Abilities, re-examination of pupil records, and administration of measures of communication and language ability. Further explanation and rationale for

the above measures will be presented later.

Description of Programs

Each program is considered a strong representation of a particular preschool model. Background information is presented in Table 1. Programs were chosen on the basis of willingness to participate in a longitudinal study, adequately large preschool enrollments and a diversity of educational methodologies. Some attention was also paid to geographic location. It should be noted, at this point, that the administrators are under no obligation to maintain any or all aspects of their respective programs for the duration of this research. They are requested only to continue to provide what they consider to be an effective preschool program for hearing impaired children.

The participating programs, presented alphabetically, and their locations are as follows:

American School for the Deaf
Hartford, Connecticut

Bill Wilkerson Hearing and Speech Center
Nashville, Tennessee

Callier Hearing and Speech Center
Dallas, Texas

Minneapolis Public School Program
Minneapolis, Minnesota

New Mexico School for the Deaf
Santa Fe & Albuquerque, New Mexico

Rochester School for the Deaf
Rochester, New York

St. Paul Public School Program
St. Paul, Minnesota

Table 1

Pupil Information

Program	Male	Female	Program Total	Mean Age In Months, 9/30/71	Number with Hearing Aids	Number Receiving Prior Training
American School for the Deaf	14	3	17	47.73	8	6
Bill Wilkerson Hearing Center	4	9	13	48.00	13	2
Callier Hearing & Speech Center	15	5	20	46.84	20	10
Minneapolis Public School System	17	2	19	44.70	18	7
New Mexico School for the Deaf	6	6	12	45.25	11	0
Rochester School for the Deaf	7	6	13	51.38	9	12
St. Paul Tilden School	3	5	8	45.42	8	5
Totals	66	36	102		87	42

American School for the Deaf

The classrooms are located in a building specifically designed for preschool deaf children. In addition to classroom and recreational facilities it contains a dormitory, kitchen and dining facilities. The children in the sample attend classes in three large rooms, two have adjoining smaller rooms for individual speech tutoring and also private bathroom facilities. Parts of the rooms are newly carpeted.

Equipment and Materials. The classes are equipped with a wide variety of materials. These include a housekeeping corner, charts of different shapes, readiness materials, books, blocks, art supplies, jungle gym and wheel toys. There are many tables and chairs reflecting the large class size.

Grouping and Activities. Infant Program. Two teachers alternate days with the four children. Both teachers meet at the beginning of the month to prepare lesson plans. The function of these teachers is to prepare the young children for entry into one of the nursery classes. Classroom activities include color and shape matching, alphabet recognition, and some experiential activity to build vocabulary and language skills.

Nursery I and II. The program combines academic and socialization activities. The children have reading groups and math but they also paint, play with blocks, and take naps. Free play activities are linked to language and diverse enriching experiences. The children are active and spontaneous and the teachers often direct events subtly without placing restrictions on the pupils. Activities

are made available by the teachers who know the children well and attempt to give each one a positive experience. Although the teachers and aides do not use formal sign language or even many gestures, they know which children can speechread and those who cannot and treat them individually.

Bill Wilkerson Hearing and Speech Center

The classrooms are located on the first floor of a modern clinic building. Rooms are spacious and two have doors opening onto a playground. Each teacher has a small working office adjoining the classroom. There is also a small room and a bathroom connected to each class.

Equipment and Materials. The classrooms contain mostly nursery school type materials. Two of the three rooms have a more academic atmosphere. "Rebus-writing" can be seen on the door to the playground, an abacus stands in one corner, and large cardboard letters and numbers decorate the walls. All rooms have small tables and chairs but no carpet.

Grouping and Activities. Hearing children as well as deaf children participate in this program. The deaf children are grouped into three classes mainly on the basis of their functional use of residual hearing and their developmental maturity. The degree to which the parents participate is also considered in grouping the children. Grouping is discussed among the staff and decided yearly. Each class can consist of pupils who have spent different amounts of time in the program.

The younger and less mature children engage mostly in group play activities. Typical activities include four children having a self initiated tea party, one girl playing with a doll house and supervised by a student teacher, several children pulling each other in a wagon, or the whole class working on fingerplays.

A frequent activity in the other two classes is rebus reading, e.g., children identifying the desired objects denoted by the written symbols while the teacher assistant supervises the remaining children in the large room. In one of the two classes the activities are more structured. The children use some gestures but the teachers' communication is all oral.

Home Demonstration Program. Several children in the sample are enrolled in the Home Demonstration Program. This is a parent-oriented program in which the children are used only for demonstration. The parents attend bi-monthly meetings at a residence near the Wilkerson Center. The house is equipped like a normal middle-class home and also includes videotape equipment. A new facility is under construction and attention is now being given to other standards of living relevant to the parental population.

The purpose of the program is to supply parents with general information and specific demonstrations suitable for application in the home setting. The emphasis is on language input and on making every encounter with the child relevant and useful.

Callier Speech and Hearing Center

The three year old facility was designed to be a complete functional unit; included are an educational division, a clinical

division and a research division. The school buildings comprise the educational division. Rooms are light, modern, and carpeted except for a large playroom. The preschool centers around a general playroom supervised by teacher aides and assistants. Doors off the general playroom lead to somewhat smaller areas used for class-size group activities including experiential activities at the stove and sink. At the four corners of this area are four teacher classrooms. These are designed for one to five children plus the teacher. Classrooms for the older children are large with various areas delineated by functional arrangements of the furniture and equipment.

Equipment and materials. The large playroom contains child-size tables and chairs, many toys, puzzles, dolls and enough room to allow organized games with large numbers of pupils.

The smaller rooms off the general playroom contain a stove, sink, round table, and other tables for speechreading practice and small group session.

The individual teacher rooms contain large storage shelves with readiness materials, a mirror, an auditory system, and a teacher's desk and chairs.

Located in the Hearing Center itself, is a complete media center containing audiovisual equipment and teaching machines which are now being used with older children. A programmed instruction unit has been developed and is being simplified for use with the young preschoolers.

Grouping and Activities. The children are grouped this year according to age and academic level due to a large increase in

enrollment. Usually the children are grouped regardless of age but according to their "comfort" level. The teachers may or may not follow through with the same children, for placement is not final until a comfortable level can be found for each child.

One teacher can be seen working one to one with a young boy, slowing her space to wait for his responses on a speech sound production task. Another teacher is engaged with two children who take turns speechreading objects from an assortment in front of them. One child is a bit poorer at the task, she explains, so his assortment consists of only two objects but in large quantity so he can receive repeated practice discrimination between them. The teacher rewards the boys with stars drawn on the back of their hands with a magic marker. She also cuts out paper neckties on which she writes the speech sounds they could identify and produce. The boys march out wearing their ties. Several entire classes can be seen working on readiness materials while a student teacher conducts an experiential activity.

In the large playroom, teacher aides and assistants organize circle games and supervise free play.

Another teacher works with five children on pronouns and verbs. She gently "spanks" one child and then asks "What happened?" The correct answer is "You spanked me." Two children work together to obtain "He tickled me," or "I hit her." Here the reward is verbal praise and perhaps a hug.

In general, the activities are structured with goals clearly defined by the perceived needs of the children. Communication is

completely oral.

Minneapolis Public School Program

Four children in the sample attend day classes at elementary schools in spacious, well-equipped classrooms. The majority of the sample attends the parent-oriented preschool program located in the basement of an elementary school. The three rooms are carpeted and recently decorated. Two of the rooms include a kitchen area and are furnished in a home-like fashion. The other room is more like a school room.

Equipment and Materials. The two home-like rooms are complete with a dining room table and chairs, sofa, coffee table, and occasional chairs. The nursery room contains toys, and wall decorations such as calendars, seasonal pictures and name cards. The room also contains a kitchen-corner, dolls, cars, manipulative toys, puzzles, gerbils, a fish bowl, and tables and chairs.

Grouping and Activities. The children in the parent-oriented preschool are being prepared for entry into a nursery class in one of the other elementary schools. This program is designed primarily to teach parents ways of putting language into and getting language out of their children. The children engage in activities such as auditory training, show and tell, and experiential activities. These activities are designed to train the children to look at and be aware of lip movements and speech, and also to produce some speech themselves. All instruction from teachers is oral.

In addition to three group sessions a week, these children also are tutored individually for one hour once a week.

New Mexico School for the Deaf

The Santa Fe preschool contains a kitchen, dining, and dormitory areas in addition to a very large playroom and smaller classrooms. The large playroom is lighted with big windows facing the playground. The class is held in a smaller, carpeted room which has a large storage closet.

The Albuquerque preschool unit is located in a semi-commercial area of the city. It is not as large as some other programs in the study, but space is used economically and efficiently. The classrooms line up along two corridors with a library and holding room between. There is also a kitchen and dining area plus bathroom, reception room and office. The rooms used for instruction are carpeted. There is also a facility next door which is used for rhythm and other large group activities.

Equipment and Materials. In Santa Fe, the large playroom is equipped with a piano, teaching machine, tables and chairs, blocks, paints, manipulative toys, puzzles, books, kitchen-corner and dress-up clothes. This room is supervised by a kindergarten teacher who has charge of from 5 to 7 children, depending on the activities going on in the classrooms. In the teaching rooms, an overhead projector, film-strip projector, and record player were seen along with toys, rhythm instruments and coloring materials.

In Albuquerque, the classrooms have horseshoe tables and chairs, weather calendars, flannel board, pictures of the children's families and several books. There is also a tutoring room to which the children go for speech therapy and other language activities. This room contains

boxes of vocabulary toys, a record player and auditory unit. The older children have a similar setting.

Grouping and Activities. Of the four children in the Santa Fe sample, two came for individual tutoring; the other two stayed in the large playroom for most of the day and were taken out for instruction during this time.

The activities in the classroom are somewhat structured though relatively brief. Matching forms, colors and colored objects, a short number exercise and supervised free play were observed in one tutoring session.

The Albuquerque children are grouped on the basis of age, length of time in the program and developmental and academic maturity.

The atmosphere is work oriented. Activities include printed name identification, receptive signing, speechreading and speech related tasks plus an experiential activity emphasizing color matching ability. During an individual tutoring session a child may receive auditory training, lipreading, expressive and receptive signing, speechreading of objects, and matching printed words to objects. Other activities observed were rhythm exercises, verbal identification of picture vocabulary, labelling the same pictures with printed words and removing these pictures from a file board via receptive fingerspelling.

Rochester School for the Deaf

The classrooms are located in a building designed for preschool deaf children. There is a large playroom (holding room) where the children gather when they arrive. Classrooms are spacious and well lighted with windows along two walls. Room divisions are provided

via furniture arrangements. Smaller rooms adjoin for individual tutoring by speech therapists (one per class).

Equipment and Materials. Nursery school materials are in evidence. The children's art work decorates many of the walls and toys consist of blocks, trucks, dolls, dress-up clothes and housekeeping items. Each class contains sinks that are child-sized plus the usual tables and chairs. Auditory units are located in the therapist's rooms.

Grouping and Activities. Grouping is mainly on the basis of length of time in the program and developmental maturity. Activities in the morning groups are repeated in the afternoon for a different group of children. These activities range from potato printing to matching objects to pictures and then identifying their printed names. These children are learning to match their own arms to a stick figure with varying arm positions. In the older group, calendar, weather and news are followed by experiential activities such as making presents for parents.

Two speech therapists work with the children in the sample. The therapists use the auditory training units and do some readiness work with the pupils.

A rhythm teacher visits the preschool building several times each week. Classes are allotted one 20 minute period during which the children stand around the piano to listen and feel the vibrations. Communication from teacher to child is a simultaneous combination of oral-aural and fingerspelling, i.e., visible English or the Rochester Method.

St. Paul, Tilden School

The program is located in an elementary school of which five rooms are allocated to the hearing impaired program. The room in which the sample of children is located is large and uncluttered. Spatial divisions are accomplished via storage cabinets which house many materials. The floor is carpeted and there are sufficient chairs and tables.

Equipment and Materials. The room is equipped with audio-visual projectors, screen, auditory unit with record player, wheel toys, some housekeeping items, and a variety of readiness materials and workbooks. In general, it is a working type atmosphere rather than a nursery school environment.

Grouping and Activities. All children new to the program are assigned to this room and remain there until they are academically and socially mature enough to move into another class. The teacher and her aide have two groups of children for three hours in the morning and three in the afternoon. Their function is preparatory: lengthening attention span, discipline, reinforcing vocal output, manipulation of materials, recognizing alphabet letters both in print and on the hand, and, in general, school adjustment and academic readiness activities.

The children gather for weather and date check followed by a discussion of something each child has brought or is wearing. The the class is divided between the teacher and the aide for different activities. For example, the teacher may take the more advanced children

for speechreading and fingerspelling exercises while the aide supervises number work or letter recognition. After a time the children change places and the same activity is modified for the other group. When they re-group again, workbooks are brought out and each child works at his own rate. Experiential activities can also be observed.

The children are taken from the room for individual (sometimes in pairs) sessions with the speech therapist. Reinforcement techniques are used. They are also taken downstairs for individualized sessions with an occupational therapist.

Communication is a combination of oral language and fingerspelling. An attempt is made to simultaneously fingerspell and say everything to the children in complete sentences. The general impression is one of good planning and highly structured activity.

METHODOLOGIES

Each of the programs was classified as employing one of three methodological approaches; the Oral-Aural, the Rochester, or the Total (Simultaneous) Method. For purposes of the present study, they are defined as follows:

1. Oral-Aural Method In this method, the child receives input through speechreading (lipreading) and amplification of sound and he expresses himself through speech. The use of signs and fingerspelling are not part of the educational process.

2. Rochester Method This is a combination of the Oral-Aural Method plus fingerspelling. The child receives information through speechreading, amplification and fingerspelling and expresses himself through speech and fingerspelling. When practiced correctly the teacher spells every letter of every word in coordination with speech.

3. Total Communication This approach also known as the Simultaneous Method, is a combination of the Oral-Aural Method plus signs and fingerspelling. The child receives input through speechreading, amplication, signs, and fingerspelling. He expresses himself through speech, signs and fingerspelling. A proficient teacher will sign in coordination with the spoken word, using spelling to illustrate elements of language for which no signs exist.

Classification presented some problems due to the fact that some of the programs are in the process of change. The changes are similar to those in many preschool programs for the deaf in the United States. For the 1970-71 academic year the programs were classified as follows:

1. American School for the Deaf, Oral-Aural Method. The superintendent, Dr. Hoffmeyer, has stated that the school is committed to changing to Total Communication over a three year period as personnel become trained. Although some parents had received training in manual communication and some children used signs in class, the teachers input consisted solely of the spoken word.

2. Bill Wilkerson Hearing and Speech Center, Oral-Aural Method.
3. Callier Speech and Hearing Center, Oral-Aural Method.
4. Minneapolis Preschool Program, Oral-Aural Method.
5. New Mexico School for the Deaf, Total Communication. The preschool program has recently changed from the Rochester Method.
6. Rochester School for the Deaf, Rochester Method. The program is in the process of changing from the Oral-Aural Method.
7. St. Paul Preschool Program, Rochester Method.

Program Information

A comparative view of the Programs can be found in Tables 2,3, 4,5, and 6. These tables, along with Table 1, contain information concerning pupils, parents, teachers, and services offered by each program.

In general, all programs provide adequate facilities and qualified personnel. The equipment and materials vary with some more academic and structured than others, reflecting the objectives of the specific programs. The activities also diverge along this dimension. All the programs are mainly concerned with the input of language to these young children. Differences occur in the type of input and the output that is expected from the pupils.

The degree of parent involvement varies also. The residential programs do not involve the parents as much as the other programs due to distance constraints imposed on many families. One program offers

Table 2

Administrative Organization of Services

Program	Residential Pupils		Day Pupils in Residential Schools or Hearing Centers		Pupils in Public School Classes for the Deaf		Home Dem./Parent Oriented Services	
	Children	Hours/week	Children	Hours/week	Children	Hours/week	Children	Hours/week
American School for the Deaf	9 3	27.5 12	4 1	27.5 12				
Bill Wilkerson Hearing Center			4 6	8 12			3 (Parents take turns bringing children for demonstrations)	
Callier Hearing & Speech Center			18 2	15 30				
Minneapolis Public School System					4	30	5 7 3	7 4 1
New Mexico School for the Deaf			2 8 1 1	22 15 2.5 1.5				
Rochester School for the Deaf	6	15	7	15				
St. Paul Tilden School					7 1	15 9		
TOTAL	18		54		12		18	

Table 3

Age of Onset of Loss

Program	Present at Birth	Birth to 12 Months	12 Months to 24 Months	Unknown	Program Totals
American School for the Deaf	13	1	0	3	17
Bill Wilkerson Hearing Center	7	1	0	5	13
Callier Hearing & Speech Center	12	2	1	5	20
Minneapolis Public School System	13	1	3	2	19
New Mexico School for the Deaf	5	0	3	4	12
Rochester School for the Deaf	2	3	1	7	13
St. Paul Tilden School	3	0	2	3	8
Totals	55	8	10	29	102

Table 4

Etiological Diagnosis

Program	Heredity	Illness	Meningitis	Prematurity	Rh Factor	Maternal Rubella	Unknown	Program Total
American School for the Deaf	7	0	2	1	0	2	5	17
Bill Wilkerson Hearing Center	0	1	1	0	2	3	6	13
Callier Hearing & Speech Center	1	0	3	0	0	7	9	20
Minneapolis Public School System	1	1	2	2	0	5	8	19
New Mexico School for the Deaf	2	1	2	1	0	1	5	12
Rochester School for the Deaf	1	3	1	1	0	0	7	13
St. Paul Tilden School	0	0	2	1	1	0	4	8
Totals	12	6	13	6	3	18	44	102

an orientation week plus weekly parent observations and meetings with the teachers. The majority, however, provide two conferences yearly and a variety of activities on a weekly, bi-weekly or monthly basis. Parent-oriented programs necessitate greater participation on the part of specific families and therefore allow for fewer hours of teacher-child interaction.

For purposes of comparison, some programs have been designated as "structured" and "unstructured." In the latter case. this is a rather gross exaggeration. No program in this study is without structure. What is meant, however, is structure in greater or lesser degrees. Those programs with a relatively high degree of structure (presented alphabetically) are: American School for the Deaf, Callier Hearing and Speech Center, New Mexico School for the Deaf, and St. Paul Tilden School. Programs with a lesser degree of structure are : Bill Wilkerson Hearing and Speech Center, Minneapolis Public School System, and Rochester School for the Deaf. This is not a permanent classification but one which will be reexamined each year. For a description of the variables which define a program as "structured" or "unstructured" the reader is referred to the section concerning the Illinois Test of Psycholinguistic Abilities.

Selection of Subjects

Certain restrictions were imposed in order to limit the sample to prelingually and profoundly deaf children at very young ages. Criteria for inclusion in the sample consisted of the following: (1) birthdate between March 1, 1966 and March 1, 1968, (2) at least 70 decibel sensori-neural hearing loss in the better ear, averaged

across the speech range frequencies, (3) A Leiter Performance Scale IQ of 80 or better, (4) age of onset of deafness of 2 years or younger and (5) no severely obvious handicap other than deafness.

The age criterion itself imposed other difficulties on subject selection. Several pupils' audiometric data are still incomplete and may necessitate exclusion when more confident decisions are made concerning the type and extent of the hearing losses. Eight children were eliminated after the spring visit for this reason. One subject failed to meet criterion on the Leiter Performance Scale and one child withdrew from his program.

The primary source of information other than test data was the pupil's cumulative record file. These files were reveiwed during the fall visit and again in the spring. From these records, data on age, sex, racial origin, admission date, residential status, hearing loss (degree, type, age of onset, and etiology), hearing ability of parents and siblings, hearing aids, schools attended previously, I.Q. scores when available, and any other relevant data were obtained.

For the most part, these files were readily accessible, fairly complete, and very helpful. In all cases the supervisors and teachers were willing, and usually able to supply missing information about the children's background.

At present there are 102 children involved in the project who satisfied the a priori requirements of age and decibel loss. There are 66 males and 36 females: 97 Caucasions and 5 Negroes. The largest sample is at Callier Hearing and Speech Center (N=20) and the smallest sample is St. Paul, Tilden (N=8). Others range from

12 to 19 children.

Forty-two children had training prior to entry in their present program. The overall average is 15.11 months training in other preschools, 10.28 months in speech and hearing centers, and 15.55 months in home demonstration programs.

Of the 42 children in residential programs 18 are housed in the schools and 24 are day students in classes in residential schools. Twenty-seven attend day programs for the deaf located in public schools.

The number of hours per week spent in the classroom varies from program to program and within each program. Using a weighted mean according to the number of children in each classification (e.g., 15 children at 9 hours per week, 3 children at 4 hours per week, etc.) the average number for all 102 children is 14.35 hours per week. Calculations for each program are as follows:

American School for the Deaf	23.6 hours per week
Bill Wilkerson Hearing and Speech Center	10.0 hours per week
Callier Hearing and Speech Center	16.4 hours per week
Minneapolis Public School Program	9.8 hours per week
New Mexico School for the Deaf	14.0 hours per week
Rochester School for the Deaf	15.0 hours per week
St. Paul Tilden Program	14.0 Hours per week

The date of admission was recorded to determine the length of time each child has been in the program. Forty-nine children in the sample have attended their programs for one year or less; 36 children not more than 2 years, 12 children not more than 3 years; and 2 for more than 3 years as of June 30, 1971. (No admission date was

available for 3 children.)

Etiology and Onset

The job of diagnosing the cause of a child's deafness is often very difficult. Hospital records can be sketchy, mothers can be unsure about aspects of pregnancy and delivery, family histories may be unknown especially in the case of an adopted child. Wherever possible the official diagnosis listed in the files has been used. Often there is more than one probably cause. The following represents the etiological breakdown as accurately as it could be ascertained.

44 Unknown

18 Maternal Rubella

13 Meningitis

12 Hereditary

9 Otitis Media, Rh Factor, illness, or "fever"

6 Premature birth

Fifty-five children were deafened at birth, 8 were deafened before one year and 10 deafened before age two. It is unknown when 29 children became deaf, however in all cases the deafness was discovered before age three.

Fourteen of the subjects have minor handicaps in addition to their deafness: 7 with perceptual-motor difficulties, 3 with poor vision, 3 with heart murmur and 1 with emotional problems. A decision will eventually be made to keep or drop these children depending on the effect these additional handicaps have on their development.

Amplification

Eight-nine children or 85% of the sample of children have some type of hearing aid, either their own or one loaned to them by the program. Data on length of time the aid has been in use was not found in pupil recrod files, however, an attempt is being made to obtain this important information.

Teachers and Supportive Staff

The breakdown of services and the certification and experience of personnel in each program are presented in Tables 5 and 6. Although the pattern of services varies, all programs appear to be adequately staffed.

Table 5

Breakdown of Programs by Teachers, Supportive Staff and Certification

Program	Teachers		Supportive Staff				Total	Certified to Teach Deaf	Bachelor's or Teaching Certi. Only
	Supervising	Regular	Occupa. Thera.	Speech Thera.	Aids	Tutors			
American School for the Deaf	1	5				2	8	6	1
Bill Wilkerson Hearing Center	1	3			3		7	3	2
Callier Hearing & Speech Center	1	9			2		12	10	1
Minneapolis Public School System	1	6		1			8	5	
New Mexico School for the Deaf	2	3		1	1		7	4	2
Rochester School for the Deaf	1	2		2	2	1	8	1	4
St. Paul Tilden School	1	1	1	1	2		6	2	2

* Bill Wilkerson has three teachers for the Home Demonstration program in addition to those shown above.

Table 6

Program Teachers by Certification, Advanced Degrees, Length of Time with Program and Previous Work Experience

Program	No. certified to teach normal children	No. with Master's degrees	Length of time with program.			Previous exper. with deaf or normal children.
			Under 2	2-5	5+years	
American School for the Deaf	3	4		1	6	2
Bill Wilkerson Hearing Center	5	3	3	4		4
Callier Hearing & Speech Center	11	5	3	4	5	
Minneapolis Public School System	1	1	2	4	1	
New Mexico School for the Deaf	3	4	1	3	3	2
Rochester School for the Deaf	3	2		8		2
St. Paul Tilden School	4	1	2	5		4

DESCRIPTION AND RESULTS OF TESTING

Leiter Performance Scale

An attempt was made to administer the Leiter International Performance Scale to all children in the sample. The attempt was successful with only a few exceptions due to absence or inability to obtain a basal age. All children found to be non-testable in the fall of 1970 were re-examined during the spring 1971 school visits. Children remaining non-testable for any reason after the spring visit are not included in the statistical analyses. The results are based on data on 94 children from the total sample of 102. Plans have been made to test the remaining eight children during the 1971-72 academic year.

For those who are unfamiliar with the test, a brief explanation is provided below. The following is taken from the Arthur Adaptation of the Leiter International Performance Scale reprinted from the Journal of Clinical Psychology, Vol. V, No. 4, 345-349, 10, 1949 with permission of the editor. More detailed information on materials and standardization may be obtained from this publication or the test manual.

> The Arthur Adaptation of the Leiter International Performance Scale is, in principle, a non-verbal Binet scale for young children. Its main advantages are: (1) it reaches down to lower chronological age levels than the other performance scales, (2) the tests lowest in the scale are tests of ability to learn rather than tests of acquired skills or material

already learned: the first five tests are given credit as passed if the subject is able to perform the task without demonstration or help during any one trial, no matter how many previous trials have been given and without regard to the amount of demonstration and help it has been necessary to give during previous trials; (3) every test of the scale is given without time limit; and (4) the entire scale is given, as it was standardized, without any verbal directions.

There has been much controversy about the use of any test which may be interpreted as permanently fixing a child's intellectual level or ability with an IQ score. The authors are very concerned and aware of this controversy and also are cognizant that children as well as examiners have their good and bad days. For these reasons it is well to note that any one score may be considered relatively accurate to within 10 points (plus or minus) of the obtained score and even then the individual child's score may change very dramatically as he matures. It is necessary, however, to have a numerical value with which to work for purposes of comparison, but caution and discretion should be used in dissemination of the information to parents and others concerned with the children. For these reasons only group scores and statistics based on the entire population of children are reported.

Results

Table 7 contains all pertinent information for each sample of

Table 7

Leiter Performance Test

Program	Number of Subjects	Mean I.Q.	Standard Deviation	Range	Mean Age in Months
American School for the Deaf	15 (2)	109.200	15.6533	88-133	47.733
Bill Wilkerson Hearing Center	11 (2)	98.454	10.7551	82-118	48.000
Callier Hearing & Speech Center	19 (1)	119.158	14.7092	85-151	46.842
Minneapolis Public School System	17 (2)	112.059	13.0598	85-135	44.706
New Mexico School for the Deaf	12	128.083	15.0722	110-157	45.250
Rochester School for the Deaf	13	108.308	11.3606	90-131	51.385
St. Paul Tilden School	7 (1)	122.286	13.1746	104.138	45.428
Totals	94 (8)	113.734*	13.3978	82-157	47.049

(#) = Number of children not tested
* = weighted mean

children from which to compute a t-test. The t-test is one of the most commonly used tests to determine whether the performance difference between two groups of subjects is significantly different from chance level. On the Leiter Performance Scale, the New Mexico School for the Deaf (Santa Fe and Albuquerque combined) was significantly different from the American School for the Deaf ($t = 3.046$, $df = 25$, $p < .01$), Bill Wilkerson Hearing and Speech Center ($t = 5.1440$, $df = 21$, $p < .001$), Minneapolis (Whittier, Emerson and Hamilton) ($t = 2.9443$, $df = 27$, $p < .01$) and Rochester School for the Deaf ($t = 3.5699$, $df = 23$, $p < .01$). The Callier Speech and Hearing Center was significantly different from the Bill Wilkerson Center ($t = 3.9411$, $df = 28$, $p < .001$) and St. Paul (Tilden) was significantly different from Bill Wilkerson ($t = 3.9532$, $df = 16$, $p < .01$). In this comparison, each program was compared with every other program in our sample. All comparisons not reported above were not significant at the .01 level of significance.

There are at least two factors which may account for these differences between programs. The first is the small number of children in some samples, and the second is the age of the children. A small number of subjects in a sample tends to make the t-test less sensitive, and the Leiter Performance Scale tends to score higher at very young ages. Therefore, a program whose sample contains a relatively large number of children at young ages has a distinct advantage in this type of comparison.

Another factor which might be considered is the type of experiences children have in some of the programs might be very similar to the

demands of the Leiter Scale. Despite the claim that the Scale at lower levels has tests of ability to learn rather than of acquired skills, it is interesting to note that the programs which have been classified as most structured (Callier, New Mexico, and St. Paul) show the highest mean scores. An important consideration for the future is whether the differences will disappear as the children mature.

It should be stressed that the average IQ of 113.7 for the group may be spuriously high. The children who were not testable will probably lower the mean score when included in the sample. Also Quigley (1969) reported a mean Leiter Scale IQ of 114 for 32 deaf children with an average age of 3.8. When tested four years later at an average age of 7.8, the WISC Performance Scale average IQ was reported as 102. It is possible the present study will observe a similar drop in reported IQ.

Illinois Test of Psycholinguistic Abilities

The Illinois Test of Psycholinguistic Abilities (ITPA) was administered to 96 children in the Spring of 1971. Six children were absent during the visits and were not tested. The ITPA norms include approximately 15% non-testables so that each child received a score for each subtest regardless of a refusal to participate or a failure to obtain a basal on a particular task.

The ITPA was selected for inclusion in the battery because it is a diagnostic test of specific abilities and can be used to delineate areas of difficulty in communication. As a complete unit, the ITPA can isolate problems in (a) three processes of communication, (b) two levels of organization, and/or (c) two channels of input and output. Performance on individual subtests can indicate specific abilities or disabilities in psycholinguistic functioning. Additional information about this test may be obtained from the Examiner's Manual, revised edition, University of Illinois, 1969.

Five of the subtests of the ITPA were administered to the sample of children. The others required complex instructions and were restricted to the auditory-vocal channel. Some verbal instructions were required on all the subtests, but the five selected were the most self explanatory and relied on the visual mode. In some cases, additional instructional materials were devised to further assist the child in understanding the tasks. A brief description of the five subtests follows:

1. Visual Reception: A measure of the child's ability to gain meaning from visual symbols. The child is shown a stimulus picture (EX. a dog) and must find an object or situation that is conceptually similar to one of four objects or situations contained in a second picture (EX. another dog).

2. Visual-Motor Association: A picture association test to assess the child's ability to relate concepts presented visually. The child is shown a stimulus picture surrounded by four response pictures. The task is to choose the response picture that is most closely related to the stimulus picture (EX. sock and shoe). As a whole this test taps the subject's organization and association abilities.

3. Manual Expression (motor encoding): A gestural manipulation test to assess the child's ability to express ideas manually. Fifteen pictures of common objects are shown one at a time and the child is asked to pantomine the action (combing hair, dialing phone).

4. Visual Closure: The child's ability to identify a common object from an incomplete visual presentation is assessed. Four separate scenes are shown each depicting a different subject matter (shoes, fish, dogs or tools) in varying degrees of concealment. The child must point to as many of the 14 or 15 particular objects as he can find in 30 seconds.

5. Visual Sequential Memory: The ability to reproduce sequences of non-meaningful geometrical figures from memory. The child is shown the sequences for five seconds and then must put corresponding chips of the figures in the same order. There are two trials for each sequence (if the first trial is unsuccessful). This test has been shown to be a good predictor of reading skills for children with normal hearing.

Results

Scaled scores were used in all statistical calculations. Scaled scores are transformed raw scores such that at each age and for each subtest the mean or average performance of the referral group is equal to a score of 36 with a standard deviation of 6. Scaled scores take into account both group means and variances and provide a helpful comparison of the child's performance.

The weighted mean score of 170 for the complete sample is somewhat below the score of 180 which would be predicted for children with normal hearing as shown in Table 8. Students in the Callier, New Mexico, Rochester and St. Paul programs scored above the sample mean. Of greater immediate importance, however, is the pattern of responses over the various subtests. Figure 1 graphically depicts the overall performance of all subjects on each of the five subtests of the ITPA. On two of the subtests, Visual Sequential Memory and Manual Expression, the children achieved above the mean scaled score of 36 for normally hearing subjects. They were below the norm in Visual Reception, Visual Association and Visual Closure, with

Table 8

Illinois Test of Psycholinguistic Abilities

Program	N	Mean ITPA Score	Standard Deviation	Range	Mean Age (months)
American School for the Deaf	15	164.07	26.40	103-206	50.13
Bill Wilkerson Hearing Center	13	147.69	21.84	103-182	51.08
Callier Hearing & Speech Center	16	190.56	18.68	159-223	49.62
Minneapolis Public School System	19	159.95	26.38	103-201	48.16
New Mexico School for the Deaf	12	182.00	9.76	115-226	49.42
Rochester School for the Deaf	13	176.00	22.64	122-203	55.15
St. Paul Tilden School	8	174.75	42.46	116-231	48.25
Totals	96	*170.1982			50.26

* Weighted mean score

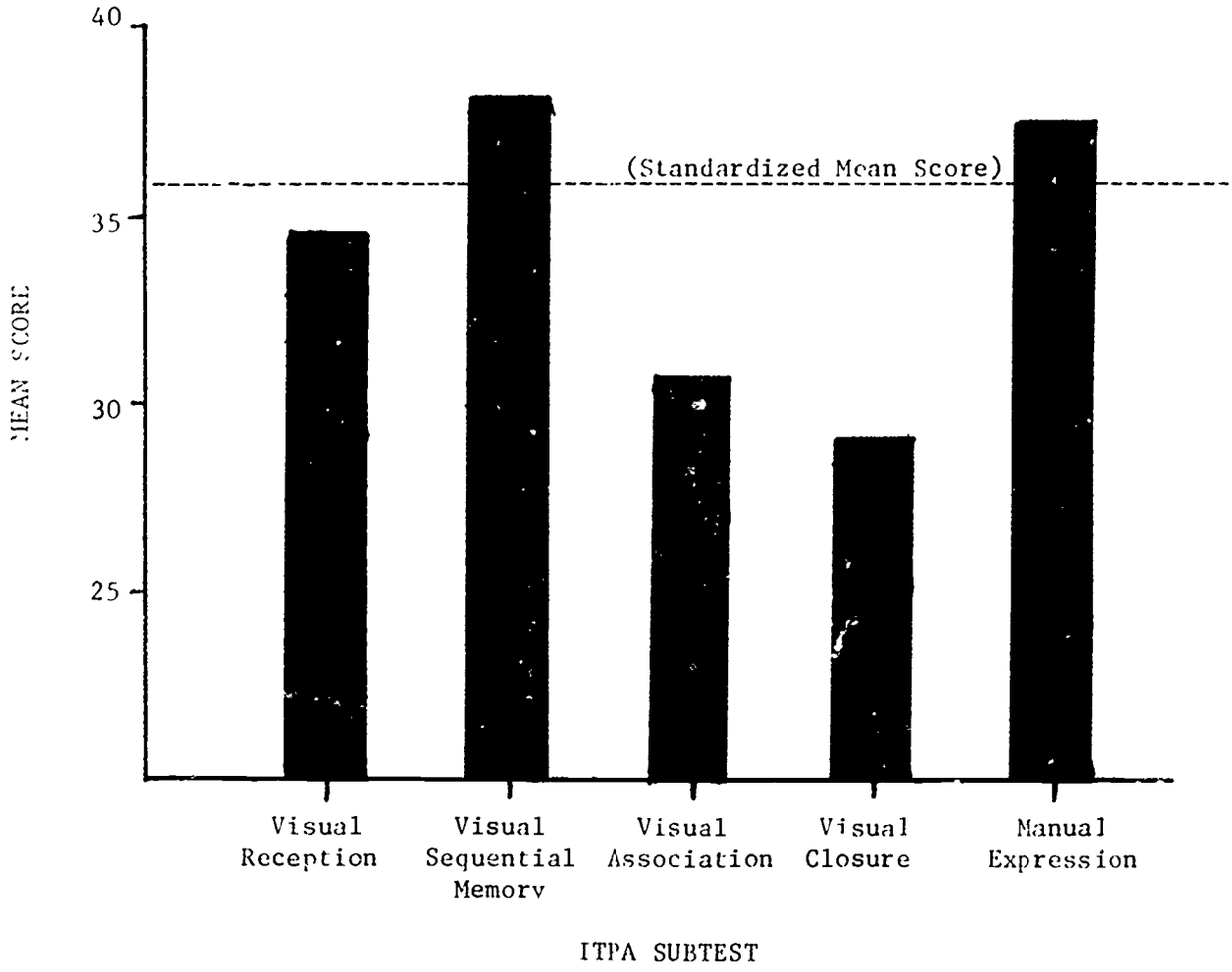

Figure 1: Overall Mean Scores on the ITPA by Subtest

performances on Visual Closure showing the greatest retardation relative to the norm.

Caution must be exercised in interpreting the results for this particular subtest because it is timed. Such tasks may provide artifically deflated estimates of true levels of functioning of deaf children. However, the results of the five subtests raise the possibility that deaf children may have different patterns of functioning in the visual motor channel. They may be superior, in relation to hearing children, on some tasks, and inferior on others. Of major importance to the investigators is the extent to which the pattern shown in Figure 1 will continue as the children mature. It should be stressed that, although differences in scores exist between programs, the pattern of performance for the five subtests was similar for all seven programs.

Multiple t-tests were computed (See Table 8) combining the scores on all five subtests by programs. Callier Speech and Hearing Center was significantly different from the American School for the Deaf ($t = 3.1342$, $df = 29$, $p < .01$), Bill Wilkerson Hearing and Speech Center ($t = 5.4957$, $df = 27$, $p < .001$) and Minneapolis ($t = 3.7863$, $df = 23$, $p < .001$). The New Mexico School for the Deaf was significantly different from Minneapolis ($t = 2.6868$, $df = 29$, $p < .02$ and Wilkerson ($t = 4.7963$, $df = 23$, $p < .001$). Rochester School for the Deaf was significantly different from Wilkerson ($t = 3.1175$, $df = 24$, $p < .01$).

ITPA scores were further analyzed to investigate differences which might exist between oral and combined (oral and manual) programs,

between structured and unstructured programs and between children classified by etiology. Figure 2 graphically presents the scores of children in combined and oral programs. Although there are small differences favoring the combined group on each subtest, no significant differences were observed by t-tests. Again, it should be stressed that the pattern of scores across subtests was similar for each group.

The children then were separated and compared on the basis of etiology. Some causes had to be grouped for expediency but the overall best performance (Figure 3) was given by the hereditary group followed by unknown cause, rubella, meningitis and the "other" group (including prematurity, RH factor, fever, etc.). In all cases, either Visual Sequential Memory or Manual Expression was the best subtest followed by Visual Reception, Visual Association and Visual Closure (except the Rubella group which reversed the last two subtests). This grouping almost exactly duplicates the overall pattern performance of the entire sample of children. (See Figure 1). In other words, no particular cause of the deafness accounted for much of the population variance.

One other classification was developed as a result of observations at various programs. It is not an official designation but one based on a number of factors: (1) academic or pre-academic work undertaken by the children, (2) organization and use of class time, (3) amount of free play allowed, either supervised or unsupervised, (4) type of ongoing activities, (5) amount of attention expected from the children and (6) teacher's expectation. We have classified

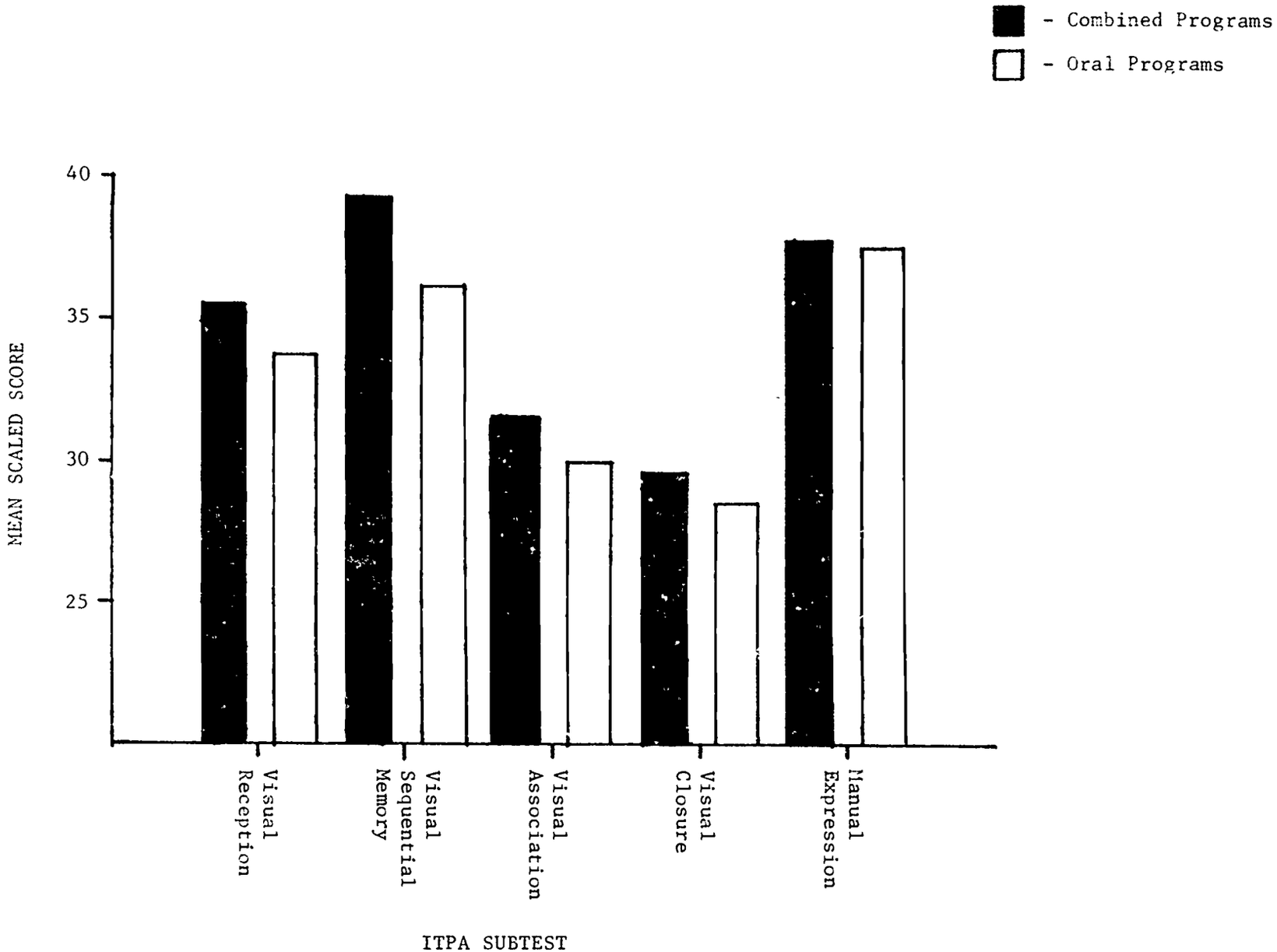

Figure 2: ITPA Scores of Children in Combined and Oral Programs

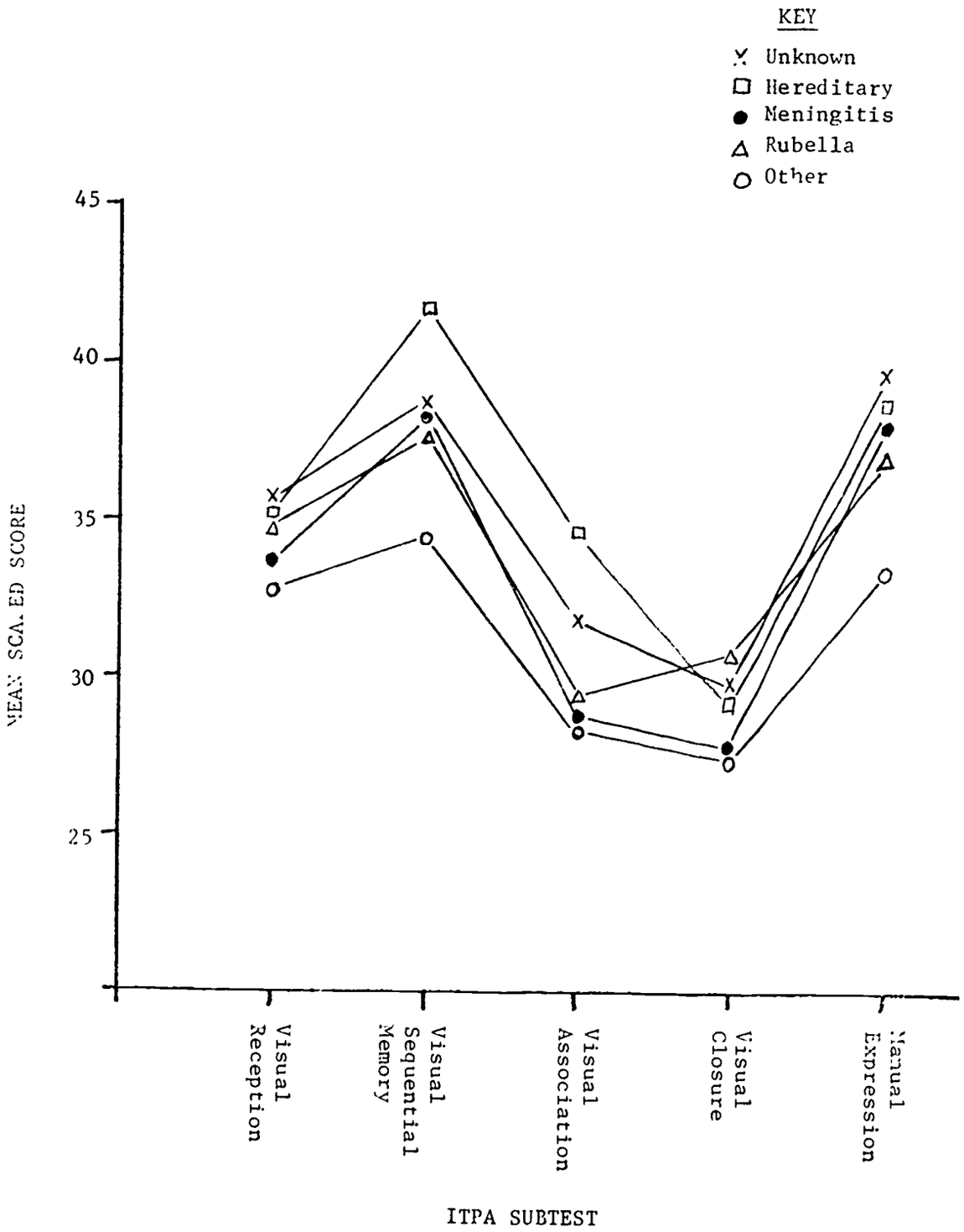

Figure 3: ITPA Subtest by Etiology of Deafness.

this as "structured" versus "unstructured" and separated the programs accordingly. Figure 4 shows that on each of the subtests the structured group was superior. On four out of five subtests of the ITPA, the superiority of the structured programs were statistically significant (Table 9). This suggests that the amount of structure in a program may be of equal or greater importance to performance on the ITPA as the etiology of deafness or the methodology employed.

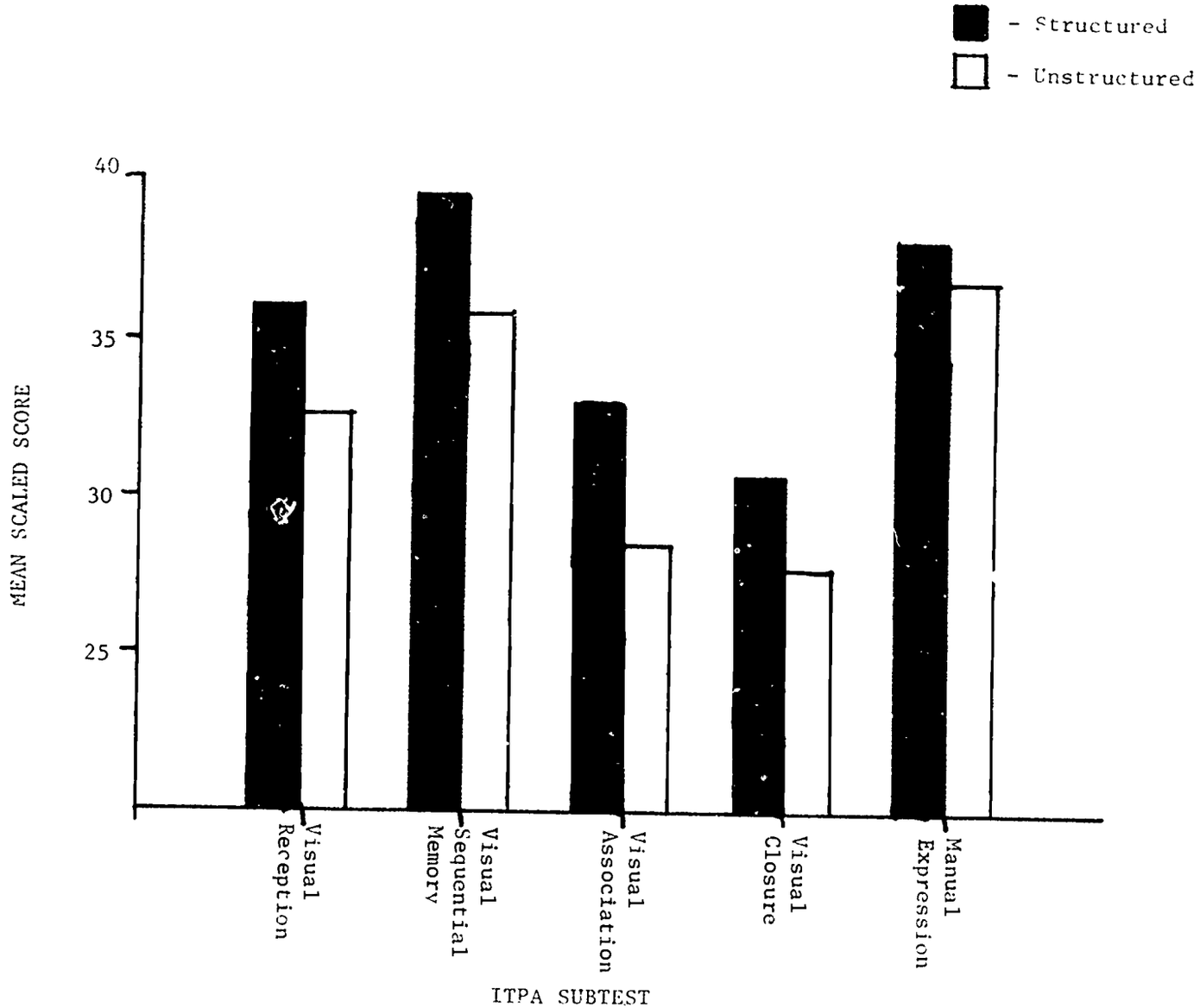

Figure 4: Mean Scaled Score on ITPA Subtest by Amount of Structuring.

Table 9

Comparison of ITPA Scores by Structured and Unstructured Programs

	Visual Reception		Visual Sequential Memory		Visual Association		Visual Closure		Manual Expression	
	S	U	S	U	S	U	S	U	S	U
N	51	45	51	45	51	45	51	45	51	45
$\bar{X}$	36.1	32.8	39.8	35.9	33.0	28.3	30.8	27.3	38.7	36.7
SD	6.2	5.5	8.1	8.2	7.8	5.8	7.8	6.8	6.1	7.5
df	94		94		94		94		94	
t	2.6534**		2.3130*		3.2527**		2.3024*		1.3248	

* p < .05

**p < .01

S = Structured Programs

U = Unstructured Programs

Classroom Observation

As part of the fall and spring visits, observations were made in the various classrooms. A running account of the type and length of activity, as well as the mode in which the activity was conducted, was recorded. In addition, equipment and materials being used and seen during the observation period were noted on a list of items frequently found in a pre-kindergarten classroom. The form used for these observations (Appendix A) consisted of a modified version of the Classroom Observation Schedule used by DiLorenzo (1969) with additions appropriate to a population of deaf children.

Immediately following the observation period, statements were rated under six major headings (See Appendix B): (1) Classroom Organization, which was concerned with the planning and execution of the program and its organization (one to small, small groups, entire group); (2) Discipline and Classroom Relationships which was concerned with the methods and manner in which disciplinary problems are handled and/or avoided and the prevailing atmosphere in the room itself. (3) Program Structure, which considered special materials, varieties of experience and organization of time periods; (4) Encouraging Language and Speech Development; (5) Reacting to Pupil Needs, which was concerned with modifications of teacher's behavior required by the developmental status and the particular impairments of the individual children in her class. (6) Communication

from Pupils and from Teachers to Pupils, which dealt with the various modes of communication used by the teacher and the children (adult to child, child to adult, and child to child).

Forty-nine statements under the above headings were rated on a seven point scale from "never" to "frequently." These ratings could then be combined across raters and compared between programs and modes of communication. (See Appendix B for individual statements).

Equipment and Materials

All of the classrooms observed were very well equipped. All contained auditory units of some kind and math and/or reading readiness materials were present in all but one program. Many were equipped with child-size sinks and toilets adjoining the classrooms---others had nearby facilities.

Audiograms were on display in four programs and most contained the usual blocks, paints, books, puzzles and other manipulative toys. Many evidenced record players, housekeeping corners, dress-up clothes, rhythm instruments, flannel boards and calendars. Only two programs were observed using overhead projectors during the observations and few programs used labels extensively throughout the classroom.

Results

The basic data were the combined scores of two raters on each statement over several observations for each school. Initial t-test computations revealed no significant differences between groups in

the category of "encouraging language and speech development." The programs, then, seem fairly equivalent in taking advantage of spontaneous language learning opportunities, exposing the children to varied concepts, and giving controlled practice in selected terms to establish specified language patterns.

The other four categories (Communication will be discussed separately) were combined with the following significant results on t-tests: American School was significantly higher, in terms of frequency, than Callier ($t = 4.0567$, $p < .001$, $df = 64$), New Mexico ($t = 4.8094$, $p < .001$, $df = 64$), Bill Wilkerson ($t = 5.7693$, $p < .001$, $df = 64$), Rochester ($t = 6.2318$, $p < .001$, $df = 64$), and Minneapolis ($t = 8.1419$, $p < .001$, $df = 64$). St. Paul was significantly higher than New Mexico ($t = 3.2460$, $p < .01$, $df = 64$), Wilkerson ($t = 3.8447$, $p < .001$, $df = 64$), Rochester ($t = 4.7338$, $p < .001$, $df = 64$), and Minneapolis ($t = 6.6464$, $p < .001$, $df = 64$). Callier, Bill Wilkerson, and New Mexico were all significantly higher than Minneapolis at the .01 level or beyond.

To further delineate the sources for these differences, the individual categories were compared. On "reacting to pupil needs," American School was significantly higher than Callier ($t = 4.1024$, $p < .01$, $df = 12$), Wilkerson ($t = 7.2463$, $p < .001$, $df = 12$), Rochester ($t = 4.8271$, $p < .001$, $df = 12$), and Minneapolis ($t = 7.8691$, $p < .001$, $df = 12$). St. Paul was significantly higher than Rochester ($t = 3.0827$, $p < .01$, $df = 12$), and Minneapolis ($t = 4.7608$, $p < .001$, $df = 12$). Wilkerson was significantly higher than Minneapolis ($t = 4.287$, $p < .01$, $df = 12$).

On the statements under the heading of "classroom organization," the results were as follows: American School was significantly higher than New Mexico ($t = 4.055$, $p < .001$, $df = 16$), Rochester ($t = 4.9769$, $p < .001$, $df = 16$), Minneapolis ($t = 5.1461$, $p < .001$, $df = 16$), and Wilkerson ($t = 5.552$, $p < .001$, $df = 16$). St. Paul was significantly higher than Minneapolis ($t = 2.9309$, $p < .01$, $df = 16$) and Rochester ($t = 3.0940$, $p < .01$, $df = 16$).

On the statements under the heading of "structuring program," American School was significantly higher than Rochester ($t = 3.3842$, $p < .01$, $df = 14$), and Wilkerson ($t = 3.4439$, $p < .01$, $df = 14$).

On statements under the heading of "discipline and classroom relationships," only one significant difference was found with St. Paul significantly higher than Minneapolis ($t = 3.0983$, $p < .01$, $df = 16$).

Results---Communication

The degree and mode in which the children communicated with each other and with the teacher were also rated on a seven point scale from "never" to "frequently." These data are presented in Table 10a. T-tests on these data revealed no significant differences between programs on the overall expressive output of the sample of children.

Inspection of Table 10a reveals that gestures (other than American Sign Language) are most frequently used between the children in all programs. Gestures are used more frequently than any other mode in the American School (tied with signs for most

Table 10

Classroom Observation Ratings of Communication Modes by Program

Program	Fingerspelling	Sign	Oral-Aural	Combined	Gestures
	Communication Child to Child (a)				
American School for the Deaf	1.0	3.5	2.0	1.0	3.5
Bill Wilkerson Hearing Center	1.0	1.0	2.0	1.0	3.25
Callier Hearing & Speech Center	1.0	1.0	2.75	1.0	2.75
Minneapolis Public School System	1.0	1.0	1.87	1.0	3.27
New Mexico School for the Deaf	1.5	2.87	1.5	1.5	2.75
Rochester School for the Deaf	1.5	1.0	2.0	1.0	3.5
St. Paul Tilden	1.75	1.5	2.25	1.0	3.75
Total	8.75	11.87	14.37	7.50	22.77
	Communication Child to Teacher (b)				
American School for the Deaf	1.0	4.0	3.0	1.0	2.5
Bill Wilkerson Hearing Center	1.0	1.0	2.75	1.0	2.75
Callier Hearing & Speech Center	1.0	1.0	4.0	1.0	2.50
Minneapolis Public School System	1.0	1.0	3.0	1.0	3.27
New Mexico School for the Deaf	2.25	4.0	2.25	1.25	2.0
Rochester School for the Deaf	1.5	1.0	2.5	1.0	2.5
St. Paul Tilden	4.0	1.75	2.50	1.25	3.5
Total	11.75	13.75	20.00	7.5	19.02

Table 10 (Continued)

Classroom Observation Ratings of Communication Modes by Program

Program	Communication Teacher to Child (c)				
	Fingerspelling	Sign	Oral-Aural	Combined	Gestures
American School for the Deaf	1.0	1.5	7.0	1.0	2.0
Bill Wilkerson Hearing Center	1.0	1.0	7.0	1.0	2.5
Callier Hearing & Speech Center	1.0	1.0	7.0	1.0	2.0
Minneapolis Public School System	1.0	1.0	6.75	1.0	3.5
New Mexico School for the Deaf	3.75	4.5	4.75	3.0	1.75
Rochester School for the Deaf	6.0	1.0	6.5	1.0	2.5
St. Paul Tilden	6.25	1.75	6.75	1.0	2.75
Total	20.00	11.75	45.75	9.0	17.00

1 = Never
7 = Frequently

frequent), Bill Wilkerson, Callier (tied with oral-aural), Minneapolis, Rochester and St. Paul programs. In the New Mexico program signs are used somewhat more frequently than gestures.

Communication from child to teacher follows a somewhat different pattern (Table 10b). The most common mode of communication is oral-aural, followed by gestures. Signs are used more frequently than other modes in the American School and New Mexico programs. Fingerspelling is the most common mode in St. Paul. Gestures and oral-aural are the most frequently used modes in the Wilkerson and Rochester programs. The most frequent child to teacher communication in Callier is oral-aural and in the Minneapolis program it consists of gestures.

Table 10c presents the breakdown of communication from teacher to child. In all cases the most frequent mode of communication was oral-aural which was consistently accompanied by fingerspelling in Rochester and St. Paul and by signs and fingerspelling in New Mexico. Oral-aural communication was less frequent in New Mexico than in the other programs. Signs and fingerspelling were non-existant or rarely observed in programs presently designated oral-aural (American, Wilkerson, Callier and Minneapolis). Signs were not observed in Rochester and were rarely used in St. Paul. In each of the oral programs the second most frequently used mode of communication from teacher to child was gesture.

Results from Table 10c suggest some inconsistencies between the stated methodology in use in some programs and the actual way in which teachers may communicate. In the case of the New Mexico program this probably represents a transition from the Rochester Method

to Total Communication and may be temporary. It will be interesting to observe whether the same pattern will emerge if the American School changes to the same system. A somewhat more surprising finding is the relatively heavy reliance placed on gestures by teachers in oral programs. At present it is unclear if teachers are aware of the extent to which they resort to gestures. For some it may be an integral part of the teaching process. For others it may be unconscious. It is possible that some teachers of the deaf convey large amounts of information through gestures of which they are not aware.

Communication Analysis

Preliminary investigation revealed the majority of the population was too young and had had too little training to instigate valid and reliable speech articulation, and speechreading measures. At this point, rather, a gross measure of the children's level of functioning was desirable. For this reason, a communication analysis was devised to investigate whether or not sound and words carried meaning for the subjects and to assess their awareness that their lip movements and those of others can influence, direct, and instruct. In addition, the ability of the children to imitate or respond to sound produced by others with comparable self-produced sound was investigated. More comprehensive evaluation of all modes of language production and reception will be employed as the children mature.

The communication analysis was administered to 96 children in the sample (six were absent). The analysis was composed of two parts. The first part (expressive) consisted of showing the child nine pictures selected from the Peabody Language Development Kit: Ball, Airplane, Mama (woman washing dishes), Daddy (man hoeing), Baby, Red, Blue, Shoes, and Boy or Girl (depending on the sex of the child). The initial trial of nine items was intended to familiarize and/or teach the child the desired response. After the experimenter was convinced that the child understood what was expected of him, the pictures were presented again and the child was encouraged (in the same manner used by his classroom teacher) to respond to each picture

using his very best speech. Upon presentation of each picture, time was allowed in which the child could respond spontaneously. If he did not, the word was spoken by the experimenter and the child was encouraged to imitate the word. If the child did not immediately imitate, several repetitions were given by the experimenter. A reasonably close approximation was scored as an "imitation," an indistinguishable vocalization scored as an "attempt," and no sound at all was scored as "no response."

The second part of the communication analysis was concerned with speechreading ability (reception). The same nine pictures were used. Three pictures were layed out randomly and when the child's attention was focused on the experimenter one of the three words was spoken. The task was to choose the correct picture on the first try. The correct picture was then removed and another substituted randomly and so on until all nine pictures had been given. If an error occurred, the word was repeated until the correct choice was made. Only the first picture pointed to by the child on each trial was scored. If the child had yet to respond after 3 or 4 repetitions of the word and conditions warrented, the word was simultaneously presented via speech, sign language or fingerspelling. Correct responses obtained by this method were not counted in the statistical analysis.

The entire session was recorded on a Craig cassette tape recorder for later scoring.

Results

Speech

The basic data consisted of the frequency with which each child replied spontaneously, imitated, attempted, or failed to respond on the nine words. These percentages by programs are presented in Table 11. Inspection of this table reveals that over 50% (in all but one case) of the children's responses were either spontaneous or imitated.

Frequency data were also computed for each word. Combining the spontaneous and imitated, Ball was the easiest for our subjects (72% correct) and Blue was the hardest (57% correct).

For statistical purposes, the children were then assigned to a position determined by the predominat score they received (5 or more similar responses-coin flip for ties). This was necessary because one of the contingencies when dealing with frequency data is that each score or subject must be independent from all other scores or subjects. These assignments are depicted in Table 12. Comparisons were then made between programs, types of programs, and types of children.

The Chi-Square statistic was used to give an indication of the degree of relationship between the categories spontaneous, imitation, and no response, and variables such as age, hearing loss, etc. A total of four Chi-Squares were computed: Oral vs. Combined ($X^2 = 2.54529$), Structured vs. Unstructured Programs ($X^2 = 1.7973$), Age 35-50 months vs. 51-61 months ($X^2 = 2.0759$) and Decibel Loss 70-85, 86-95, 96-110 ($X^2 = 5.92685$). None of the Chi-Squares was significant. The speech

Table 11

Percent of Words Children Uttered Spontaneously, Imitated, Attempted, or Failed to Attempt by Program

Program	% Spontaneous	% Imitated	% Attempted	% No Response
American School for the Deaf	28	29	5	38
Bill Wilkerson Hearing Center	11	17	14	58
Callier Hearing and Speech Center	43	33	0	20
Minneapolis Public School System	31	35	5	28
New Mexico School for the Deaf	30	29	9	31
Rochester School for the Deaf	21	52	6	20
St. Paul Tilden	59	33	0	8
Overall Percent	31.86	32.57	5.57	29.00

Table 12

Speech Assignment by Programs to Predominant Class of Response

Program	Spontaneous	Imitation	Attempts*	No Response
American School for the Deaf	4	5	0	5
Bill Wilkerson Hearing Center	2	1	3	7
Callier Hearing & Speech Center	7	8	0	3
Minneapolis Public School System	6	8	0	5
New Mexico School for the Deaf	3	5	0	4
Rochester School for the Deaf	2	8	1	2
St. Paul Tilden	4	3	0	0

* Not included in statistical analysis.

according to decibel loss did show a trend, with the lesser hearing losses giving rise to better scores.

One factor of possible importance was the length of time each child had attended his respective program. For example, a child that has been in a program for two years should be more adept at using his powers of speech than a child in a program for one year or less. Therefore, children were placed into their groups according to time in a program; 1 to 12 months; 13 to 24 months; and 25 to 36 months and above. The groups were compared between programs on length of training time, on amount of structure, and between oral and combined orientation. This was accomplished by taking the number of spontaneous and imitated utterances and dividing by the number of possible utterances yielding a proportion of correct responses (See Table 13). These proportions were then subjected to a test of significance with the following results:

Using weighted mean proportions, overall comparisons were made of children in each of the three groups (1-12 months; 13-24 months; and beyond-25 months) across programs. No significant differences were found.

Between program comparisons resulted in the following: For children in programs 12 months or less, St. Paul (Tilden) was significantly higher than Callier ($z = 2.8125$, $p < .01$), New Mexico ($z = 2.9445$, $p < .01$), American School ($z = 4.2407$, $p < .001$) and Bill Wilkerson ($z = 5.1313$, $p < .001$). Rochester School was significantly higher than Bill Wilkerson ($z = 3.6945$, $p < .01$).

Table 13

Proportion of Correct Responses on Nine Speech Items
by Programs and Length of Enrollment

Program	Percent Correct		
	1 to 12 Months	13 to 24 Months	25 + Months
American School for the Deaf	.38 (8)	.79 (6)	
Bill Wilkerson Hearing Center	.16 (2)	.25 (7)	.52 (4)
Callier Hearing & Speech Center	.64 (11)	.91 (4)	1.00 (3)
Minneapolis Public School System	.76 (10)	.63 (7)	.27 (2)
New Mexico School for the Deaf	.48 (5)	.91 (4)	.33 (3)
Rochester School for the Deaf	.79 (8)	.64 (5)	
St. Paul Tilden	1.00 (3)	.86 (4)	

(#) = Number of children involved.

For children in programs 13 to 24 months, New Mexico, Callier, St. Paul and American School were significantly higher than Bill Wilkerson at the .01 level or beyond.

For children in programs 25 months or longer (only 4 schools involved: Callier, Wilkerson, New Mexico and Minneapolis) Callier was significantly higher than New Mexico ($z = 3.5023$, $p < .01$) and Minneapolis ($z = 3.5794$, $p < .01$).

Comparisons were then made on the basis of the amount of structure inherent in the programs. For the groups with less than one year or more than 25 months, the results were not significant. For children with 13 to 24 months of training the structured programs were significantly higher than the unstructured programs ($z = 3.5678$, $p < .01$).

No significant differences were found between oral and combined programs.

A Kuder-Richardson reliability coefficient was computed on the individual items of the speech portion of the communication analysis. A high reliability coefficient (.70 or higher) means that the test items were equal in difficulty and capable or producing similar response patterns in different people. The reliability coefficient was .9349 indicating homogeneity and, therefore, validity of the test items.

Speechreading

The basic data consisted of the frequency with which each child speechread correctly, incorrectly, or failed to respond. These percentages are presented by program in Table 14. Table 14 also includes the percentages of children who correctly responded with the simultaneous presentation of the word via signs or fingerspelling.

Table 14

Breakdown of Correct and Incorrect Speechreading Items by Programs

Program	No. of Subjects	% Correct	% Correct: Signs & F.S. Added	% Incorrect	% No. Resp.
American School for the Deaf	14	58	13	21	7
Bill Wilkerson Hearing Center	13	20	6	28	45
Callier Hearing & Speech Center	18	71	0	23	5
Minneapolis Public School System	19	58	.6	17	23
New Mexico School for the Deaf	12	64	2	5	29
Rochester School for the Deaf	13	63	10	13	14
St. Paul Tilden	7	68	6	14	7
Overall Percent		57.00	5.3	17.28	18.57

Since this was a test of speechreading, these data are presented only for inspection and were not included in the statistical analyses. It should be emphasized that they do not reflect receptive ability for signs and fingerspelling. This will be assessed beginning in the 1971-72 academic year.

Subjects were assigned to a position on the basis of their most frequent response as shown in Table 15. Chi Squares were then computed with the following results: Age 35-50 months vs. 51-61 months ($X^2 = 1.682246$), Decibel Loss 70-95 vs. 96-110dB ($X^2 = 1.752436$), Oral vs. Combined ($X^2 = 4.391703$). None of the comparisons was significant.

Additional comparisons were made according to the length of time in training using the underlying logic that a child with two years of training in speechreading should be more proficient at this skill than a child with a year or less of training. (See Table 16 for percent correct for all programs.) The following results were obtained:

An overall comparison (using weighted means) across programs revealed no significant differences, e.g., children in the sample with three or more years of training were not significantly more proficient at the speechreading task than children with one year or less training.

Comparisons of children in programs 12 months or less revealed that Rochester, Minneapolis, and Callier were significantly higher than Bill Wilkerson at the .01 level or greater.

Table 15

Speechreading Assignment by Programs to Predominant Class of Response

Program	Correct	Incorrect	No Response
American School for the Deaf	9	4	1
Bill Wilkerson Hearing Center	2	5	6
Callier Hearing & Speech Center	14	3	1
Minneapolis Public School System	13	2	4
New Mexico School for the Deaf	9	0	3
Rochester School for the Deaf	10	1	2
St. Paul Tilden	6	0	1

Table 16

Proportion of Correct Responses on Nine Speechreading Items by Programs and Length of Enrollment

Program	Percent Correct		
	1 to 12 Months	13 to 24 Months	25 + Months
American School for the Deaf	.50 (8)	.68 (6)	
Bill Wilkerson Hearing Center	.00 (2)	.21 (7)	.30 (4)
Callier Hearing & Speech Center	.65 (11)	.72 (4)	.92 (3)
Minneapolis Public School System	.67 (10)	.54 (7)	.28 (2)
New Mexico School for the Deaf	.44 (5)	1.00 (4)	.48 (3)
Rochester School for the Deaf	.76 (8)	.42 (5)	
St. Paul Tilden	.63 (3)	.75 (4)	

(#) = Number of children involved

For children in programs 13 to 24 months, New Mexico was significantly higher than Rochester ($z = 3.5301$, $p < .01$) and Bill Wilkerson ($z = 6.4542$, $p < .001$). For children in programs longer than 24 months, no significant differences were revealed.

Additional comparisons were computed between programs with oral and combined orientations and between structured and unstructured programs. For children with 13 to 24 months of training, structured programs were significantly higher than unstructured programs ($z = 3.5916$, $p < .01$). All other comparisons were not significant.

Brown Parent Attitude Scale

One important variable in the educational development of pre-school children, both hearing and deaf, is their parents. The attitudes, feelings and expectations they hold for their children may significantly affect educational progress. Attitudes and expectations may predict success in pre-school and beyond.

Of particular importance in the present study are any changes that may occur in parent attitude as the child gets older. Will parents lower their expectations, or raise them? If there are changes, will they be a function of the child's success or failure? What role does the child's program play in the formation and change of parent attitudes?

A Parental Information and Attitude Scale for Parents of Hearing Impaired Children (Appendix C) has been developed by Dr. Donald W. Brown at Gallaudet College. This scale was distributed to all parents in the sample for completion and return. The scale is divided into 3 parts: Part 1 deals with general information such as occupation, education, and questions concerning the discovery of the child's hearing impairment.

Part 2 is entitled "Your Child Thirty Years from Now" and assesses parental expectation by having parents rate statements (from "very good chance" to "no chance at all") such as "will be a college graduate," etc.

Part 3 contains statements and opinions often expressed about

hearing impaired individuals. The parents are requested to circle the choice of answers which best indicates their own feelings about that particular statement.

The data were coded onto IBM cards and several programs of descriptive statistics were run. Ninety-six parents returned the completed questionnaires.

Results

Part I: General Information

Table 17 contains a summary of the questions related to the parents themselves. Examination of Table 17 reveals that the parents are relatively young (mean age = 32.16 years), and well educated (68 have completed 12 or more years of school, 20 have college degrees and eight have done some graduate work).

For information on deafness, the parents tend to rely on school administrators or sources other than books and periodicals. Only three families subscribe to any journal and only 50 of the responding parents have ever read any journals or books related to deafness.

Tables 18, 19, 20 and 21 contain a summary of questions concerning the hearing impaired children. The hearing impaired child was the first-born in 21 families and sixth-born in only two families. When the hearing loss was suspected, 43 parents originally went to a pediatrician, 22 visited general practitioners, 12 visited audiologists, and eight visited otologists. In 13 cases, diagnoses other than hearing impairment were given including mental retardation, "slowness," brain damage and hyperactivity.

Table 17

Parent Information from Brown Attitude Scale

Groups	Mean Age	Mean No. Years of Formal Education	Working Mothers Full/Part Time	No. Not Reading Journal since Child's Impairment	Members of Org. for Parents of Hrng. Impaired	
					Local	State
Mothers	30.98	12.39	13	19	21	1
Fathers	33.63	13.77		27	16	2
Oral Program Parents	30.66	12.80	11	31	22	3
Combined Program Parents	35.41	13.35	2	15	15	0
Structured Program Parents	33.40	13.19	9	27	25	2
Unstructured Program Parents	29.75	12.57	4	19	12	1
Overall	32.16	12.97	13	46	37	3

Table 18

Parent and Child Information from Brown Attitude Scale

Groups	Child's Position within the Family							Mean Age Education Began as Hearing Impaired	% of Parents Very Confident about Present Program	Modal Age when Hearing Loss Occurred
	0*	1	2	3	4	5	6			
Mothers	6	23	11	5	4	2	2	28 Months	79	Birth
Fathers	6	19	7	4	4	1	2	24 Months	72	Birth
Oral	4	35	13	5	4	0	4	27 Months	72	Birth
Combined	8	7	5	4	4	3	0	26 Months	84	Birth
Structured	12	21	15	8	2	3	2	25 Months	75	Birth
Unstructured	0	21	3	1	6	0	2	28 Months	79	Birth
Total	12	42	18	9	8	3	4	26 Months	76	Birth

* Adopted

Table 19

The Number of Physicians or Specialists Visited Before Hearing Loss was Identified

	Number of Physicians Visited					
	0	1	2	3	4	5
Mothers	3	21	17	8	2	2
Fathers	0	21	6	11	3	2
Oral Program Parents	1	21	20	16	5	2
Combined Program Parents	2	21	3	3	0	2
Structured Program Parents	2	30	13	13	3	2
Unstructured Program Parents	1	12	10	6	2	2
Total No. of Parents Responses	3	42	23	19	5	4

Table 20

Person Originally Visited by Parents when Hearing Loss was Suspected

	Pediatrician	Gen. Practitioner	Audiologist	Otologist	S&H Center	Other
Mothers	21	13	7	4	5	3
Fathers	22	9	5	4	3	0
Oral Program Parents	24	21	9	4	5	2
Combined Program Parents	19	1	3	4	3	1
Structured Program	33	9	5	8	7	1
Unstructured Program	10	13	7	0	1	2
Total Parent Responses	43	22	12	8	8	3

Table 21

Diagnoses Given Other Than Hearing Loss

	M.R.	"Slow"	C.P.	Heart Trouble	Hyperactive	Brain Damage	None
Mothers	2	8	3	1	2	1	33
Fathers	1	4	2	1	0	0	33
Oral Program Parents	1	12	3	2	0	1	42
Combined Program Parents	2	0	2	0	2	0	24
Structured Program Parents	2	7	4	0	2	1	45
Unstructured Program Parents	1	5	1	2	0	0	21
Total No. of Parents Responses	3	12	5	2	2	1	66

Fifty-five percent of the parents reported that their child had begun his education in a program for the hearing impaired by the age of 24 months. Seventy-three parents are "very confident" about placing their child in his current program. Only four reported a "serious lack of confidence." In this same vein, 40 parents have visited their child's classroom 12 or more times while only two have never visited the classroom.

Fifty-one parents feel that blindness or cerebral palsy are more educationally handicapping than deafness.

Part II: Your Child Thirty Years from Now

The data consisted of the number of parent responses to each of nineteen statements rated on a five point scale from "very good chance" to "no chance at all." The Chi Square statistic was used to test for differences between groups (fathers-mothers, oral program-combined program, structured-unstructured program).

There are six statements in which all groups had modal agreement (the largest number of responses fell in the same category). The parents felt there was a "very good chance" that their hearing impaired child would: drive a car, be close to brothers and sisters, know the neighbors well, be in good health, keep in touch, and belong to organizations of deaf and hard of hearing. Parents indicated there was "some chance" their child would have more deaf than hearing friends, and "no chance at all" that he would read at the fifth or sixth grade level or below.

Five out of six groups agreed there was some chance their child would marry a normal hearing person, and a very good chance

that he would be a college graduate.

The following differences were found at the .05 level of significance. Differences of this magnitude have not been reported so far in this report, for it is possible to obtain similar results by chance in 5 out of every 100 times. But the results do indicate a definite directional trend which may be of interest to readers.

Ratings on the statements "will have speech that is easily understood by most people," and "will graduate from a regular high school" were much higher for parents of children in oral programs. In other words, they felt these things were much more likely to occur than did parents of children in combined programs. Similarly, oral program parents felt there was little or no chance that their children would have difficulty in using English correctly.

Differences were also found between parents of children in structured versus unstructured programs. On the statements concerning speech and using English correctly, the unstructured group ratings were much more positive than the structured group.

Only one difference was found to be significant at the .01 level. On the statement "will use sign language as his preferred means of communication," parents of children in unstructured programs were more certain that this would not be the case ($X^2 = 10.6833$, $p < .01$). There were no differences between the combined and oral groups.

Part III

The data consisted of the number of parent responses to fourteen statements each containing five alternative answers in multiple choice

form. Instructions to the parents were as follows:

> Many statements and opinions have been expressed about hearing handicapped people. We are interested in learning the reactions that you, as the parent of a hearing impaired child, would have to the following statements. Please read each statement carefully. Circle the letter in front of the response which best expresses what you think of or would do about the statement.

Results

Six groups were compared: oral-manual, structured-unstructured program, and father-mother. All of the groups evidenced modal agreement on three questions. To the statement that many fewer deaf people than hearing people are able to go to college, parents agreed that "they were talking about previous generations and were unaware of current progress." To the statement that many deaf adults who do not have intelligible speech are successfully employed and well adjusted, the parents replied "this does not surprise me." In addition, most parents in all groups agreed that there were no disadvantages in geting together with other parents at their child's school.

There are several other questions where almost complete agreement prevailed. Table 22 presents each of these statements and the choice of most parents followed by the divergent group.

A test of significance of proportions compared statements where there was little or no agreement between the groups. Only one

Table 22

Summary of Questions on which Only One Group of Parents Differed

Question 1. Alexander Graham Bell, inventor of the telephone and strong supporter of teaching speech to deaf children, once said that fingerspelling was the fastest and most efficient way to teach language to deaf children.

d. This is interesting but probably needs some research to prove it or disprove it.

a. (Combined group) I think he was probably right.

Question 3. There is so much disagreement about education of the deaf that the best thing to do is:

d. Realize that what seems to be best for others may not be best for my child.

a. (Combined group) Be sure I've picked the best school and then get information from that school's staff.

Question 6. Most deaf people marry a deaf person.

d. This is fine if it's what the deaf want.

c. (Combined group and fathers) This is true only if the deaf have been segregated from contact with hearing people.

Question 7. If a friend of mine discovered that her child was deaf:

a. I'd tell her about the school my child is in.

e. (Unstructured group) I would feel obligated to share with her the satisfaction I have now that I've found the right program.

Question 9. An oral teacher of the deaf claims that many deaf children can't learn to speak and lipread.

e. I agree--some can, but many can't.

a. (Unstructured group) The statement is false and I can't believe a teacher would say that.

Question 11. A deaf adult says that he and his deaf friends don't think speech is very important.

c. Possibly he and his friends have found satisfactory adjustment without speech.

a. (Combined group) I can't imagine anyone, deaf or hearing saying that.

Table 22 (Continued)

Summary of Questions on which Only One Group of Parents Differed

Question 12. We all have too little time. Because of this I should devote my short reading time to:	
	a. Books and articles whose authors know what they're talking about.
	e. (Combined group) Books on manual communication so I can get to know my child better.
Question 13. Most deaf people prefer to associate with other deaf people rather than hearing people.	
	d. I imagine this is true - they understand each other's speech easier.
	e. (Mothers) If they are happy doing this--that's fine.
Question 14. The primary function of an educational program of hearing impaired children is to:	
	c. Development speech and speechreading skills.
	d. (Combined group) Provide appropriate instruction in academic skills, i.e., reading, language, writing.

significant difference was found. The statement reads: "Stuckless and Birch report that their study has indicated that manual communication (sign language and fingerspelling) does not hinder the development of speech in young deaf children." Parents of children in combined programs chose the answer "This is reassuring because I've wondered about that." A significantly different proportion of parents of children in oral programs chose the following statement: "They mean this is true if the child has already developed speech before he is exposed to manual communication" ($z = 3.7572$, $p < .01$).

Semantic Differential

In addition to the Brown Parent Attitude Scale, another measure of attitude was desired: one that would systematically compare the attitudes of groups of parents towards concepts related to deafness. Consequently, a scale was devised using the semantic differential technique (Osgood, Suci & Tannenbaum, 1957). This principle involves rating a concept (like deafness) along a seven step scale between pairs of bipolar adjectives (sweet-sour, etc.). The rationale and execution of the semantic differential are complex and the reader is referred to Osgood et al. (1957) for more detailed information and description of the differential as an attitude measuring tool. In general, however, most authorities agree that attitudes are not only learned but are predispositions to respond in certain ways. The semantic differential developed measures attitudes towards 19 concepts, as listed below:

Mother	Father
Coat	Book
Food	Hat
*Speechreading-Lipreading	*Auditory Training
*Hearing Impaired	*Fingerspelling
Water	Picture
*Integration of deaf child into a hearing class	*Deafness
	*Speech
Car	Ball
*Sign Language	
*Hearing-Aid	

*Concept Related to Deafness

Of the 19 concepts, nine are obviously related to deafness and ten are not. It was hypothesized that if all of the parents in the samples are drawn from similar populations, then there would be no overall differences between different groups. Responses to words such as food and picture for example, would show little variability. If any differences were to surface on the particular instrument employed, they could be expected to be in reactions to words related to hearing impairment. Thus, differences in relation to concepts such as Sign Language and Auditory Training might be traced to variations between programs in emphasis and parent counseling.

The 12 pairs of bipolar adjectives were chosen on the basis on previous work by the senior investigator. A sample page from the semantic differential developed is presented in Appendix D.

All parents of the sample of children received a copy of the semantic differential to be filled out and returned with the Brown Parent Attitude Scale. All the returned scales were punched on IBM cards and computer analyzed.

Results

At this point in the study it is hypothesized that parents may differ along dimensions according to the program in which their child is enrolled. Presumably parents have certain attitudes towards various methodologies either because they have chosen a particular program for their child or because through parent involvement and parent-teacher meetings they have been convinced of the efficacy of a particular program's methods. One goal of the study is to investigate changes in attitude in parents as children progress through the

various educational systems.

Analysis of variance was performed on responses of parents of children in oral programs versus parents of children in combined (oral/manual) programs. Only families with both parents responding were used resulting in 28 combined program parents and 56 oral program parents. To facilitate statistical analysis the oral program parents were randomly divided into two groups of 14 families each. Three analyses of variance were performed:

Oral Group I versus Combined Group

Oral Group II versus Combined Group

Oral Group I versus Oral Group II

Summary data are presented in Tables 23, 24, and 25 for those readers familiar with analysis of variance. In general the results are interpretable as follows:

There were no significant differences on the combined versus oral variable. This means that by isolating this factor independently of other factors being measured the parents do not differ from each other as groups. This is encouraging in that subsequent comparisons, if significant, will be a result of the new added dimension and not a result of original differences in parent attitude.

The main effect of "concepts" was significant in all three comparisons. The concepts, as previously noted, were originally chosen such that nine were deaf-related and ten were relatively neutral words such as car and coat. Differences here suggest the technique was obtaining differential results, as planned.

The important variable was the interaction between the combined-

Table 23

Analysis of Variance: Combined versus Oral Group I

Source of Variance	df	Mean Square	F
Between Ss			
A (Combined - Oral I)	1	92.0313	1.0523
S (A)	54	87.4580	
Within Ss			
B (Concepts)	18	208.3611	39.2551**
A x B	18	25.8478	4.8697**
B x S (A)	972	5.3079	
C (Adjective pairs)	11	172.4262	43.4803**
A x C	11	3.2772	.8264
C x S (A)	594	3.9656	
B x C	198	11.4079	13.2407**
A x B x C	198	1.0084	1.1704
B x C x S (A)	10692	.8616	

** $p < .01$

Table 24

Analysis of Variance: Combined versus Oral Group II

Source of Variance	df	Mean Square	F
Between Ss			
A (Combined - Oral II)	1	127.3202	1.4419
S (A)	54	88.3019	
Within Ss			
B (Concepts)	18	214.7243	43.8745**
A x B	18	25.1324	5.1353**
B x S (A)	972	4.8940	
C (Adjective pairs)	11	196.0052	28.9267**
A x C	11	20.3838	3.0083**
C x S (A)	594	6.7759	
B x C	198	10.5250	12.0667**
A x B x C	198	1.3863	1.5893**
B x C x S (A)	10692	.8722	

** $p < .01$

Table 25

Analysis of Variance: Oral Group I versus Oral Group II

Source of Variance	df	Mean Square	F
Between Ss			
A (Oral I - Oral II)	1	2.8572	.0358
S (A)	54	79.8918	
Within Ss			
B (Concepts)	18	226.3287	55.2863**
A x B	18	2.9754	.7268
B x S (A)	972	4.0938	
C (Adjective pairs)	11	224.8948	36.5714**
A x C	11	12.0344	1.9570
C x S (A)	594	6.1495	
B x C	198	11.0549	14.4813**
A x B x C	198	.7518	.9849
B x C x S(A)	10692	.7634	

** $p < .01$

oral program groups and the various concepts. Significant interactions were found in the Combined versus Oral Group I ($F = 4.8697$, $df = 18/972$, $p < .01$) and the Combined versus Oral Group II comparison ($F = 5.1353$, $df = 18/972$, $p < .01$). But differences were not found between the two oral groups (I and II) when they were compared with each other. This means that when combined program parents and oral program parents are administered this questionnaire, the two groups respond in a significantly different way to the concepts and that the semantic differential was sensitive enough to measure the differences.

In order to present the results of the interaction clearly, the means for the deaf-related words were plotted in Figure 5. Inspection of Figure 5 reveals that the parents in both groups have similar attitudes towards the concepts of Hearing Aid, Hearing Impaired, Speech, and Auditory Training. Combined program parents are more positive in their attitudes toward Speechreading, Sign Language, and Fingerspelling while oral program parents are more positive in their attitudes toward Deafness, and Integration of a deaf child into a hearing class.

It is apparent that parents with children in the combined programs do not perceive these programs as manual only. Speechreading, Hearing Aid, Speech and Auditory Training all receive positive ratings equivalent to Sign Language and Fingerspelling.

As with the concepts, the main effect of adjective pairs was also significant in all three comparisons. The pairs were selected because of divergent measuring properties and significant effects were

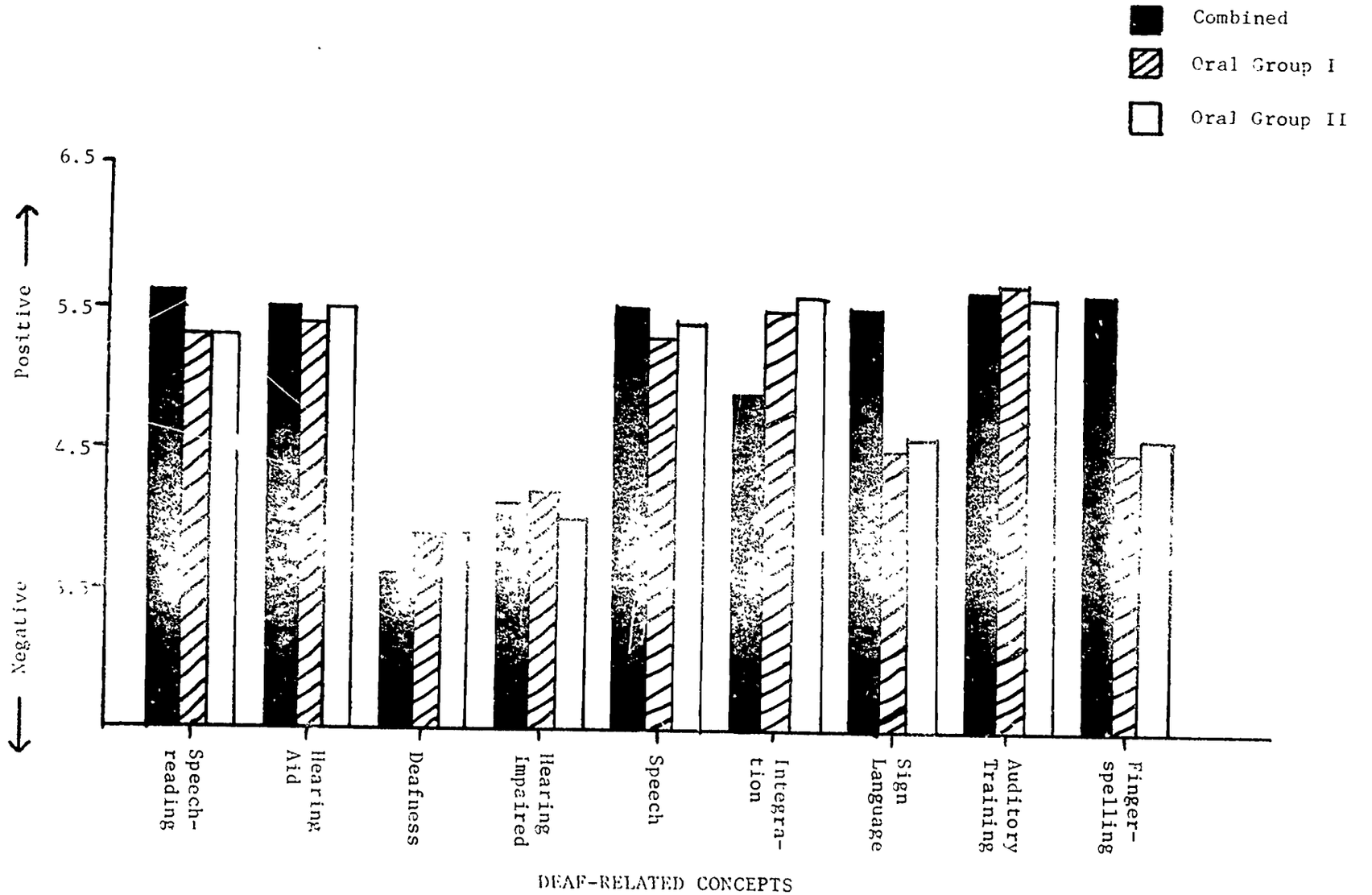

Figure 5: Semantic Differential Deaf Related Concepts by Combined and Oral Programs.

expected (Osgood, et al., 1957). The interaction of concepts and adjective pairs (B x C) was also significant in the three analyses. If the semantic differential is operating effectively, one would expect the adjective pair responses to vary according to the concepts being rated or judged.

The interaction between the combined-oral variable and the adjective pairs (A x C) was significant in only one comparison (Combined versus Oral Group II, $F = 3.00$, $df = 11/594$, $p < .01$). Also the combined-oral by concepts by adjective pairs interaction (A x B x C) was significant in the Combined versus Oral Group II comparison ($F = 1.5893$, $df = 198/10692$, p .01).

Analysis of variance was also performed on parents of children in structured programs versus parents of children in unstructured programs. As before, only families with both parents responding were used resulting in 28 unstructured program parents and 56 structured program parents. The structured program parents were randomly divided into two groups of 14 families each. Again three analyses of variance were performed.

Structured Group I versus Unstructured

Structured Group II versus Unstructured

Structured Group I versus Structured Group II

Summary data are presented in Tables 26, 27 and 28.

There were no significant differences between parents on the structured-unstructured variable in isolation. This means that any differences obtained between these groups upon addition of the concepts and adjective pair variables are a function of these additions

Table 26

Analysis of Variance: Structured I versus Unstructured

Source of Variance	df	Square	F
Between Ss			
A (Structure I - Unstructured)	1	76.2977	1.0135
S (A)	54	75.2779	
Within Ss			
B (Concepts)	18	240.9564	52.9485**
A x B	18	13.1310	2.8855**
B x S(A)	972	4.5508	
C (Adjective pairs)	11	202.9362	48.6618**
A x C	11	5.5708	1.3358
C x S(A)	594	4.1703	
B x C	198	11.7722	14.7198**
A x B x C	198	.9941	1.2430
B x C x S(A)	10692	.7997	

** $p < .01$

Table 27

Analysis of Variance: Structured II versus Unstructured

Source of Variance	df	Mean Square	F
Between Ss			
A (Structure II - Unstructured)	1	.1730	.0019
S (A)	54	89.2660	
Within Ss			
B (Concepts)	18	204.1178	39.2326**
A x B	18	20.2760	3.7955**
B x S(A)	972	5.3421	
C (Adjective pairs)	11	183.7267	30.4131**
A x C	11	5.7128	.9457
C x S(A)	594	6.0410	
B x C	198	10.1376	12.0084**
A x B x C	198	1.1676	1.3830**
B x C x S(A)	10692	.8442	

** $p < .01$

Table 28

Analysis of Variance: Structured I versus Structured II

Source of Variance	df	Mean Square	F
Between Ss			
A (Structured I - Structured II)	1	69.2043	.7441
S (A)	54	92.9973	
Within Ss			
B (Concepts)	18	199.1371	40.3079**
A x B	18	4.9404	1.0318
B x S(A)	972	4.7882	
C (Adjective Pairs)	11	200.2253	27.9781**
A x C	11	5.0974	.7123
C x S(A)	594	7.1565	
B x C	198	11.0995	13.0337**
A x B x C	198	1.0495	1.2324
B x C x S(A)	10692	.8516	

** $p < .01$

and not attributable to inherent differences in the two groups.

The main effect of "concepts" was significant in all three comparisons as well as the two concepts by structured-unstructured interaction (Structured I versus Unstructured, $F = 2.88$, $df = 18/972$, $p < .01$) and Structured II versus Unstructured, $F = 3.79$, $df = 18/972$, $p < .01$). Evidently there are differences in the ways parents of children in structured programs respond to the concepts as opposed to the ways parents of children in unstructured programs respond.

In order to see the shape of this interaction, the means for the deaf-related words were plotted in Figure 6. Inspection of Figure 6 reveals that parents in both groups have similar attitudes toward the concepts of Hearing Aid, Hearing Impaired, Speech, and Deafness. Unstructured program parents feel more positively toward the concepts of Integration of deaf child into hearing class, and Auditory Training while structured program parents are most positive toward Speech-reading, Sign Language, and Fingerspelling.

The main effect of adjective pairs was significant in three comparisons. As expected, also, the interaction of concepts with adjective pairs was significant indicating that the semantic differential is operating correctly. The triple interaction (A x B x C) is not readily interpretable.

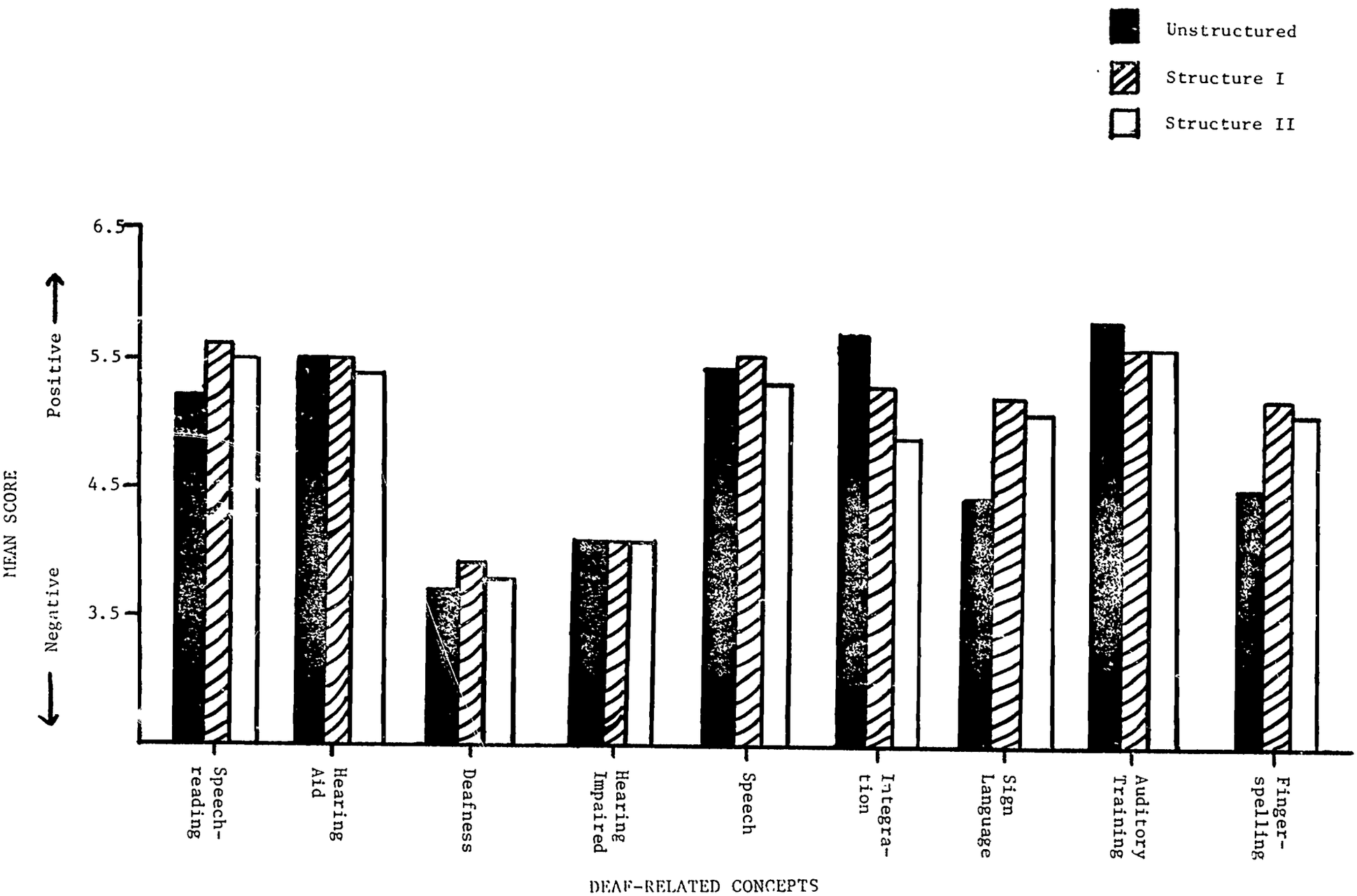

Figure 6: Semantic Differential Deaf Related Concepts by Structured and Unstructured Programs.

SUMMARY

1. The mean IQ scores of the subjects, as measured by the Leiter International Performance Scale, was 113.7. Children in structured programs tended to have higher scores than children in unstructured programs.

2. On modifications of visual-motor subtests of the Illinois Test of Psycholinguistic Abilities (ITPA), the children as a group scored slightly below the norms for hearing children. Regardless of program, methodology, or etiology a definite pattern of strengths and weaknesses appeared. On Visual Sequential Memory and Manual Expression the children were above the norms and on Visual Reception and Visual Association they were below the norm. Performance on the Visual Closure subtest revealed a substantial retardation, perhaps due to the timed nature of the test.

3. No significant differences (defined as $< .01$) were found between combined (oral-manual) and oral programs on the ITPA. Children in structured programs scored higher than those in unstructured. When grouped by etiology, children with hereditary deafness were superior to other classifications.

4. The most common mode of communication between children was through gestures, regardless of the official philosophy of the program. The only exception was the New Mexico program where signs were the most common mode.

5. Communication from child to teacher most frequently involved the

oral-aural mode, closely followed by gestures. Programs showed great variability in this measure. Signs were most frequent in the American School and New Mexico programs; gestures were most frequent in the Minneapolis program; oral-aural communication was most frequent in Callier; fingerspelling was the most common mode in St. Paul; and in the Wilkerson and Rochester programs, gestures and oral-aural communication were most common.

6. Communication from teacher to child most frequently was oral-aural, accompanied by fingerspelling in Rochester and St. Paul and by signs and fingerspelling in New Mexico. Teachers in oral programs used gestures as much as, or more than, teachers in combined programs.

7. Speech and speechreading abilities of the children, around chronological age four, were extremely difficult to assess during the first year of testing. Ratings of children's attempts of articulation showed no significant differences between oral and combined or structured and unstructured programs.

8. No differences in speechreading were found in the oral-combined and structured-unstructured comparisons.

9. Responses to the Brown Attitude scale suggest that parents tend to be relatively young (mean age 32 years) and well educated.

10. Parents were similar in their future expectations for their children. Only one significant difference was found. Parents of children in unstructured programs were more certain that their children would not use sign language as their preferred form of communication as adults.

11. Reactions to a semantic differential revealed no differences between parents of children in combined and oral programs in reactions to concepts Hearing Aid, Hearing Impaired, Speech and Auditory Training. Parents in the combined group were more positive toward Speechreading, Sign Language and Fingerspelling. Parents in the oral group were more positive toward Deafness and Integration of a deaf child in a hearing class. Comparisons between structured-unstructured programs showed parents of children in unstructured programs to be more positive toward Auditory Training and Integration of a deaf child into a hearing class and less positive toward Speechreading, Sign Language and Fingerspelling.

12. In the 1971-72 academic year increased emphasis will be placed on assessment of readiness and academic skills as well as measurement of linguistic functioning, both receptive and expressive, in all modes of communication. As the children mature, each year should allow more sophisticated analysis.

FUTURE PLANS

The project has been progressing on schedule and plans call for its continuation, following the same children, until at the 1973-74 academic year. The modification of the Visual-Motor subtests of the Illinois Psycholinguistic Abilities was successful will be administered each spring under present projections. Of particular interest will be the extent to which deaf children continue to show distinct patterns of strength and weakness on the various subtests.

The Leiter International Performance Scale provided a valid instrument of initial assessment of children in the first year of study and will not be administered on an annual basis. The children will be tested on another instrument, probably the WISC (Weschler Intelligence Scale for Children) Performance Scale, in the spring of 1974.

The Brown Attitude and Opinion Scale and the Semantic Differential which was developed for the project have been shown to provide sensitive measures of parent attitudes and reactions to deafness. Both will continue to be administered on an annual basis.

The classroom observation methods provide useful information of classroom activities and interaction patterns. The techniques, with some modifications, will be used for the remainder of the project.

The most substantial changes will be in the area of communication. As mentioned previously, because of the level of functioning of the

children, assessment in the first year was limited to speech and speech involving concrete stimuli and limited to the expression and reception of one word at a time. In no way should this be considered assessment of language ability.

For the academic year 1971-72 the children will be tested in the area of communication through the following modes:

A. Receptive Communication

1. Sound alone (without speechreading)
2. Sound plus speechreading
3. Sound plus speechreading plus fingerspelling
4. Sound plus speechreading plus signs and fingerspelling
5. The printed word

B. Expressive Communication

1. Speech
2. Fingerspelling
3. Signs
4. The Written Word

Sound plus speechreading is consistent with the oral-aural method. The addition of fingerspelling introduces the Rochester Method and the addition of signs brings in all of the elements of the Simultaneous Method or, as it is defined in some quarters, Total Communication.

Children from all programs will be tested in all modes for both receptive and expressive communication. If any of the teachers or programs object to the use of manual communication in the classroom, these parts of the instrument will not be emphasized for that

particular case.

A major new component of the assessment will be in the area of academic readiness and academic achievement. Tests standardized on normally hearing children have been pilot tested and modified. This phase of assessment will begin in the spring of 1972.

The schedule will follow the pattern of the first year of data collection and analysis for the remainder of the study. Data will be gathered in the spring of each year and analyzed in the summer. Procedural modifications will be made on the basis of feedback and the results of the testing. Results will be published each fall, with a comprehensive report scheduled for publication in December, 1974. Other dissemination activities include presentations to workshops, seminars and conventions as well as publication of results of parts of the project in appropriate journals.

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Appendix A

Classroom Observation

Teacher: _____ Observer: _____

District: _____ Date: _____ Time Start _____ Time Finish _____

No. of Children: _____ Supporting Staff: _____

DAILY PROGRAM

Listed below are a number of activities thay may be included in the daily program of pre-kindergarten class. Indicate by number the sequence of activities in the session observed and the amount of time spent on each. Add activities not listed in spaces provided.

Order	Activity	Minutes	Order	Activity	Minutes	Order	Activity	Minutes
_____	F.S. expr.	____	____	_____	____	____	_____	____
_____	F.S. rec.	____	____	_____	____	____	_____	____
_____	Signing expr.	____	____	_____	____	____	_____	____
_____	Signing rec.	____	____	_____	____	____	_____	____
_____	Writing	____	____	_____	____	____	_____	____
_____	Speech	____	____	_____	____	____	_____	____
_____	Lipreading	____	____	_____	____	____	_____	____
_____	Auditory Trng.	____	____	_____	____	____	_____	____
_____	Reading Readiness	____	____	_____	____	____	_____	____
_____	Number Work	____	____	_____	____	____	_____	____
_____	Free play	____	____	_____	____	____	_____	____
_____	Role Taking	____	____	_____	____	____	_____	____
_____	Date & weather check	____	____	_____	____	____	_____	____
_____	Group Discussion	____	____	_____	____	____	_____	____
_____	Story time	____	____	_____	____	____	_____	____
_____	Tioleting	____	____	_____	____	____	_____	____
_____	Snack	____	____	_____	____	____	_____	____
_____	Rest Period	____	____	_____	____	____	_____	____

EQUIPMENT AND MATERIALS

Listed below are materials and equipment that may be found in a pre-kindergarten classroom. Check those seen in this classroom (x) and double check those used during the observation period (xx). Add items not listed in the spaces provided.

_____ Large blocks

_____ Small unit blocks

_____ Books

_____ Record player, tape recorder

_____ Paints

_____ Crayons

_____ Pencils

_____ Feltpens

_____ Play dough

_____ Clay

_____ Scissors

_____ Housekeeping corner

_____ Dress-up clothes

_____ Pupil name cards

_____ Jungle gym, climbing ladder

_____ Carpentry bench

_____ Water play utensils

_____ Rhythm band instruments

_____ Puppets

_____ Wheel toys

_____ Readiness workbooks

_____ Readiness materials

_____ Ditto masters

_____ AV projectors

_____ Overhead projector

_____ Auditory unit

_____ Audiograms

_____ Pupil records

_____ Color charts

_____ Labels

_____ Picture puzzles

_____ Lotto games

_____ Flannel board

_____ Plants

_____ Live animals

_____ Manipulative toys

_____ Northampton Chart

_____ Fitzgerald Key

_____ _____

_____ _____

_____ _____

_____ _____

Classroom Organization

1. Teacher plans activities for the group as a whole.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

2. Teacher singles out individual children for:
   tutoring

Never _____ _____ _____ _____ _____ _____ _____ Frequently

3. supporting

Never _____ _____ _____ _____ _____ _____ _____ Frequently

4. Teacher shifts the organizational pattern (individual - small groups - entire group) according to the activity.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

5. Teacher shifts the organizational pattern (individual - small group - entire group) according to the needs of the children.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

6. Spontaneous, independent work by the children does occur.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

7. Spontaneous independent work by the children is allowed.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

8. The program gives an impression of good planning.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

9. The program appears to be well executed.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Use of Supporting Staff

Type of staff: X = Parent, V = Volunteer, 0 = Paid Personnel, * = Other

10. Supporting Staff works in a supportive manner.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

11. Supporting Staff performs housekeeping functions.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

12. Supporting Staff assists in maintaining discipline.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

13. Supporting Staff prepares teaching materials.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

14. Supporting Staff has responsibility for specific portions of the educational program.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

15. Teacher and Supporting Staff function as a team, shifting responsibilities according to the needs of the children.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Discipline and Classroom Relationships

16. Teacher admonishes the children for misbehavior.

Frequently _____ _____ _____ _____ _____ _____ _____ Never

17. Teacher threatens and cajoles.

Frequently _____ _____ _____ _____ _____ _____ _____ Never

18. Teacher controls through reiteration of the expectations of "good" and "grown-up" boys and girls.

Frequently _____ _____ _____ _____ _____ _____ _____ Never

19. Conforming behavior is rewarded.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

20. Teacher avoids problems by changing the pace of the program.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

21. Teacher quickly reprimands those who depart from the group pattern.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

22. The children cooperate readily.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

23. A laissez-faire attitude prevails in the classroom.

Frequently _____ _____ _____ _____ _____ _____ _____ Never

24. Teacher places restrictions on the childrens behavior.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Structuring Program

25. Teacher emphasizes diverse experiences for general enrichment.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

26. Children's activities have discernable objectives related to apparent needs.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

27. Teacher relies primarily on children's responses to determine her teaching goal at a given time.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

28. Teacher evidenced specific instructional goals.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

29. Teacher focuses attention on the objectives:
through defining the time period of the activity.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

30. through the use of special materials.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

31. through prescribing the child's responses.

Frequently _____ _____ _____ _____ _____ _____ _____ Never

32. Teacher utilizes both enriching experiences and instructional activities.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

33 Encouraging Language and Speech Development

33. Teacher takes advantage of spontaneous language learning opportunities.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

34. Teacher makes provisions for language development:
through discussions, question and answer period.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

35. through planned exposure to concepts.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

36. Teacher gives the child controlled practice in the use of selected terms and concepts in order to establish specific language patterns.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Communication From Pupils

E = Expected

S = Spontaneous

37. Child - Child

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sign Language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

38. Child - Teacher

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sign language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

39. Child - Supporting Staff

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sing language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Pupils Receptive Communication

E = Expected

S = Spontaneous

40. Child - Child

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sign language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written, Printed

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

41. Teacher - Child

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sign Language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written, Printed

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

42. Supportive Staff - Child

a) Fingerspelling

Never _____ _____ _____ _____ _____ _____ _____ Frequently

b) Sign language

Never _____ _____ _____ _____ _____ _____ _____ Frequently

c) Oral - Aural

Never _____ _____ _____ _____ _____ _____ _____ Frequently

d) Combined

Never _____ _____ _____ _____ _____ _____ _____ Frequently

e) Written, Printed

Never _____ _____ _____ _____ _____ _____ _____ Frequently

f) Gestures

Never _____ _____ _____ _____ _____ _____ _____ Frequently

Reacting to Pupil Needs

43. In planning and carrying out the program, teacher takes into account: the developmental status of the children.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

44. The children's particular impairments.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

45. Teacher modified her behavior to the childrens' needs and reactions: in small groups

Never _____ _____ _____ _____ _____ _____ _____ Frequently

46. entire group

Never _____ _____ _____ _____ _____ _____ _____ Frequently

47. individually

Never _____ _____ _____ _____ _____ _____ _____ Frequently

48. Teacher uses his capacity to recieve childrens communication.

Never _____ _____ _____ _____ _____ _____ _____ Frequently

49. Teacher domineers

Frequently _____ _____ _____ _____ _____ _____ _____ Never

Appendix B

Classroom Observation Statements by Categories

Classroom Organization

1. Teacher plans activities for the group as a whole.
2. Teacher singles out individual children for: tutoring
3. Supporting
4. Teacher shifts the organizational pattern (individual, small groups, entire group) according to the activity.
5. Teacher shifts the organizational pattern (see 4) according to the needs of the children.
6. Spontaneous, independent work by the children does occur.
7. Spontaneous, independent work by the children is allowed.
8. The program gives an impression of good planning.
9. The program appears to be well executed.

Discipline and Classroom Relationships

16. Teacher admonishes the children for behavior
17. Teacher threatens and cajoles.
18. Teacher controls through reiteration of the expectations of "good" and "grown up" boys and girls.
19. Conforming behavior is rewarded.
20. Teacher avoids problems by changing the pace of the program.
21. Teacher quickly reprimands those who depart from the group pattern.
22. The children cooperate readily.
23. A laissez-faire attitude prevails in the classroom.
24. Teacher places restrictions on the children's behavior.

Structuring Program

25. Teacher emphasizes diverse experiences for general enrichment.
26. Children's activities have discernable objectives related to apparent needs.
27. Teacher relies primarily on children's responses to determine her teaching goal at a given moment.
28. Teacher evidenced specific instructional goals.
29. Teacher focuses attention of the objectives: Through defining the time period of the activity.
30. . . . Through the use of special materials.
31. . . . Through prescribing the child's responses.
32. Teacher utilizes both enriching experiences and instructional activities.

Reacting to Pupil Needs

43. In planning and carrying out the program, teacher takes into account: The developmental status of the children.
44. The children's particular impairments.
45. Teacher modifies her behavior to the children's needs and reactions: In small groups
46. Entire group
47. Individually
48. Teacher uses her capacity to receive the children's communications.
49. Teacher domineers.

Appendix C

PARENTAL INFORMATION AND ATTITUDE SCALE

FOR PARENTS OF HEARING IMPAIRED CHILDREN

Donald W. Brown, Ph.D.
Associate Professor
The Graduate School
Gallaudet College
Washington, D. C.

Name of organization or meeting at which you received this questionaire _____

_____ _____

GENERAL INFORMATION

Part I.

Note: Please do not put your name or address on this form. All information will be treated confidentially and will be used only for purposes of scientific research.

1. Sex: Male _____ Female _____ 2. Year of birth _____ 3. Year of marriage _____

4. Living with spouse at spouse at present time. Yes _____ No _____

5. Married more than once. Yes _____ No _____

6. If married more than once, was previous marriage ended because of:
   Death _____ Divorce _____ Other (please state) _____

7. Draw a circle around the number of years of schooling you have completed.

12345678	1 2 3 4	1 2 3 4	1 2 3 4
Grade School	High School	College	Graduate Work

8. Religious affiliation:
   _____Protestant _____Jewish _____None
   _____Roman Catholic _____Other

9. Present family income (annual)

   _____ under $3,000
   _____ 3,000 to 4,999
   _____ 5,000 to 6,999
   _____ 7,000 to 8,999
   _____ 9,000 to 10,999
   _____11,000 to 14,999
   _____15,000 or over

10. Husband's occupation (Be specific such as Drug Store Clerk, College Professor, Automobile Mechanic, etc.) _____

11. Wife's occupation _____
    Full time _____ Part time ____

Note: In the following questions the child referred to is always your hearing impaired child.

12. Child's position in the family (1st born, 2nd, etc.) _____

13. Child's birthdate _____ Age _____

14. Age of child when hearing loss occured _____ was diagnosed _____

15. How many physicians or specialists did you visit before hearing loss was identified _____

16. Degree of child's hearing loss: Profound _____ Severe _____ Moderate _____
Mild _____ Average loss for speech frequencies (if known)
Right ear _____ dB Left ear _____ dB
Deaf _____ Hard of Hearing _____

17. To whom did you originally go when you suspected a hearing loss:
Pediatrician _____ Otologist _____
General Practitioner _____ Hearing Aid Dealer _____
Audiologist _____ Speech & Hearing Center _____
Friend or relative _____ Other _____

18. What diagnoses other than hearing loss were given; e.g. mental retardation, "slow development" _____
By whom _____

19. Who gave the diagnosis of hearing impairment? _____

20. Are any members of Wife's family deaf or hard of hearing (Do not include elderly relatives who lost hearing late in life)
Yes _____ State relationship _____ No _____

21. Are any members of Husband's family deaf or hard of hearing
Yes _____ State relationship _____ No _____

22. When you were a youngster did you know any deaf children or adults?
Yes _____ No _____

23. During any part of your life have you known a deaf person? Yes _____ No _____
If Yes, give name(s) _____

24. Prior to the discovery of your child's hearing loss had you ever seen a magazine or journal about deaf children or adults? Yes _____ No _____
If Yes, give name(s) _____

25. Since learning of your child's impairment have you read any of the following: (Please check those which you have read)
_____ American Annals of the Deaf _____ Teacher of the Deaf
_____ Deaf American (Silent Worker) _____ Volta Review
_____ Exceptional Children _____ Other
_____ Books Specify title(s) _____

26. Do you subscribe to any of the above periodicals? Yes _____ No _____
If Yes, give name(s) and length of time during which you have subscribed.
_____

NOTE: The following questions assume that your child is presently enrolled in a program for the hearing impaired. If this is not the case, answer the questions in terms of the program your child will be entering.

27. At what age did your child begin his education as a hearing impaired child

_____.

28. Have you ever visited a school or class for hearing impaired children other than the one in which your child is enrolled? Yes _____ No _____
If Yes, please give name(s) _____
Age level(s) of class(es) visited _____

29. Please give the names of at least three other schools, classes, or programs (in this state) that your child could have been enrolled in if you had not chosen the one he is presently attending _____
_____
_____

30. How did you first hear about the program your child is attending?
_____
_____

31. Did anyone encourage you to send your child to his present school?
Yes ____ No ____ If Yes, state relationship of the person(s)_____
_____

32. Have you visited your child's classroom? Yes ____ No ____ If Yes, approximately how many times _____

33. Has anyone suggested that you enroll your child in a program other than the one he is attending? Yes ____ No ____ If Yes, what was the relationship of that person to you and what type of program(s) did he (she) suggest? _____
_____
_____

34. Would you please rate the amount of confidence you have that you made the correct decision in placing your child in the program he is now attending:
_____ Very confident
_____ Fairly confident
_____ Slight lack of confidence
_____ Serious lack of confidence

35. Have you seen any television programs about deaf children or adults or with a deaf character? Yes _____ No _____

36. Which of the following conditions do you feel is the most educationally handicapp for a young child? (Check one)

_____Deafness	_____Cerebral Palsy
_____Blindness	_____Rheumatic Fever

37. What does the name Gallaudet mean to you? _____

_____

38. Are you a member of the Alexander Graham Bell Association for the Deaf?
Yes _____ No _____

39. Do you belong to any association of parents of deaf or hard of hearing children?
Yes _____ No _____ If yes, give name(s) _____

_____

40. Have you ever known a deaf person who is a parent of deaf or hearing children?
Yes _____ No _____

YOUR CHILD THIRTY YEARS FROM NOW

Part II.

What will your child be doing thirty years from now? Knowing your child, you may be able to make some good guesses. Place an (X) in the column which indicates the degree of chance you feel there is that the statement will be a true description of your child thirty years from now. If you and your spouse disagree, give both answers and place an (H) after husband's choice and (W) for wife's.

	Very good chance	Fairly good chance	Some chance	A little chance	No chance at all
1. Will be a college graduate					
2. Will have speech that is easily understood by most people					
3. Will read at about fifth or sixth grade level or below					
4. Will use sign language as his preferred means of communication					
5. Will have more deaf friends than hearing friends					
6. Will be active in PTA, Rotary, Kiwanis or other similar organizations					
7. Will know his neighbors well					
8. Will be thought of as having normal hearing by people who meet him					
9. Will have graduated from a regular high school					
10. Will drive a car					
11. Will depend on speech reading more than on his hearing					
12. Will be married to a person with normal hearing					
13. Will be employed in a semi-skilled or skilled job rather than a profession					
14. Will be close to his brothers and sisters					
15. Will have difficulty in using English correctly					
16. Will be in good health					
17. Will use both oral and manual communication					
18. Will keep in touch with me					
19. Will belong to organizations of deaf and hard of hearing					

Part III.

Many statements and opinions have been expressed about hearing handicapped people. We are interested in learning the reactions that you, as the parent of a hearing impaired child, would have to the following statements. Please read each statement carefully. Circle the letter in front of the response which best expresses what you think of or would do about the statement.

In completing this form, please keep the following points in mind:

1. Everything you write will be kept confidential.

2. Try to circle one response for every question. (If you skip a statement, we will not know what you meant.)

1. Alexander Graham Bell, inventor of the telephone and strong supporter of teaching speech to deaf children, once said that finger spelling was the fastest and most efficient way to teach language to deaf children

   a. I think he was probably right
   b. I find it difficult to believe that he ever said that
   c. He meant this only for retarded or slow learning deaf children
   d. This is interesting but probably needs some research to prove it or disprove it
   e. Such a statement proves that he never truly believed in the importance of speech

2. Stuckless and Birch (University of Pittsburgh) report that their study has indicated that manual communication (sign language and finger spelling) does not hinder the development of speech in young deaf child

   a. I'd like to get the opinion of the principal of my child's school on that
   b. This is reassuring because I've wondered about that
   c. They probably didn't do a very careful study
   d. They mean that this is true if the child has already developed speech before he is exposed to manual communication
   e. This sounds like propaganda to me

3. There is so much disagreement about education of the deaf that the best thing to do is:

   a. Be sure I've picked the best school and then get information from that school's staff
   b. Read everything I can and then just trust that I've done the right thing
   c. Find out what approach has the most supporters and try that first
   d. Realize that what seems to be best for others may not be best for my child
   e. Read everything I can and then get the opinion of a school principal or superintendent

4. Some people have said that many fewer deaf people than hearing people are able to go to college

   a. This is probably true because of the deaf child's difficulty in learning
   b. This is only true if the deaf child gets the wrong elementary education
   c. Colleges shouldn't be allowed to discriminate against the deaf that way
   d. These people are talking about previous generations and are unaware of current progress
   e. This seems quite logical to me

5. Alexander Graham Bell said, "I think the use of the sign language will go out of existance very soon".

   a. This has happened
   b. This statement just shows how wrong Bell could be
   c. This will happen soon because of our better teaching methods
   d. Bell would never have said that
   e. This is why it is unnecessary for my children to learn signs

6. Most deaf people marry a deaf person

   a. This is not true
   b. If this is true, it is because of the communication barrier imposed by deafness
   c. This is true only if the deaf have been segregated from contact with hearing people
   d. This is fine if it's what the deaf want
   e. This will not be true of my child because we're treating him as a normal person

7. If a friend of mine discovered that her child was deaf

   a. I'd tell her about the school my child is in
   b. I'd suggest some things she should read about the different types of programs
   c. I would sympathize with her but not interfere with her right to make her own decision
   d. I'd try to get to her before people filled her with wrong information
   e. I would feel obligated to share with her the satisfaction I have now that I've found the right program

8. It is reported that many deaf adults who do not have intelligible speech are successfully employed and well adjusted.

   a. There are rare exceptions
   b. This does not surprise me
   c. They would be even more successful if they could speak
   d. I don't think this is true
   e. Statements like this should not be made as they will discourage parents from teaching their child to talk

9. An oral teacher of the deaf claims that many deaf children can't learn to speak and lipread.

   a. The statement is false and I can't believe a teacher would say that
   b. She probably doesn't know the methods used at my child's school
   c. That's true - she means retarded and visually handicapped deaf children
   d. She shouldn't be allowed to teach
   e. I agree - some can but many can't

10. One of the disadvantages of getting together with other parents whose children are in my child's school is:

a. I know what they think - I want to hear the other side
b. No one of us has the same problems as another parent
c. There are no disadvantages
d. It requires time away from my own family
e. We might support each other's mistakes

11. A deaf adult says that he and his deaf friends don't think speech is very important.

a. He and his friends probably have poor speech - sour grapes
b. I can't imagine anyone, deaf or hearing, saying that
c. Possibly he and his friends have found satisfactory adjustment without speech
d. This is what can happen if a child is sent to the wrong type of school
e. This is an unfortunate but very common statement

12. We all have too little time. Because of this I should devote my short reading time to:

a. Books and articles whose authors know what they're talking about
b. Topics other than deafness because I have faith in my child's school
c. Learning about methods of teaching the deaf which I disagree with
d. Controversial articles - so I can defend the correct approach
e. Books on manual communication so I can get to know my child better

13. Most deaf people prefer to associate with other deaf people rather than hearing people.

a. This is not true
b. This will not be true of my child if I raise him right
c. I imagine this is true - they understand each other's speech easier
d. This is why deaf children should be taught with regular children
e. If they are happy doing this - that's fine

14. The primary function of an educational program of hearing impaired children is to:

a. Provide short term help which will enable the child to enter a regular school with hearing children
b. Teach the children to hear better
c. Develop speech and speechreading skills
d. Provide appropriate instruction in academic skills, i.e., reading, language, writing
e. Present opportunities for association with hearing children

Appendix D

Page from Semantic Differential

FATHER

good	_____:	_____:	_____:	_____:	_____:	_____:	_____:	bad
sweet	_____:	_____:	_____:	_____:	_____:	_____:	_____:	sour
dirty	_____:	_____:	_____:	_____:	_____:	_____:	_____:	clean
sad	_____:	_____:	_____:	_____:	_____:	_____:	_____:	happy
nice	_____:	_____:	_____:	_____:	_____:	_____:	_____:	awful
fair	_____:	_____:	_____:	_____:	_____:	_____:	_____:	unfair
pessimistic	_____:	_____:	_____:	_____:	_____:	_____:	_____:	optimistic
distasteful	_____:	_____:	_____:	_____:	_____:	_____:	_____:	tasty
valuable	_____:	_____:	_____:	_____:	_____:	_____:	_____:	worthless
healthy	_____:	_____:	_____:	_____:	_____:	_____:	_____:	sick
cowardly	_____:	_____:	_____:	_____:	_____:	_____:	_____:	brave
calm	_____:	_____:	_____:	_____:	_____:	_____:	_____:	agitated

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