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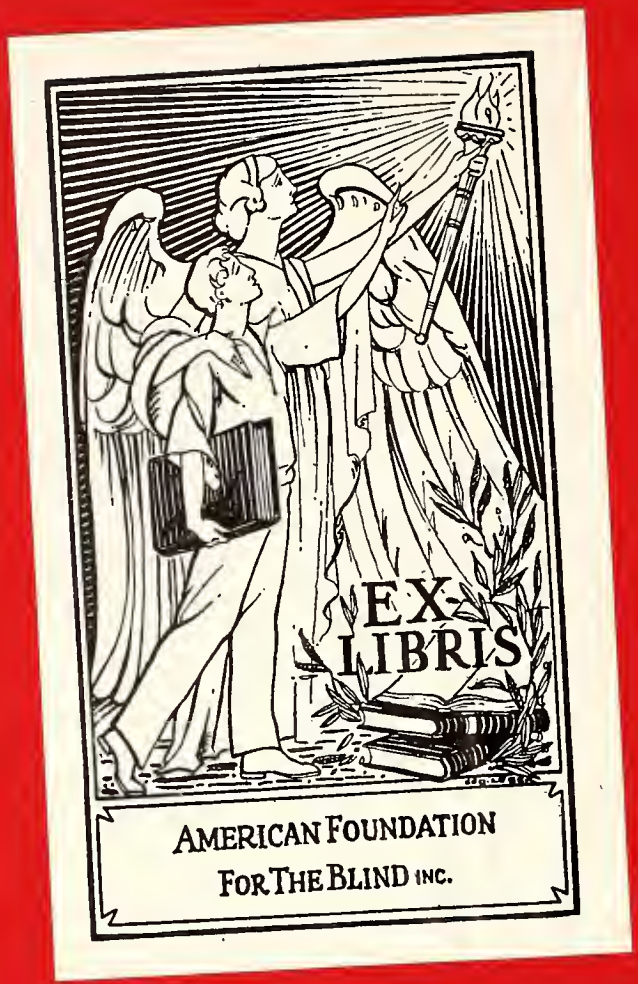

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A DESCRIPTIVE STUDY OF BLIND CHILDREN EDUCATED IN THE ITINERANT TEACHER, RESOURCE ROOM, AND SPECIAL SCHOOL SETTINGS*

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Abstract

This is a descriptive study of 97 totally blind subjects from the fourth, fifth, and sixth grades. All had been educated exclusively in one educational setting; 34 from itinerant teacher, 34 from resource room, and 29 from special school settings.

Subjects were administered Stanford Achievement subtests of Braille Reading and Word Meaning, Vineland Social Maturity Scale, Locus of Control Test, and sociometric devices to ascertain the number of blind and sighted friends, participation in active and passive activities, solitary or accompanied activities, and activities with blind or sighted friends.

Raw scores were subjected to a three-way analysis of variance to determine significant difference among the groups. An analysis of covariance was performed to control for variation in intelligence, father's occupation, and chronological age. Where the *F* ratio of the adjusted data proved significant, Tukey's Test of all comparisons among means was applied, using a harmonic mean.

STATEMENT OF THE PROBLEM

At the present time, blind children receive their education in three different educational settings. The oldest setting is the special school in which blind children are educated apart from sighted children, usually in a residential facility. Developed to cope with the special needs of blind children, the special school setting educated the majority of blind children until recent years.

The other two facilities, the resource room and itinerant teaching setting, are integrated in the sense that they were developed to enable blind children to attend class with sighted children. The resource room setting differs from the itinerant teacher setting in that it includes a special room containing

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special educational materials required to teach blind children special skills such as braille. In addition, the resource room setting has a special teacher available throughout the entire school day to help the blind child. In this setting the integration of the blind child into classes with sighted children can be controlled in accord with the blind child's abilities and needs. The resource room itself often serves as the home room of the blind child.

The most recently developed and most highly integrated form of educational setting for blind children is the itinerant teacher setting. In this setting the blind child attends his neighborhood school from the very beginning with his sighted peers. A special teacher goes from one school to another in which a blind child is enrolled to teach blind children those special skills that are specifically necessary because of his blindness. The fact that the special teacher is available for only a small part of each school day encourages the blind child to depend more on his own resources and on the help of the regular classroom teacher.

This study attempts to investigate the effectiveness of these three settings upon some aspects of the education of blind children. These include the teaching of braille skills, the development of friendships with sighted children, and the ability to participate in activities with sighted children, and the development of the ability to accept responsibility for the results of one's activity.

It would seem that although there are many similarities to be found among the special school, resource room, and itinerant teacher settings, there are also marked differences. A review of educational literature reveals claims of specific advantages and disadvantages for each of these educational settings. New educational programs have been established on the basis of these claims. Blind children have been placed in one or another of these settings on the basis of the advantages and disadvantages claimed for them.

Frampton (1) and others have written of the need for research to determine the objectivity of the advantages or disadvantages claimed by each of these educational settings, and yet to date there is little research evidence to show the comparative strengths and weaknesses of the special school, resource room, and itinerant teacher settings or their effects upon the blind children enrolled in them. There is need to examine these settings to evaluate their strengths and weaknesses.

This descriptive study seeks to obtain information about the value and effectiveness of the special school, the resource room, and the itinerant teacher settings. This information, by providing objective criteria for placement, may help educators and parents to form a more accurate judgment about the suitability of

educational settings for individual blind children, and may enable administrators to plan and organize services for blind children on a more realistic and scientific basis.

Hypotheses

1. The special school setting will be superior to the integrated settings in teaching braille reading skills, while the resource room setting will be superior to the itinerant teacher setting in this regard.

2. The itinerant teacher setting will be more effective than the special school or resource room in developing social maturity and independence; the resource room setting will be more effective than the special school setting in this respect.

3. The itinerant teacher setting will be superior to the other settings in fostering friendships with sighted children, while the resource room setting will be more effective than the special school in this respect.

4. Conversely, the special school setting will be more effective than the other two educational settings in fostering friendships with the blind, while the resource room setting will exceed the itinerant teacher setting in this regard.

5. The itinerant teacher setting will be superior to the other settings in fostering activities with sighted children; the resource room setting will be superior to the special school setting in this regard.

6. Conversely, the special school setting will prove more effective than the other educational settings in fostering activities with the blind, while the resource room setting will exceed the itinerant teacher setting in this regard.

7. The itinerant teacher setting will be superior to the other settings in fostering participation in active activities; the resource room setting will be superior to the special school setting in this regard.

8. The itinerant teacher setting will be more effective than the other settings in helping blind children see themselves as responsible for the success or failure of their actions; the resource room setting will be superior to the special school setting in this regard.

PROCEDURE

This study is descriptive, not experimental. It seeks to obtain information about blind children educated in various special educational settings. It should provide useful information for comparing the effectiveness of these settings upon some aspects of the education of blind children. The three settings investigated were:

The Special School Setting in which blind children receive their education in a special setting apart from sighted children.

The Resource Room Setting in which blind children are educated within a regular school and are integrated into some classes with sighted children, but have available to them throughout the school day a special teacher who provides for their specific educational needs and a resource room with special aids and appliances.

The Itinerant Teacher Setting in which blind children receive their entire education with sighted children except for training in special skills such as braille reading and writing.

The services of the itinerant teacher are available to the blind child for only a part of each school day or week since the special teacher must travel in order to provide services to blind children in a number of schools.

The study limited itself to blind students who had received their entire education exclusively in one of these settings. Any blind child who had attended more than one setting was excluded from the study.

Since subjects were recruited from school programs offering only one educational setting for blind children, the factor of preselection by reason of intelligence or socioeconomic background was lessened. No educational programs which had a policy of preselection participated in this study (2).

In order to obtain subjects, blind students from the following programs of special education for blind children were contacted regarding participation:

Special School Setting

Lavelle School for the Blind
Bronx, New York

Resource Room Setting

Special Education Departments of:

Newark, New Jersey
Hackensack, New Jersey
Elizabeth, New Jersey
Paterson, New Jersey
Montclair, New Jersey

Archdiocese of Chicago
Chicago, Illinois

Diocese of Portland
Portland, Maine

St. Lucy's Day School
Philadelphia, Pennsylvania

Itinerant Teacher Setting

Industrial Home for the Blind
Brooklyn, New York

Special Education Departments of:

Diocese of Brooklyn
Brooklyn, New York

Mount Carmel Guild
Newark, New Jersey

New Jersey State Commission for the Blind
Newark, New Jersey

Each school program was asked to provide as subjects for the study students who:

1. Were totally blind, or had light perception only.

2. Had spent their entire educational career in a single educational setting, and were now in the fourth, fifth, or sixth grades.

3. Had no physical or mental handicap except blindness.

As a result of this contact, a total of 168 blind students agreed to be tested. Because of illness, vacation, or conflict of schedules, a total of 139 blind children actually were tested. Of this number 42 students were eliminated from the study because they had more vision than light perception, or they had been in two or more different educational settings, or their scores on intelligence tests fell below eighty.

Degree of Vision

"Perhaps the most important variance with research in the field of blindness is vision" (3). Yet many studies in this field simply include as subjects all who are within the commonly accepted legal definition of blindness (i.e. have less than 20/200 in their better eye with correction, or a field of vision which subtends an angle of less than 20 degrees). Such studies, in effect, compare children who can easily travel independently and who can read regular ink print by holding it close to the eyes, with children who are totally blind. Cutsforth (4) enumerated the difficulty involved in obtaining comparable groups for research studies. Yet few studies to date take into account this important factor of degree of vision. This study attempted to control for this factor by limiting itself to subjects with no usable vision, that is, to subjects who were totally blind or who had light perception only, and who consequently used braille as their primary tool of reading. The degree of blindness of the subjects from the three settings is shown in Table 1.

TABLE 1

Degree of Blindness

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Total	19	65.5	24	70.0	27	79.4	70	72.1
Light perception	10	34.5	10	30.0	7	20.6	27	27.9
Totals	29		34		34		97	

Not only is the degree of vision an important factor, but also the age of onset of blindness. Rubin has determined some psychological differences in abstract reasoning ability between those who are congenitally blind and those who are adventitiously blinded (5).

As will be seen in Table 2, all but two of the subjects included in the study were congenitally blind. Two subjects, one from the itinerant teacher setting and one from the resource room setting, were adventitiously blinded before age three. Since Schlaegel (6) found that subjects who lost sight before the age of three do not retain visual imagery, both these subjects were included in the study.

TABLE 2

Onset of Blindness

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Congenital	29	100.0	33	97.0	33	97.0	95	98.0
Adventitious	0	--	1	3.0	1	3.0	2	2.0
Total	29		34		34		97	

The causes of blindness on the part of the subjects from the three educational settings are remarkably similar. They are shown in Table 3.

It might be noted that retrolental fibroplasia (R.L.F.), which was the cause of blindness in so many of the subjects included in the study, is now a comparatively rare cause of blindness.

To control for the factor of retardation, the study further limited itself to subjects with an intelligence quotient above 80. Subjects with an intelligence quotient of 80 or less, or those whose school records noted a second handicap, such as a hearing loss or neurological impairment, were excluded from the study.

TABLE 3

Causes of Blindness

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
R.L.F.	24	82.7	28	82.3	31	91.2	83	85.5
Congenital (other than R.L.F.)	5	17.3	5	14.7	2	5.8	12	12.5
Adventitious	0	--	1	3.0	1	3.0	2	2.0
Total	29		34		34		97	

All subjects included in the study used braille as their primary tool in learning and were enrolled in the fourth, fifth, or sixth grades. Since basic braille skills are ordinarily taught in the primary grades and, since the method of teaching braille varies from school to school, it was felt advisable to limit the study to those who were enrolled in the fourth, fifth, and sixth grades and who had presumably already attained basic reading proficiency in braille. By limiting itself to these three grades the study also eliminated to a large extent the influence on the test results that transfers from one school system having a 1-6, 7-9, 10-12 grade arrangement might have over another with a 1-8, 9-12 grade arrangement.

The grade level of the subjects for the different settings is shown in Table 4.

It will be noted that the resource room setting contained a smaller number of students enrolled in the fourth grade than did the other two settings. Conversely the special school and itinerant teacher setting contained a lower number of sixth grade students than did the resource room setting.

TABLE 4

Grade Level

	Special		Resource Room		Itinerant		Total All Settings	
Grade	No.	%	No.	%	No.	%	No.	%
Fourth	10	34.4	6	17.6	11	32.4	27	27.9
Fifth	11	38.0	16	47.1	14	41.2	41	42.2
Sixth	8	27.6	12	35.3	9	26.4	29	29.9
Total	29		34		34		97	

As will be seen in Table 5, one setting differed from the other two settings with regard to the ratio of boys to girls. Because of the difficulty of obtaining subjects who met all the criteria for inclusion in the study and since the norms for boys and girls are the same for all the tests used in the study, no attempt was made to eliminate subjects simply in order to have equal numbers of boys and girls.

TABLE 5

Sex of Subjects

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Male	15	51.7	17	50.0	13	38.2	45	46.4
Female	14	48.3	17	50.0	21	61.8	52	53.6
Total	29		34		34		97	

As will be seen in Table 6, the subjects were similar with regard to religion. This information was obtained from school records where it existed or from the spontaneous response of the subject. A large number of subjects attended parochial schools. No subject was asked directly about his religious affiliation. In four cases it was impossible to obtain information about religious preference.

TABLE 6

Religion of Subjects

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Protestant	5	17.3	6	17.6	10	29.3	21	21.6
Catholic	23	79.3	25	73.6	16	47.1	64	66.0
Jewish	0	--	2	5.8	4	11.8	6	6.1
Other	1	3.4	1	3.0	0	--	2	2.1
Unknown	0	--	0	--	4	11.8	4	4.2
Total	29		34		34		97	

The chronological age in months of the 97 subjects included in the study is shown in Table 7. The chronological age of the special school subjects was approximately three months greater than the resource room subjects and six months greater than the itinerant teacher subjects. This may be due to the fact that the subjects enrolled in the special school and resource room settings entered school later or might have had more opportunity to remain in the nursery school or kindergarten for a longer period of time before being admitted to the first grade. Subjects enrolled in the itinerant teacher setting have no "special room" or special provision for building up readiness, or in which they might receive extra help until they are otherwise "ready" for the first grade. Hence they are ordinarily admitted to the first grade at the same time as their sighted classmates. There was no evidence in the various settings of a different policy of deliberately holding up children until they reached a certain chronological age.

TABLE 7

Chronological Age (Months)

	N.	Mean	S.D.	Range
Special School Setting	29	144.8	12.05	127 to 173
Resource Room Setting	34	141.4	12.68	118 to 173
Itinerant Teacher Setting	34	138.5	12.41	118 to 167
Total	97			

An intelligence quotient from a complete intelligence test was obtained for every subject from school records. The intelligence tests from which these scores were obtained included the Interim Hayes-Binet and the Verbal WISC (7). The intelligence quotients of subjects from all settings are indicated in Table 8.

TABLE 8

Intelligence Quotient Scores

	N.	Mean	S.D.	Range
Special School Setting	29	100.7	10.42	81 to 123
Resource Room Setting	34	109.9	17.66	83 to 133
Itinerant Teacher Setting	34	108.7	13.36	81 to 137
Total	97			

The socioeconomic background of the groups was determined on the basis of the father's occupation, by utilizing the six occupational categories used in the construction of the Stanford-Binet Intelligence Scale, 1960, Form L-M.

The description of the subjects divided according to father's occupation is shown in Table 9. As will be seen, the subjects enrolled in the itinerant teacher and resource room setting contained a higher number of students whose fathers were from the professional and managerial classes than did the students enrolled in the special school setting.

TABLE 9

Father's Occupational Status

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Professional	4	13.7	7	20.5	6	17.6	17	17.5
Managerial	1	3.4	4	11.9	7	20.6	12	12.5
Sales	1	3.4	6	17.8	2	5.9	9	9.3
Craftsman	10	34.4	7	20.5	11	32.4	28	28.8
Semi-skilled	3	10.8	1	2.9	3	8.8	7	7.2
Laborer	8	27.5	8	23.5	5	14.7	21	21.6
Unknown	2	6.8	1	2.9	0	--	3	3.1
Total	29		34		34		97	

The testing of the children was carried out in the last month of the 1964 school year and during the summer vacation which followed. Tests administered included:

1. The Stanford Achievement Test 1953, Intermediate Battery, Paragraph Meaning and Word Meaning Subtests, Form N, Braille edition

2. The Vineland Social Maturity Scale (1947) from age levels 4-5 to 12-15

3. A questionnaire on the number of friends, whether blind or sighted

4. A questionnaire on the number of activities, whether active or passive, whether accompanied by blind or sighted persons

5. Locus of Control questionnaire

6. The Stanford-Binet Intelligence Scale, Vocabulary Subtest, Form L-M, Revised 1960

A copy of the battery of tests administered is included in Appendix A. The average time consumed in testing each subject was approximately two and one half hours.

Braille Tests

Achievement in braille reading was measured for each group of blind students by administering the Paragraph Meaning and Word Meaning Subtests of the Stanford Achievement Test, Braille Edition (8). This is the only standardized achievement test in general use which is available in braille.

The directions for administering, correcting, and scoring Braille Grade Editions of the Stanford Achievement Tests recommend, for research purposes, that the elementary battery of tests be given to grades 3.5 to 4.5 and the intermediate battery to grades 5 and 6. Since all children in the study were at least in grade 4.5, and because of the desirability of using only one form of the test, the intermediate form was administered to all subjects.

Both the Paragraph Meaning and Word Meaning Subtests are fundamentally power tests rather than speed tests. The word-meaning subtest was included in this study because word knowledge is an indispensable basis for acquisition of reading skill.

"In the word meaning test, only the answers are printed in Braille and the oral method of administering the test has been adopted. By this means inequalities in the rate of reading Braille are eliminated and a wider measure of word knowledge is obtained" (9). There are 48 questions in each subtest. Eight students from the resource room setting used Form M of the paragraph-meaning and word-meaning tests because the school authorities wished that this test be administered as part of their on-going testing program. However, since the different forms of the various tests are "matched for content and difficulty" and "represent equally good measures of the respective subjects and yield comparable results," (10) these were included as part of the study along with Form N which was used by the other subjects. This consisted of parts A and B, which took 35 and 30 minutes, respectively, to administer. Both subtests combined contain 48 questions.

The paragraph-meaning test is generally considered the best subtest for indicating braille reading ability since it provides a functional measure of the pupil's ability to comprehend connected discourse involving levels of comprehension varying from extremely simple recognition to the making of inferences from several related sentences.

Vineland Social Maturity Scale

Each subject was asked to respond to the items of the Vineland Social Maturity Scale, Age Levels 4-5 to 12-15, to determine his perception of his own degree of independence and mastery over his environment. Since it would have been impossible to check the objectivity of the subjects' responses by interviewing parents, regular classroom teachers, and special class teachers, the subjects' own responses were utilized in this study. According to the manual for the Vineland Social Maturity Scale, this approach has been "found practicable with normal children as young as five years of age" (11).

The items of this scale are arranged in order of increasing difficulty and are said to represent "progressive maturation in social independence" and may be taken as a "measure of progressive development in social competence" (12). This scale is said to provide a "means of evaluating the influence of environment and the effects of such handicaps as. . . blindness" (13). "Sex differences in item difficulty and in average age scores are so small as to be negligible for practical purposes" (14). The raw scores of the subjects were used in this study, not the social quotient which can be obtained from these scores.

The manual of directions instructs the investigator to question the informant "well below the anticipated final score in each series of items" (15). Consequently the examiner began with one level, 4-5, for all subjects.

Sociometric Devices

A sociometric device was included in this study to investigate the social effects of the integrated settings. Since the chief benefits adduced for the establishment of the itinerant teacher and resource room settings are social and are principally concerned with the integration of blind children with sighted children, each child was asked to name his five best friends and the activities he liked best. He was then questioned to determine whether the friends mentioned are sighted or blind. Adults or members of the child's family were not counted as friends. Names were asked for to help insure the fact that real friends would be submitted. The word "friend" as used in this study was not defined as such and was interpreted by the subjects as meaning "playmate, companion, or buddy."

The maximum number of friends who could be named was five. This relatively small number was considered non-threatening to the subjects. No child was asked to name more than five friends.

In addition, each child was requested to determine what his favorite activities were. Not more than five could be named. Each child was then questioned as to whether the activities in which he said he participated were indulged in alone or with others, and whether they were active or passive activities. If the blind child reported he had participated in activities with others, he was asked whether his companion or companions were sighted or not.

Locus of Control

Each subject was administered a 21-question Internal-External Locus of Control Scale in an effort to ascertain the degree to which he attempted to look for the solution of problems, or attributed his successes and failures to himself or to sources outside himself. The Locus of Control Scale was essentially that developed by Bialer (1960) with slight modifications. A study conducted by M. B. Miller recommended the elimination of one item since it correlated negatively with the full scale (16). The wording was altered somewhat to render the item more appropriate for the population in this study. For example, the word "kids" was changed to "people."

Analysis of Data

A three-way analysis of variance was used to determine if there was a statistically significant difference at the 0.05 level among the groups on the following variables:

Hypothesis 1 was tested by the use of two instruments:

a. Paragraph Meaning

b. Word Meaning Subtest, Form N (17).

Hypothesis 2 was tested by means of the Vineland Social Maturity Scales.

Hypothesis 3 was tested by the use of three instruments:

a. Total Number of Friends

b. Total Number of Blind Friends

c. Total Number of Sighted Friends

Hypothesis 4 was tested by the use of three instruments:

a. Total Number of Activities

b. Total Number of Passive Activities

c. Total Number of Active Activities

Hypothesis 5 was tested by the use of two instruments:

a. Number of Activities with Blind Friends

b. Number of Activities with Sighted Friends

Hypothesis 6 was tested by means of the Locus of Control Scale.

Following the three-way analysis of variance, an analysis of co-variance was performed to control for variations in intelligence, socioeconomic background, and chronological age.

Where the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means was applied to the data using a harmonic mean.

RESULTS

Because of the small number of available subjects who met all criteria for inclusion in the study, it was not feasible to match or equate groups on the basis of age, father's occupation, or intelligence quotient. Consequently, an analysis of co-variance was employed to adjust for these control variables throughout the study in order to provide for a more sensitive analysis of the data.

The mean scores on all variables for the subjects from each of the educational settings is shown in Table 10.

The results of the analysis of variance in terms of the level of significance achieved is also shown in the same table. Also indicated in this table are the results of the analysis of co-variance in terms of the level of significance when the data were adjusted for the three control variables, i.e. intelligence quotient, chronological age, and father's occupational status.

TABLE 10

Summary of Test Scores and Analysis of Variance and Co-Variance

Variables	Mean Scores for Group			Analysis of Variance	Analysis of Co-Variance Adjusted for		
	Special	Resource Room	Itinerant	Without Control	IQ	C.A.	F.O.
Paragraph meaning	20.96	25.70	29.44	*	--	*	--
Word meaning	31.89	31.20	37.82	*	*	*	--
Vineland Social Maturity Scale	24.34	28.23	29.58	**	**	**	**
Internal-external locus	12.24	12.58	12.41	--	--	--	--
Total number of friends	4.68	4.41	4.85	--	--	--	--
Number blind friends	3.62	1.85	0.82	**	**	**	**
Number sighted friends	1.06	2.55	4.02	**	**	**	**
Total number activities	4.03	4.26	4.67	--	--	--	--
Number passive activities	0.79	0.76	0.47	--	--	--	--
Number active activities	3.24	3.50	4.17	*	*	*	*
Number activities with blind	1.31	0.70	0.29	**	**	**	**
Number activities with sighted	1.58	1.91	3.11	**	**	**	**

*Significant at the 0.05 level

**Significant at the 0.01 level

TABLE 10 (Continued)

Controls	Mean Scores for Group			Analysis of Variance	Analysis of Co-Variance Adjusted for		
	Special	Resource Room	Itinerant	Without Control	IQ	C.A.	F.O.
Intelligence quotient	4.44	5.50	5.29				
Chronological age in months	144.75	141.35	138.52				
Father's occupational status	4.34	3.55	3.38				

Hypothesis 1

Results of Paragraph Meaning Subtest. An analysis of variance for the unadjusted data of the Paragraph Meaning Test revealed a significant difference among the settings at the 0.05 level. The results are shown in Table 11.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As can be seen in Table 11, the analysis of co-variance showed no significance in the Paragraph Meaning scores among the educational settings when the analysis of co-variance adjusted for intelligence quotient and father's occupational status.

When the data were adjusted for intelligence quotient and father's occupational status, the results of the Paragraph Meaning Subtest failed to verify the hypothesis that the special school would prove superior to the other settings in braille reading achievement and that the resource room would exceed the itinerant teacher setting in this regard. The direction of the scores was opposite to that indicated in the hypothesis.

Results of Word Meaning Test. An analysis of variance for the unadjusted data of the Word Meaning Test revealed a significant difference among the settings at the 0.05 level. The results are shown in Table 12.

TABLE 11

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Stanford Achievement Test, Intermediate Battery N (Paragraph Meaning) Test

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	1124.910	2	562.455	3.2	*
Error	16276.410	94	173.153		
Total	17401.320	96	181.263		
Adjusted for IQ					
Treatment	634.722	2	317.361	1.9	N.S.
Error	14985.156	93	161.307		
Total	15619.878	95	164.419		
Adjusted for Chronological Age					
Treatment	1438.017	2	719.008	4.2	*
Error	15636.602	93	168.135		
Total	17074.619	95	179.732		
Adjusted for Father's Occupation					
Treatment	783.691	2	366.845	2.2	N.S.
Error	15555.744	93	167.266		
Total	16289.435	95	171.467		

*Significant at the 0.05 level

N.S. no significance

TABLE 12

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Stanford Achievement Test, Intermediate Battery M (Word Meaning) Test

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	883.840	2	441.920	3.4	*
Error	12325.190	94	131.119		
Total	13209.030	96	137.594		
Adjusted for IQ					
Treatment	848.449	2	424.224	3.2	*
Error	12152.429	93	130.671		
Total	13000.878	95	136.851		
Adjusted for Chronological Age					
Treatment	1081.136	2	540.568	4.2	*
Error	11846.165	93	127.378		
Total	12927.301	95	136.076		
Adjusted for Father's Occupation					
Treatment	709.516	2	354.708	2.8	N.S.
Error	11570.999	93	124.419		
Total	12280.505	95	129.268		

*Significant at the 0.05 level

N.S. no significance

The same table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As can be seen in Table 12, the analysis of co-variance showed no significance in the Word Meaning scores among the educational settings when the analysis of co-variance adjusted for father's occupational status.

When the data were adjusted for father's occupational status the results of the Word Meaning Subtest failed to verify the hypothesis that the special school would prove superior to the other settings in braille reading achievement and that the resource room would exceed the itinerant teacher setting in this regard. The direction of the scores was opposite to that indicated in the hypothesis.

Hypothesis 2

Results of Vineland Social Maturity Scale. An analysis of variance for the unadjusted data of the Vineland Social Maturity Scale revealed a significant difference among the settings at the 0.01 level. The results are shown in Table 13.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As can be seen in Table 13, the analysis of co-variance continued to find a significant difference in the Vineland Social Maturity Scale among the educational settings at the 0.01 level.

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means, was applied to the data using a harmonic mean.

Tukey's Test disclosed a significant difference at the 0.05 level between the itinerant teacher and the special school settings, between the resource room and the special school, but disclosed no significance between the itinerant teacher and the resource room settings. The results are shown on Table 14.

The test results verified the hypothesis that the itinerant teacher and resource room settings would prove superior to the special school setting in developing social maturity and independence. The hypothesis was not verified with reference to the superiority of the itinerant teacher over the resource room setting in this regard, since no significant difference was found between these settings.

TABLE 13

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Vineland Social Maturity Scale Test

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	455.13	2	227.565	8.1	**
Error	2630.91	94	27.9884		
Total	3086.04	96	32.14625		
Adjusted for IQ					
Treatment	243.822	2	121.911	5.1	**
Error	2267.117	93	24.378		
Total	2510.939	95	26.431		
Adjusted for Chronological Age					
Treatment	423.801	2	211.901	7.49	**
Error	2627.878	93	28.256		
Total	3051.679	95	32.122		
Adjusted for Father's Occupation					
Treatment	393.832	2	196.916	7.01	**
Error	2612.673	93	28.093		
Total	3006.505	95	31.647		

**Significant at the 0.01 level

TABLE 14

Vineland Social Maturity Scale
Results of Tukey's Test

Setting	Mean Score	Adjacent Difference	Extreme Difference
Itinerant teacher	29.58		
		1.35	
Resource room	28.23		5.34 *
		3.99 *	
Special school	24.34		
D =		2.62	3.15

*Significant at the 0.05 level

Hypothesis 3

Total Number of Friends. An analysis of variance for the unadjusted data of the total number of friends revealed no significant difference among the various settings. The procedure is shown in Table 15.

The table shows the procedure for the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 15, the analysis of co-variance continued to find no significant difference.

The results of the comparisons thus indicate that there is no significant difference among the settings with regard to the total number of friends named by subjects from the different educational settings.

Total Number of Blind Friends. An analysis of variance for the unadjusted data of the total number of blind friends revealed a significant difference among the different educational settings at the 0.01 level. The results are shown in Table 16.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 16, the analysis of co-variance continued to find a significant difference at the 0.01 level among the different settings.

TABLE 15

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Total Number of Friends

Sources of Variance	Sum of Squares	DF	Mean Square	F
Unadjusted				
Treatment	3.370	2	1.885	1.8 N.S.
Error	86.710	94	0.922	
Total	90.080	96	0.938	
Adjusted for IQ				
Treatment	4.532	2	2.266	2.56 N.S.
Error	82.044	93	0.882	
Total	86.576	95	0.911	
Adjusted for Chronological Age				
Treatment	3.242	2	1.621	1.74 N.S.
Error	86.439	93	0.929	
Total	89.681	95	0.944	
Adjusted for Father's Occupation				
Treatment	3.401	2	1.700	1.82 N.S.
Error	86.436	93	0.929	
Total	89.898	95	0.946	

N.S. no significance

TABLE 16

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Total Number of Blind Friends

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	123.930	2	61.965	29.7	**
Error	196.030	94	2.085		
Total	319.960	96	3.332		
Adjusted for IQ					
Treatment	122.068	2	61.034	29.13	**
Error	194.796	93	2.094		
Total	316.864	95	3.335		
Adjusted for Chronological Age					
Treatment	117.251	2	58.625	27.83	**
Error	195.866	93	2.106		
Total	313.117	95	3.295		
Adjusted for Father's Occupation					
Treatment	112.912	2	56.456	26.94	**
Error	194.864	93	2.095		
Total	307.776	95	3.239		

**Significant at the 0.01 level

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means, was applied to the data. Because the number of subjects in the three settings varied, a harmonic mean was used for this test.

Tukey's Test disclosed a significant difference at the 0.05 level between the itinerant teacher setting and the resource room, between the itinerant and the special school settings, and between the resource room and the special school settings. The results are shown on Table 17.

The results of the test verified the hypothesis that the special school setting would prove more effective than the other settings in fostering friendships with the blind, and that the resource room would prove more effective than the itinerant teacher setting.

TABLE 17

Number of Blind Friends
Results of Tukey's Test

Setting	Mean Score	Adjacent Difference	Extreme Difference
Special school	3.62		
		1.77 *	
Resource room	1.85		2.80 *
		1.03 *	
Itinerant teacher	0.82		
D =		0.71	0.85

*Significant at the 0.05 level

Total Number of Sighted Friends. An analysis of variance for the unadjusted data of the total number of sighted friends revealed a significant difference among the settings at the 0.01 level. The results are shown in Table 18.

TABLE 18

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Total Number of Sighted Friends

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	137.430	2	68.715	36.0	**
Error	179.210	94	1.906		
Total	316.640	96	3.298		
Adjusted for IQ					
Treatment	125.337	2	82.868	32.7	**
Error	178.118	93	1.915		
Total	303.455	95	3.194		
Adjusted for Chronological Age					
Treatment	127.726	2	63.863	33.29	**
Error	178.357	93	1.917		
Total	306.083	95	3.221		
Adjusted for Father's Occupation					
Treatment	128.495	2	64.247	33.41	**
Error	178.840	93	1.923		
Total	307.336	95	3.235		

**Significant at the 0.01 level

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As can be seen in Table 18, the analysis of co-variance continued to find a significant difference at the 0.01 level in the number of sighted friends.

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means was applied to the data using a harmonic mean.

Tukey's Test disclosed a significant difference at the 0.05 level between the itinerant teacher and the resource room setting, between the itinerant teacher and the special school settings, and between the resource room and special school settings. The results are shown on Table 19.

The test results supported the hypothesis that the itinerant teacher setting would be superior to the other settings in fostering friendships with the sighted and that the resource room setting would exceed the special school setting in this regard.

TABLE 19

Number of Sighted Friends
Results of Tukey's Test

Setting	Score	Adjacent Difference	Extreme Difference
Itinerant teacher	4.03		
		1.47 *	
Resource room	2.56		2.96 *
		1.49 *	
Special school	1.07		
D =		0.68	0.82

*Significant at the 0.05 level

Hypothesis 4

Total Number of Activities. An analysis of variance for the unadjusted data of the total number of activities revealed no significant difference among the various settings. The results are shown in Table 20.

TABLE 20

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Total Number of Activities

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	6.740	2	3.370	2.7	N.S.
Error	119.030	94	1.266		
Total	125.770	96	1.310		
Adjusted for IQ					
Treatment	5.248	2	2.624	2.09	N.S.
Error	116.364	93	1.251		
Total	121.612	95	1.280		
Adjusted for Chronological Age					
Treatment	5.656	2	2.828	2.22	N.S.
Error	118.266	93	1.271		
Total	123.922	95	1.304		
Adjusted for Father's Occupation					
Treatment	7.547	2	3.773	2.97	N.S.
Error	117.981	93	1.268		
Total	125.528	95	1.321		

N.S. no significance

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 20, the analysis of co-variance continued to find no significant difference among the settings.

The results indicate that there is no significant difference in regard to the total number of activities participated in by subjects from the different educational settings.

Total Number of Passive Activities. An analysis of variance for the unadjusted data of the number of passive activities revealed no significant difference among the various settings. The results are shown in Table 21.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 21, the analysis of co-variance continued to find no significant difference with regard to the number of passive activities participated in by subjects from the different educational settings.

The results indicate no significant difference in regard to the total number of passive activities participated in by subjects from the different educational settings.

Total Number of Active Activities. An analysis of variance for the unadjusted data of the number of active activities revealed a significant difference among the various settings at the 0.05 level. The results are shown in Table 22.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 22, the analysis of co-variance continued to find a significant difference among the different settings at the 0.05 level.

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means was applied to the data using a harmonic mean.

Tukey's Test disclosed a significant difference at the 0.05 level between the itinerant teacher setting and the resource room setting, and between the itinerant teacher and the special school settings, but found no significance between the resource room and the special school settings. The results are shown on Table 23.

The test results verified the hypothesis that the itinerant teacher setting would prove superior to the other settings in the fostering of active activities but did not verify the hypothesis that the resource room would exceed the special school setting in this regard.

TABLE 21

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Number of Passive Activities

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	2.090	2	1.045	1.5	N.S.
Error	67.350	94	0.716		
Total	69.440	96	0.723		
Adjusted for IQ					
Treatment	2.380	2	1.190	1.6	N.S.
Error	66.700	93	0.717		
Total	69.081	95	0.727		
Adjusted for Chronological Age					
Treatment	1.67	2	0.836	1.1	N.S.
Error	66.754	93	0.717		
Total	68.426	95	0.720		
Adjusted for Father's Occupation					
Treatment	1.848	2	0.924	1.2	N.S.
Error	67.114	93	0.721		
Total	68.962	95	0.725		

N.S. no significance

TABLE 22

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Number of Active Activities

Source of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	15.020	2	7.510	4.1	*
Error	172.750	94	1.837		
Total	187.770	96	1.955		
Adjusted for IQ					
Treatment	13.573	2	6.786	3.6	*
Error	171.901	93	1.848		
Total	185.474	95	1.952		
Adjusted for Chronological Age					
Treatment	12.349	2	6.174	3.3	*
Error	170.390	93	1.832		
Total	182.739	95	1.923		
Adjusted for Father's Occupation					
Treatment	15.066	2	7.533	4.0	*
Error	172.600	93	1.855		
Total	187.666	95	1.975		

*Significant at the 0.05 level

TABLE 23

Number of Active Activities
Results of Tukey's Test

Setting	Mean Score	Adjacent Difference	Extreme Difference
Itinerant teacher	4.18		
		0.68 *	
Resource room	3.50		0.94 *
		0.26	
Special school	3.24		
D =		0.67	0.80

*Significant at the 0.05 level

Hypothesis 5

Number of Activities with Blind Friends. An analysis of variance for the unadjusted data of the number of activities with blind friends revealed a significant difference among the settings at the 0.01 level. The results are shown in Table 24.

The table shows results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 24, the analysis of co-variance continued to find a significant difference among the settings at the 0.01 level.

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means was applied to the data using a harmonic mean.

Tukey's Test disclosed a significant difference at the 0.05 level between the special school and the resource room settings and between the special school and the itinerant teachers, but disclosed no significant difference between the resource room and itinerant teacher settings. The results are shown in Table 25.

The test results verified the hypothesis that the special school would prove more effective than the other settings in fostering activities with the blind. The hypothesis was not verified with reference to the superiority of the resource room over the itinerant teacher in this regard since no significant difference was found between these settings.

TABLE 24

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Number of Activities with Blind

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	16.230	2	8.115	6.3	**
Error	120.330	94	1.280		
Total	136.560	96	1.422		
Adjusted for IQ					
Treatment	12.346	2	6.173	4.8	**
Error	117.497	93	1.263		
Total	129.843	95	1.366		
Adjusted for Chronological Age					
Treatment	16.359	2	8.179	6.3	**
Error	120.088	93	1.291		
Total	136.447	95	1.436		
Adjusted for Father's Occupation					
Treatment	12.463	2	6.231	4.9	**
Error	116.826	93	1.256		
Total	129.289	95	1.360		

** Significant at the 0.01 level

TABLE 25

Number of Activities with Blind
Results of Tukey's Test

Setting	Mean Score	Adjacent Difference	Extreme Difference
Special school	1.31		
		0.60 *	
Resource room	0.71		1.02 *
		0.42	
Itinerant teacher	0.29		
D =		0.55	0.67

*Significant at the 0.05 level

Number of Activities with Sighted Friends. An analysis of variance for the unadjusted data of the number of activities with sighted friends revealed a significant difference among the various settings at the 0.01 level. The results are shown in Table 26.

The table shows the results of the analysis of co-variance adjusted for intelligence quotient, chronological age, and father's occupational status. As can be seen in Table 26, the analysis of co-variance continued to find a significant difference among the settings at the 0.01 level.

Since the *F* ratio of the adjusted data was found to be significant, Tukey's Test of all comparisons among means was applied to the data using a harmonic mean.

Tukey's Test disclosed a significant difference at the 0.05 level between the itinerant teacher and resource room settings and between the itinerant teacher and special school, but disclosed no significance between the resource room and special school settings. The results are shown in Table 27.

TABLE 26

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Number of Activities with Sighted

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	42.250	2	21.125	8.4	**
Error	235.300	94	2.503		
Total	277.550	96	2.891		
Adjusted for IQ					
Treatment	44.394	2	22.197	8.8	**
Error	232.870	93	2.503		
Total	277.264	95	2.918		
Adjusted for Chronological Age					
Treatment	39.892	2	19.946	7.8	**
Error	235.154	93	2.528		
Total	275.046	95	2.895		
Adjusted for Father's Occupation					
Treatment	38.460	2	14.230	7.6	**
Error	233.892	93	2.514		
Total	272.352	95	2.666		

**Significant at the 0.01 level

TABLE 27

Number of Activities with Sighted
Results of Tukey's Test

Setting	Mean Score	Adjacent Difference	Extreme Difference
Itinerant teacher	3.12		
		1.21 *	
Resource room	1.91		1.53 *
		0.32	
Special school	1.59		
D =		0.77	0.93

*Significant at the 0.05 level

The test results verified the hypothesis that the itinerant teacher setting would prove superior to the other settings in fostering activities with the sighted. The hypothesis was not verified with reference to the superiority of the resource room over the special school setting since no significant difference was found between these settings.

Hypothesis 6

Results of Locus of Control Test. An analysis of variance for the unadjusted data of the internal-external Locus of Control Test revealed no significant difference among the settings. The results are shown in Table 28.

The table shows the results of the analysis of co-variance controlling for intelligence quotient, chronological age, and father's occupational status. As will be seen from Table 28, the analysis of co-variance continued to find no significant difference.

The results of the comparisons failed to verify the hypothesis that the itinerant teacher setting would prove superior to the other settings in helping students to attribute the success or failure of their efforts to themselves and that the resource room would exceed the special school setting in this regard.

TABLE 28

Analysis of Variance for the Unadjusted and of Co-Variance for the Adjusted Data of the Internal-External Locus of Control

Sources of Variance	Sum of Squares	DF	Mean Square	F	
Unadjusted					
Treatment	1.88	2	0.94	0.14	N.S.
Error	619.79	94	6.593		
Total	621.67	96	6.475		
Adjusted for IQ					
Treatment	2.122	2	1.061	0.180	N.S.
Error	546.792	93	5.879		
Total	548.914	95	5.778		
Adjusted for Chronological Age					
Treatment	1.720	2	0.860	0.129	N.S.
Error	619.397	93	6.650		
Total	621.117	95	6.538		
Adjusted for Father's Occupation					
Treatment	2.783	2	1.391	0.209	N.S.
Error	616.618	93	6.630		
Total	619.401	95	6.520		

N.S. no significance

DISCUSSION

The study presumed a normal distribution of subjects. The total number of subjects tested may seem to be relatively small; yet an example may indicate the fact that perhaps the universe of subjects meeting the criteria described earlier was actually included in the study.

In the state of New Jersey at the present time (1968), a total of 1,689 visually handicapped children are registered with the New Jersey Commission for the Blind. Of this total, 804 are legally blind, that is have central vision of less than 20/200 in the better eye, with correction, or a restriction of field of vision which subtends an angle of less than 20 degrees. Of these 804 legally blind students in the state of New Jersey and known to the New Jersey Commission for the Blind there are only 114 legally blind children enrolled in the fourth, fifth, and sixth grades. Of these 114 legally blind students, only 34 use braille. Some of these 34 have attended more than one educational setting while others have more vision than mere light perception, even though they are braille users. Thus the total number of available subjects from the entire state of New Jersey who were eligible for inclusion in the study was less than 34.

In reality the study included virtually the universe of blind students who met the criteria of early and total blindness, grade level and attendance in only one school setting from those areas served by the school programs which provided subjects. Since 85 percent of the subjects were congenitally blind as a consequence of retrolental fibroplasia, the results are virtually a study of such children. Retrolental fibroplasia is a relatively infrequent cause of blindness in children today. Hence this study provides a description of a particular historical group of blind children rather than a study of such blind children as are to be found in school at the present time.

Norris feels that there is "no evidence that retrolental fibroplasia is associated with either a specific or a generalized brain defect. When a child with retrolental fibroplasia is retarded in his functioning and there are no specific neurological findings, the retardation must be presumed to be directly related to complex social and environmental factors." She declares that under optimum conditions the potential of such blind children "compares favorably with that of most sighted children. . ." (18).

Unfortunately, neither the attitudes of parents, nor a description of early life experiences which they provided for their children, nor the early nursery school experiences of subjects were available to the investigator. The overall test results indicate that the subjects blinded from retrolental fibroplasia are competing successfully with sighted children in integrated programs.

Braille Skills

The study provided no support for the assumption that the special school setting is more effective in teaching braille reading skills which are so necessary to blind students. Apparently braille reading skills can be taught as effectively in the itinerant teacher and resource room settings as in the special school setting. Factors which might have influenced braille reading ability, such as the amount of teacher training on the part of the staff of the special school setting or the particular approach used in teaching braille reading skills, were not able to be investigated because of pressures of time and scheduling difficulties. Informal interviews with administrators and staff by the examiner failed to reveal any readily apparent difference in teachers' qualifications or methodology among teachers from the various settings. The results of the study clearly demonstrate that greater effectiveness in teaching braille reading skills may not be used as a criteria for determining placement of a blind child in a special school setting. It is obvious that blind children from the integrated settings did as well in learning braille reading skills as did the children who attended the special school setting.

The study did not investigate braille writing skills, typewriting, listening skills, use of tactual apparatus and audio aids. It is possible that a study which investigated the effectiveness of the various educational settings in teaching these skills might reveal differences among the settings.

Social Maturity

It must be remembered that the scores of the Vineland Social Maturity Scale are based on the responses of the subjects themselves. The manual for this scale approves this procedure. While the examiner did attempt to verify the objectivity of answers during the testing situation, the scores are nonetheless a subjective estimate of independence and social maturity rather than an objective appraisal of these factors.

While some individuals from the special school setting obtained relatively high scores on the Vineland Social Maturity Scale, the study supports the hypothesis that integrated settings result in greater independence and social maturity than the special school setting. This would tend to support the contention of those who favor integrated settings for blind children for their social advantages. The study reveals no significant differences, however, between the itinerant teacher and resource room settings.

The higher scores achieved by subjects from integrated settings may indicate their greater awareness of what is expected

of children of their age and grade level, an awareness fostered by their continuing contacts with sighted children. The very fact that these subjects have less opportunity to receive special help may force them to learn how to work out problems for themselves. The significantly lower scores of children from the special school setting may perhaps reflect the lowered expectations resulting from lack of competition with sighted children their own age.

Children who are successful in integrated settings without the extra help available in the special school setting undoubtedly receive increased stimulation and incidental learning in the more highly competitive settings they attend. The amount of stress and anxiety resulting from competition with sighted classmates was not measured in this study. On the other hand, this competition may well help the blind child to assess his abilities more realistically and thus help prepare him for adult life in a sighted world.

Blind children who attend integrated settings may feel impelled to develop greater skills in orientation and mobility in order to achieve acceptance or to be included in activities with their sighted classmates.

Parental attitudes which may influence the development of independence and social maturity were not measured in this study since information concerning these activities was not available from school records. It was not feasible to interview the parents of subjects without prolonging the testing period unduly or further limiting the already small number of subjects.

It is important to note that the scores of subjects from all settings on the Vineland Social Maturity Scale were generally lower than those achieved by sighted children. This may reflect realistic difficulties in the area of mobility and orientation caused by blindness, or the tendency of sighted persons to overprotect or to make lower demands of handicapped children.

Friendships

While the three educational settings did not differ significantly with regard to the total number of friends named, each setting did differ significantly from the others in the number of blind and sighted friends. The success of the itinerant teacher and resource room settings in fostering friendships of blind with sighted children was amply demonstrated.

The increased opportunity to meet sighted children in the integrated settings is obviously the most important single factor in promoting friendships with sighted children by blind subjects. The fact that subjects from the integrated settings named more sighted children as friends, does not necessarily reflect the quality, constancy, or depth of these friendships. It is possible that the friendships of blind children from the special school

setting with other blind children are deeper and more meaningful than are the friendships of children from the integrated settings with sighted children whom they named as friends. Whether the friendships of blind children with sighted children in the fourth, fifth, or sixth grades are lasting, or whether they are valuable in helping to form future friendships, remains to be studied.

The question of whether the friendships named by blind students were truly friendships based on mutuality of respect and emotional attachment was not determined by this study. Nor was the effect of dependency of blind children on sighted friends studied. Therefore, the value to be placed on these friendships with sighted children in development of social maturity and emotional satisfaction remains unanswered.

Students from the itinerant teacher setting attend their neighborhood school and thus have the opportunity not only to attend class with sighted children, but also to travel to school with them and to participate in lunch time and after-school activities with them. Students from the itinerant teacher setting arrive home from school at the same time as other children and thus have more opportunity to play with sighted children or participate in neighborhood recreational programs.

Students from the special school and resource room setting are generally drawn from a wide geographical area. This frequently necessitates a long bus ride. Since they arrive home later than other children in the neighborhood they find it more difficult to participate in neighborhood activities than do students from the itinerant teacher setting. Resource room students find it difficult to participate in afterschool clubs since they must leave school promptly to take their special school bus.

A significantly higher number of friendships with sighted children was found among subjects who attended integrated educational settings. This may indicate that a single individual of a minority group can be more easily accepted by members of the majority group than would be a group of such individuals.

It must be remembered that blind persons as members of a minority group often seem to suffer from subtle forms of discrimination or rejection. It may be that the itinerant teacher setting in which the blind child is involved in all school activities is more effective in breaking down prejudice and promoting true integration than are the other settings. Blind children from the resource room setting might, on the other hand, tend to be seen more easily as members of a special minority group.

It is interesting to note that the resource room setting revealed a slightly lower total number of friends than the other settings. The difference, while it was not significant, might indicate the desirability of studying the opportunity which this setting affords to form friendships. Children from the resource

room setting generally spend less time with blind children than do children enrolled in the special school setting and less time with sighted children than do children enrolled in the itinerant teacher setting. A feeling of "not belonging" to either group might result in a lack of true integration in the resource room setting. One resource room teacher suggested that students from this setting named blind classmates from their own resource room as friends out of a sense of class loyalty.

The number of blind friends was significantly different among subjects from the different settings. It would seem that the results reflect the fact that the special school setting affords more opportunity to meet blind persons than the other settings and so it results in the formation of more friendships with blind persons. In the same way the resource room affords more opportunity than the itinerant teacher setting for the formation of friendships with the blind. Whether this pattern of segregated friendships continues in later life or not deserves investigation.

Activities

There was no significant difference in the total number of activities among the three settings.

The itinerant teacher setting proved more effective than the other settings in fostering activities with the sighted. This would seem to follow from the greater number of friendships found among subjects from this setting with sighted children. There was a small, but not significant, difference between the resource room and the special school setting in number of activities with sighted children. The difference was in the direction indicated in the hypothesis. The lower number of activities with sighted children in these settings is probably due to lessened opportunities for activities and friendships with sighted children.

The fact that the special school setting proved significantly more effective than the other settings in fostering activities with the blind is undoubtedly due to the opportunity for such activities with blind children which this setting affords. There was a small, but not significant, difference between the itinerant teacher and the resource room settings on this variable in the direction indicated in the hypothesis.

The number of active activities was significantly greater for the itinerant teacher setting, thereby supporting the hypothesis that this setting encourages a more active participation in free time activities. The types of pastimes mentioned by blind subjects included such activities as stick ball, swimming, card playing, roller skating, fishing, bike riding, wrestling, judo, scouting, arts and crafts, checkers and chess; passive activities included reading braille books or listening to tape recordings, talking books, radio, television, and movies. This greater number

of activities on the part of blind children in the itinerant teacher setting may be partly explained by the increased contact with sighted children and the desire to participate in activities with them.

The special school setting may encourage participation in activities in the special school with other blind children--participation rendered easier because of the availability of special games and toys--but these special games are not always available at home. Since children in the special school setting frequently arrive home from school later than other children because of the greater distance they travel, they apparently resort more often to passive activities such as listening to the radio or to records rather than participation in neighborhood activities.

Locus of Control

An extremely high or low score on the Locus of Control Test is associated with mental illness. Within the middle range of scores, a higher score indicates a tendency to recognize one's ability to influence environment, while a lower score indicates a tendency to attribute success or failure to some outside force, such as chance or fate. Although scores achieved by subjects on this test were in the direction hypothesized, the study revealed no significant difference among the various settings.

The results achieved in the Locus of Control Test are in keeping with the study of Land which revealed no significant difference in scores on the Locus of Control Test between blind students attending public school programs and blind students attending residential schools.

It would seem that despite the fact that subjects in the integrated settings have enjoyed significantly greater success in social independence their expectations of success as the result of their own efforts does not differ significantly from that of subjects from the special school setting (19).

Generally speaking, the results of this study would indicate that the integrated settings have achieved the purpose for which they were established. It would seem that the itinerant teacher setting promotes social maturity and independence and fosters friendships and activities with sighted children without sacrificing braille skills.

The resource room would seem to be equally successful in fostering social maturity, independence, and braille skills. Though not as effective in fostering friendships with sighted children as the itinerant teacher setting, it would seem to be superior to the special school setting in this respect.

The special school setting would seem to be no more effective in teaching braille skills than the integrated settings; it would seem to be less effective in promoting social maturity than the integrated settings. It would seem that the friendships and activities of blind students attending the special school setting tend to be with other blind children rather than with sighted children.

SUMMARY

Statement of Problem

Among the three educational settings commonly used in the education of blind children, it is generally recognized that each has unique advantages for some blind children and that no one setting meets the needs of all blind children optimally. Consequently, educators are coming to accept a policy of selective educational placement, based upon the strength of each setting in terms of the needs of the individual blind child.

Because of the comparative newness of the resource room and itinerant teacher settings it has been impossible to study these integrated settings until quite recently. To date research has not evaluated the strengths of these settings. Consequently, in areas where more than one such setting exists, the placement of blind children presents difficulties. This present effort attempts to evaluate the effectiveness of these three educational settings upon some aspects of the education of blind children. It is hoped that this study will help provide objective criteria for placement and thus enable educators to form more adequate judgments about the suitability of particular settings for individual blind children. Perhaps it will also help administrators to plan educational services for blind children on a more scientific and objective basis.

Advantages and Disadvantages of Various Educational Settings

The special school setting, with its constant availability of special teachers and materials, might be expected to be more effective in teaching braille skills. Its segregated nature might be expected to foster more friendships with blind children and fewer friendships with sighted children. Its very lack of competition with sighted children might be expected to result in lessened social pressures and less independence for the blind children who attend it.

The resource room setting, with special help constantly throughout the day, might be expected to produce greater braille skills than the itinerant teacher setting. Less social pressure

might be expected in this setting than is found in the itinerant teacher setting since participation in activities with sighted children can be regulated according to the needs of the individual blind child. Resource room subjects might be expected to select friends from among both blind and sighted classmates because of their contacts with both groups.

One would expect that the itinerant teacher setting in which blind children are constantly with sighted classmates would tend to promote more friendships and participation in activities with sighted children than would the other settings. Since the itinerant teacher is not available during the entire school day, subjects might be expected to develop fewer braille skills than subjects from other settings. Since subjects in the itinerant teacher setting receive less special help, they might be expected to develop greater independence, maturity, and ingenuity in solving their own problems than subjects from other settings.

Comparative test results of 97 blind students are shown in Table 29.

Conclusions

The results of this study justify the philosophy which established integrated settings of education for blind children. It would seem that the integrated educational settings, both itinerant teacher and resource room, have amply fulfilled the purpose for which they were established, that of facilitating the social integration of blind children with their sighted peers, and of promoting social maturity and independence. It appears that they have done this without sacrificing the acquisition of braille skills.

The more highly integrated itinerant teacher setting surpasses the resource room setting in fostering friendships and participation in activities with sighted children. This is true also of participation in active types of activities which might be, at first glance, seemingly too difficult for blind children.

The resource room setting, while not differing from the itinerant teacher setting in the fostering of independence and social maturity, is less effective than the itinerant teacher setting in fostering friendships with sighted children. While surpassing the special school setting in these respects, the resource room setting does not differ from the special school setting in the degree to which it fosters participation in activities, especially in active activities with sighted children.

While not differing from the other settings in the ability to communicate braille skills, the special school setting would seem to promote friendships with other blind children and participation in activities with blind children more than do the other settings.

TABLE 29

Comparative Data
Background of Subjects by Setting

	Special		Resource Room		Itinerant		Total All Settings	
	No.	%	No.	%	No.	%	No.	%
Degree of Blindness								
Total	19	66.5	24	70.0	27	79.4	70	72.1
Light perception	10	34.5	10	30.0	7	20.6	27	27.9
More than L.P.	0	--	0	--	0	--	0	--
Time of Onset of Blindness								
Congenital	29	100.0	33	97.0	33	97.0	95	98.0
Adventitious	0	--	1	3.0	1	3.0	2	2.0
Causes of Blindness								
R.L.F.	24	32.7	28	82.3	31	91.2	83	85.5
Congenital (other than R.L.F.)	5	17.3	5	14.7	2	5.8	12	12.5
Adventitious	0	--	1	3.0	1	3.0	2	2.0
Grade Levels								
Fourth	10	34.4	6	17.6	11	32.4	27	27.9
Fifth	11	38.0	16	47.1	14	41.2	41	42.2
Sixth	8	27.6	12	35.3	9	26.4	29	29.9
Sex								
Male	15	51.7	17	50.0	13	38.2	45	46.4
Female	14	48.3	17	50.0	21	61.8	52	53.6
Religion								
Protestant	5	17.3	6	17.6	10	29.3	21	21.6
Catholic	23	79.3	25	73.6	16	47.1	64	66.0
Jewish	0	--	2	5.8	4	11.8	6	6.1
Other	1	3.4	1	3.0	0	--	2	2.1
Unknown	0	--	0	--	4	11.8	4	4.2
Father's Occupational Status								
Professional	4	13.7	7	20.5	6	17.6	17	17.5
Managerial	1	3.4	4	11.9	7	20.6	12	12.5
Sales	1	3.4	6	17.8	2	5.9	9	9.3
Craftsman	10	34.4	7	20.5	11	32.4	28	28.8
Semi-skilled	3	10.8	1	2.9	3	8.8	7	7.2
Laborer	8	27.5	8	23.5	5	14.7	21	21.6
Unknown	2	6.8	1	2.9	0	--	3	3.1
Intelligence Quotient								
61 - 70	0	--	0	--	0	--	0	--
71 - 80	0	--	0	--	0	--	0	--
81 - 90	6	20.6	5	14.9	1	3.0	12	12.5
91 - 100	9	31.0	7	20.5	10	29.3	26	26.7
101 - 110	10	34.5	6	17.6	9	26.4	25	25.8
111 - 120	3	10.5	4	11.7	8	23.6	15	15.5
121 - 130	1	3.4	7	20.5	4	11.8	12	12.5
131 - 140	0	--	4	11.9	2	5.9	6	6.1
140 or over	0	--	1	2.9	0	--	1	1.0

Recommendations

Since the majority of blind students attending the special school setting are in residential schools, it would seem useful to repeat this study including a residential special school setting. This would help determine if the pattern of lowered achievement and independence is maintained in the residential setting which is the more common form of special school setting. The same study might be usefully repeated with blind children who have usable vision and who actually form the larger portion of those who are "legally blind." It would be valuable to study blind children from the sixth to twelfth grades to see if the trends indicated by the test results of this study continue to be found in those grades as well.

Whether the pattern of segregated friendships and participation in segregated activities continues to hold in adult life should be investigated. The depth and stability of friendships with the sighted children which are fostered in the integrated settings deserve study.

It would be important to study the degree to which a blind child might benefit psychologically from contact with other blind children. If benefits can be gained from such contacts it would be useful to determine whether this contact might best be provided by a particular type of educational setting or by a special summer or recreational program.

Other factors which may influence the effectiveness of individual educational settings and which should be considered in planning future studies include:

1. The degree to which parental attitudes, early life experiences and pre-school attendance influence the development of achievement, independence, and social life of blind children.

2. The degree to which teacher preparation, methods of teaching braille, and mobility affect the achievement of blind children in various educational settings.

APPENDIX A

Instruments

Subject

Date _____

Name _____ Religion _____

Address _____ City _____ State _____

Phone _____

Birth Date _____ C.A. _____ Sex _____

Name of School _____ Degree of Vision _____

Grade _____ No. of Years in Program _____

Descent _____ No. of Brothers _____

No. of Sisters _____ Rank _____

Father's occupation _____ Years in school _____

Mother's occupation _____ Years in school _____

M.A. _____ I.Q. _____ Test _____ When _____

_____ S.B. Vocabulary Score

_____ Vineland Social Age Level Basal _____

_____ Vineland Social Quotient Extra Pts. _____

_____ Internal-External Locus of Control TOTAL _____

_____ Paragraph Meaning Part 1 _____

_____ Paragraph Meaning Part 2 _____

_____ Word Meaning

Total No. of Friends _____ Blind _____ Sighted _____

Names

_____

_____

_____

_____

_____

Activities

_____ Passive _____

_____ Active _____

_____ With Blind _____

_____ With Sighted _____

_____ 51. Cares for self at toilet
_____ 52. Washes face unassisted
_____ 53. Goes about neighborhood unattended
_____ 54. Dresses self except for tying
_____ 55. Uses pencil or crayon for drawing
_____ 56. Plays competitive exercise games
_____ 57. Uses skates, sled, wagon
_____ 58. Prints simple words
_____ 59. Plays simple table games
_____ 60. Is trusted with money
_____ 61. Goes to school unattended
_____ 62. Uses table knife for spreading
_____ 63. Uses pencil for writing
_____ 64. Bathes self assisted
_____ 65. Goes to bed unassisted
_____ 66. Tells time to quarter hour
_____ 67. Uses table knife for cutting
_____ 68. Disavows literal Santa Claus
_____ 69. Participates in pre-adolescent play
_____ 70. Combs or brushes hair
_____ 71. Uses tools or utensils
_____ 72. Does routine household tasks
_____ 73. Reads on own initiative
_____ 74. Bathes self unaided
_____ 75. Cares for self at table
_____ 76. Makes minor purchases
_____ 77. Goes about home town freely
_____ 78. Writes occasional short letters
_____ 79. Makes telephone calls
_____ 80. Does small remunerative work
_____ 81. Answers ads; purchases by mail

_____ 82. Does simple creative work

_____ 83. Is left to care for self or others

_____ 84. Enjoys books, newspapers, magazines

_____ 85. Plays difficult games

_____ 86. Exercises complete care of dress

_____ 87. Buys own clothing accessories

_____ 88. Engages in adolescent group activities

_____ 89. Performs responsible routine chores

Locus of Control

NAME: _____

DATE: _____

INSTRUCTIONS: This is not a test. We are just trying to find out how people think about certain things. I am going to ask you some questions to see how you feel about these things. There are no right or wrong answers to these questions. Some people say "Yes" and some say "No." When you read the question, if you think your answer should be yes, or mostly yes, write "Yes" on the line to the left of the number. If you think the answer should be no, or mostly no, write "No" on the line to the left of the number. Remember, different people give different answers, and there is no right or wrong answer. Just write "Yes" or "No," depending on how you think the question should be answered.

_____ 1p. When somebody gets mad at you, do you usually feel there is nothing you can do about it?

_____ 2f. Do you really believe a person can be whatever he wants to be?

_____ 3f. When people are mean to you, could it be because you did something to make them be mean?

_____ 4f. Do you usually make up your mind about something without asking someone first?

_____ 5f. Can you do anything about what is going to happen tomorrow?

_____ 6f. When people are good to you, is it usually because you did something to make them be good?

_____ 7f. Can you ever make other people do things you want them to do?

_____ 8f. Do you ever think that people like yourself can change things that are happening in the world?

_____ 9f. If another person was going to hit you, could you do anything about it?

_____ 10f. Can a person like yourself ever have his own way most of the time?

_____ 11p. Is it hard for you to know why some people do certain things?

_____ 12f. When someone is nice to you, is it because you did the right thing?

_____ 13f. Can you ever try to be friends with another person even if he doesn't want to?

_____ 14f. Does it ever help any to think about what you will be doing 5 years from now?

_____ 15f. When someone gets mad at you, can you usually do something to make him your friend again?

_____ 16f. When you get in an argument, is it sometimes your fault?

_____ 17p. When nice things happen to you, is it only good luck?

_____ 18f. Will people usually do things for you if you ask them?

_____ 19f. Do you believe a person can usually be whatever he wants to be?

_____ 20p. When bad things happen to you, is it usually someone else's fault?

_____ 21f. Can you ever know for sure why some people do certain things?

APPENDIX B

TABLE 30

Order of Significant Differences in Scores by Settings

	Vineland Social Maturity Scale	Number of Blind Friends	Number of Sighted Friends	Number of Active Activities	Number of Activities with Blind	Number of Activities with Sighted
Itinerant Teacher	(29.6) - 1	(0.8) - 3	(4.0) - 1	(4.2) - 1	(0.3) - 3	(3.1) - 1
	NS	S	S	S	NS	S
Resource Room	(28.2) 2	(1.9) 2	(2.6) 2	(3.5) 2	(0.7) 2	(1.9) 2
	S	S	S	NS	NS	NS
Special School	(24.3) 3	(3.8) 1	(1.1) 3	(3.2) 3	(1.3) 1	(1.6) 3

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2. It should be noted that the policy of the New York Institute for the Blind is active recruitment of promising blind students; thus it was not included in the study. Its proximity to Lavelle School for the Blind may influence indirectly the selection of students at Lavelle.

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THE SOCIOMETRIC STATUS OF VISUALLY HANDICAPPED STUDENTS IN PUBLIC SCHOOL CLASSES*

Stephen James Havill

Abstract

The purpose of this study was to determine the sociometric status of visually handicapped children integrated in regular classes, and to examine the effect of several variables on this status. This was considered important because of the widespread growth of integrated programs for visually handicapped children, although assumptions regarding social benefits lack research report.

INTRODUCTION

During the past fifteen years there has been a tremendous growth in public school programs for educating visually handicapped children. In 1953, of the 6,284 legally blind children registered with the American Printing House for the Blind, 83 percent were being educated in schools for the blind and 17 percent were in public school programs (1). In 1968, 20,266 children were registered, with almost 40 percent in residential schools and 60 percent in public school programs (2). The interim period has thus not only seen a great growth in numbers of legally blind children but also a manyfold increase in those being served in public schools.

An examination of the type of provision made in public schools indicates a trend away from segregated classes to at least partial integration. Prior to 1946 Jones and Collins report that 58 percent of programs established were segregated special classes with the rest involving some degree of integration (3). However, between 1955 and 1963 only 16 percent of new programs were special classes. More frequent were integrated programs, especially resource teachers (30 percent) and itinerant teachers (35 percent). The same survey showed that approximately 75 percent of all public school programs for the visually handicapped involve the child in classroom contact with normally seeing children.

Problem

The problem of this study was to explore by sociometric techniques the sociometric status of visually handicapped children in integrated classroom situations, and to investigate the predictive value of grade level, sex, degree of impairment, school achievement, socioeconomic level, amount of time spent in the integrated situation, and type of special service received in determining sociometric status.

Statement of Hypotheses

The following null hypotheses were tested:

1. There will be a nonsignificant difference in the sociometric status of visually handicapped children and their normally seeing classmates.

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2. There will be a nonsignificant difference in sociometric status between each of the three impairment categories and the comparison group.

3. There will be a nonsignificant difference in sociometric status among visually handicapped children of different grade levels.

4. There will be a nonsignificant difference in sociometric status between boys and girls who are visually handicapped.

5. There will be a nonsignificant difference in sociometric status between visually handicapped children of different levels of achievement.

6. There will be a nonsignificant difference in sociometric status between visually handicapped children of different socioeconomic levels.

7. There will be a nonsignificant difference in the sociometric status of visually handicapped children spending differing amounts of time in regular classes.

8. There will be a nonsignificant difference in the number of choices received by the visually handicapped on each of the three choice criteria.

9. There will be a nonsignificant difference in sociometric status between visually handicapped children being served by itinerant and resource room programs.

Justification

As has been pointed out, many visually handicapped children are being educated among normally seeing children. To date no study has been made of the level of acceptance or rejection of these children, but programs involving integration have been established in large numbers on the expectation and assumption that physical presence will lead to true integration. As Gronlund points out there is some agreement that personality is a product of interpersonal relationships, and for the school child this means his relationships with his peers (4).

"Other things being equal, the type of relationships a child develops with his peers will determine to a large extent how he views the world about him and how he views himself. If he has secure and satisfying relationships with his age mates, he will tend to view the world as a warm and friendly place and will develop feelings of confidence in himself and others. . . . In contrast, children who feel isolated or rejected among their peers are more likely to develop feelings of inadequacy and self doubt" (5).

It follows that the development of social skills and attitudes, important for establishing and maintaining effective interpersonal relationships in adulthoood, depend to some extent on school experiences.

Despite claims that visually handicapped children in the regular classes tend to be isolated or rejected, there is no research evidence to throw light on the situation of these children. If a study such as the present one indicated that the position of the visually handicapped child is indeed one of isolation and rejection, then a need for careful reevaluation of program development and pupil placement practices would be indicated. If, on the other hand, the visually handicapped child seemed to be well accepted by his class peers, concentration could continue on upgrading content aspects of public school programs for the visually handicapped.

Definition of Terms

The following terms are defined to give clearer understanding of their use:

Visually Handicapped. Those children receiving some educational assistance from a special teacher because of visual impairment. These visually handicapped children range from those with no sight to those with relatively useful vision.

Legally Blind. Those whose visual acuity is 20/200 or less in the better eye after correction, or who have a visual field restriction to an angle subtending an arc of twenty degrees or less. This category includes those referred to in this study as blind, and low vision.

Blind. This term refers to those children who use braille as their mode of reading and writing.

Low Vision. Those legally blind children who have sufficient residual vision to read print.

Partially Seeing. For the purpose of this study the partially seeing are those children who are visually handicapped but have better than 20/200 visual acuity in the better eye after correction.

Sociometry. The measurement of relationships between individuals in a group.

Sociometric Technique. "A method of evaluating the feelings of group members towards each other with respect to a common criterion" (6). It involves individual group members making choices among their group. In this study five choices on each of three criteria were used.

Sociometric Status. The number of times an individual is chosen by individuals in the group. Status categories conventionally used are star, average, neglectee, isolate and rejectee. In this context the first four categories were based on Bronfenbrenner's fixed frame of reference (Appendix I) as follows (7).

Star. One who was chosen more than twenty-one times by his classmates.

Average. One who received from ten to twenty-one choices.

Neglectee. One who was chosen less than ten times.

Isolate. One who was not chosen at all.

Rejectee. This is arbitrarily defined as one who received only negative choices or whose negative-positive choice ratio was three to one greater.

Mutual Choice. This term is used to indicate that two individuals have chosen each other on the sociometric technique.

Integrated Program. A program in which the visually handicapped child receives part or all of his education in a regular classroom with normally seeing children. In this study two types of integrated programs were involved. (a) The Resource Room Program in which a number of visually handicapped are brought into a central school, and though they spend most of their time in regular classrooms, they have available a specially equipped room and special teachers to aid in their adjustment. (b) The Itinerant Program in which the children usually attend their neighborhood school where they receive visits from an itinerant specialist who provides special teaching and materials.

Segregated Program. A program in which the handicapped child is educated separately from his normally-seeing peers.

Limitations

This study examined the sociometric status of a specific group of visually handicapped children, but it should be emphasized that it does not allow conclusions to be drawn about any individual's personal adjustment, or the adjustment of this group of children or of visually handicapped children in general. As Sax points out, "Neither isolates nor stars are necessarily either well adjusted or poorly adjusted" (8). The sociometric status of any individual is just one part of his total adjustment pattern and must be recognized as such.

Furthermore, the criteria on which the sociometric choices were made must be kept in mind. The choices were made for general situations and although these cover a large area of any child's activities, other more specific criteria might have resulted in different choices.

REVIEW OF THE RELATED LITERATURE

Despite the increased incidence of visually handicapped children in regular classes, there has been little research on adjustment or social acceptance. The whole question of suitability of public school classes has been treated in a subjective manner. Tonkovic, referring to integrated facilities, sums up this situation as follows, "In American literature this phenomenon is most frequently treated with a varying degree of propaganda while European authors, with a few exceptions either ignore it or qualify it *a priori* as an unacceptable practice" (9).

This review will examine some of the viewpoints concerning social aspects of integrated and segregated facilities for the visually handicapped and also research on the sociometric status of the visually handicapped and other groups of exceptional children in regular classrooms.

Tonkovic is representative of the view that preparation of the visually handicapped for life in a sighted society should, if possible, be conducted in an integrated setting. The implication is that the integrated educational program offers opportunities for social and emotional growth not present in segregated facilities.

Carroll outlined both sides of the controversy between integrated and segregated facilities (10). Among the disadvantages he mentions as cited by opponents of residential schools, compared to public school programs, are lack of opportunity during the formative years to develop ability to cooperate and compete with the sighted, and generally decreased opportunities to be accepted by normal children. On the other hand Carroll noted the view that the visually handicapped children will never be accepted as normal by other children and will suffer lasting personality damage from trying to compete with normally seeing children. He summed up the situation with the comment that "some children cannot get all the education they need outside the residential school and. . . not every child need be exposed to the disadvantages of that type of school."

Hathaway has pointed out that for optimum social and emotional growth partially-seeing children should share in regular class activities (11). Lowenfeld, too, has suggested that the growth of integrated educational facilities is in part a result of the generally held belief that continued social relationships with sighted individuals are important for all-round development (12).

Frampton and Kearney put forward the opposite view (13). They stated that there is in residential schools "less segregation in real experiences in day-to-day contacts with human beings than in any other system, notwithstanding other day school arguments to the contrary."

More recently Frampton again reiterated his opinion that there is real segregation in these so-called integrated situations (14). He claimed that the blind child's actual contact with the normally seeing can be extremely limited and that the undue sympathy and coddling the child receives makes normal adjustment difficult.

These latter objections to the contrary, the general opinion seems to be that there can be social and emotional benefits from integrated educational programs and that many blind and partially-seeing children can benefit from the experience.

Sociometric Research with Exceptional Children

Educators of exceptional children have used programs which involve regular class placement on a part or full-time basis. A review of some of the sociometric studies will not only illustrate possibilities for the use of this method, but describe something of the sociometric status of the exceptional child in the regular class.

There is a good deal of agreement as to the low sociometric status of the educable mentally retarded child in regular classes. Reports by Johnson and Kirk, Miller, Johnson, and Baldwin show that these children are quite segregated despite their physical presence (15). There are fewer stars, and many more isolates and rejectees than among their normal peers.

The situation is not so clear among physically handicapped children. Soldwedel and Terrill found that a small group of physically handicapped youngsters had similar sociometric status to their normal classroom peers and concluded that status seems related to factors other than the physical handicap (16).

Force, on the other hand, found evidence of inferior sociometric status among the physically handicapped, and concluded that to be accepted the handicapped child had to evidence some exceptional social desirability traits (17). Elser found the sociometric status of hearing handicapped to be lower on the average than their classmates with the mildly handicapped and those without hearing aids being least accepted (18).

The social status of gifted children has been investigated in the hope that this would help in determining relative merits of different types of programs. Gallagher, and Gallagher and Crowder showed a high level of acceptance for gifted children among regular classmates (19). A study by Mann showed that where they were partially segregated, their status among the regular children suffered (20). In this situation the gifted child chose and was chosen by other gifted children.

Karnes and Wollersheim used a sociometric approach to examine the social acceptance of ten partially-seeing elementary school children in regular classes (21). Normally-seeing classmates were asked to indicate desired companions for a variety of leisure time activities. Results showed that the partially seeing children were usually excluded as prospective companions and were thus less well accepted in regular classes than their normally seeing peers, although they were not actively rejected.

The "reputation" of thirty-four elementary school blind children in regular classes was studied by Raskin and Kittleson as reported by Raskin (22). All children were asked to match names of classmates with brief word descriptions. The blind children emerged as quiet, likeable and friendly, but needing help. Raskin saw these results as consistent with his contention that blind individuals tend to be liked but not well respected.

In summing up, Gronlund pointed out that it seems that despite the practice of placing exceptional children in regular classes on the basis that this enables them to maintain normal peer relations, there is some indication from the studies reviewed that they may be segregated from their peers (23).

PROCEDURE

General Design

Sixty-three visually handicapped children from six public school programs in the state of Colorado were the subjects of this study. They and their normally seeing classmates were asked to name, from their class, desired work, leisure, and seating companions. The sociometric status of the visually handicapped subjects was then compared with a matched group of normally seeing children. The sociometric status of the visually handicapped subjects was further analyzed to find the effects of grade level, sex, degree of visual loss, socioeconomic level, school achievement, time spent in regular classes and type of special service received on their status.

Subjects

The visually handicapped children in this study were those located in public school programs in Aurora, Denver, Fort Collins, Greeley, Jefferson County and Littleton. These represent six of the seven programs in Colorado. One school district declined inclusion in the study.

Subjects were required to meet these criteria:

1. Fourth grade level and above

2. Have no other complicating handicap

3. Spend some part of the school day in regular classes

4. Have been in their present classes for at least three months.

Sixty-three of the approximately eighty above third grade visually handicapped children in the six school districts were able to be included in the study.

In each regular classroom where a visually handicapped subject was found a normally seeing classmate was assigned to the comparison group after matching on the basis of sex, age, race, socioeconomic level, and achievement.

Method

Every child in regular class where there was a visually handicapped subject was asked by the class teacher to make five written choices from among his classmates of preferred companions for work, leisure and seating situations. In addition they were asked to write down the name or names of any child they would prefer not to be with in the situations mentioned. The class teachers used a guidance sheet (Appendix II) and the children indicated preferences on a form provided (Appendix III).

Information on the visually handicapped children with respect to the variables being examined was obtained from records and categorized as follows:

Grade Level. The visually handicapped subjects were grouped as follows: Upper Elementary - Grades IV-VI, Junior High School - Grades VII-IX, and Senior High School - Grades X-XII.

Severity of Impairment. Using ophthamological reports filed in special teachers' records together with evidence of visual efficiency, the visually handicapped subjects were divided into three groups according to the definitions given previously: Blind, Low Vision and Partially Seeing.

School Achievement. Both special teachers' and regular teachers' records, including results on standardized achievement tests, were used, along with teacher ratings to place the visually handicapped subjects into three general achievement groups: Above Average, Average, and Below Average.

Socioeconomic Level. Each visually handicapped subject was placed in one of three socioeconomic categories on the basis of father's occupation. Using the North-Hatt Index (Appendix IV) categories are defined as follows: Above Average - a rating score

of seventy-five or above; Average - a rating score of between fifty-six and seventy four; and Below Average - a rating score of less than fifty-six.

Time Spent in the Regular Classroom. Information from Special teachers was used to group the visually handicapped children according to how much time they spent each week in the regular classroom. (a) Full time in regular class or withdrawn for no more than one hour each day. (b) Withdrawn for more than one hour each day.

Analysis of Results

The following procedures were used to test the hypotheses. Each hypothesis was tested using a chi square test to determine the degree of association between the variable and sociometric status. The chi square tests showed the discrepancies between the observed frequencies within the sociometric categories and those expected on the basis of independence of sociometric status and the particular variable under investigation. A low chi-square value indicated independence, and the higher the chi square the greater the difference between the distributions and thus the greater the association between the sociometric status and the variable under consideration.

In testing Hypothesis 1 the star and average categories were combined as were the neglectee and isolate. This produced a two by two table which compared the distributions, between the two categories, of the experimental group and the contrast group. Hypothesis 2 using the same categories compared each of the impairment categories, i.e., blind, low vision, and partially seeing, in turn with the contrast group.

Hypotheses 3 through 9 involved only the experimental group and investigated in turn the association between grade level, sex, achievement, socioeconomic level, time spent in regular classroom, type of choice situation and type of special service received, and sociometric status. For this analysis two categories, (a) average and above and (b) below average, were used. The mean number of choices received by the experimental group was 6.7. Those subjects with six and above were placed in the upper category and those with below six in the lower category.

RESULTS

Description of Subjects

The sixty-three visually handicapped subjects in this study ranged in age from nine years three months to nineteen years and had a mean age of thirteen years nine months. Males outnumbered females by thirty-five to twenty-eight. Using the definitions given, twenty-five were classified as blind, seventeen as low vision, and twenty-one as partially seeing. Eleven attended Senior High School, twenty-four Junior High School, and twenty-eight Grades 4 - 6. Thirty-two of the subjects were rated as being average achievers with fifteen above-average and sixteen below-average. Based on father's occupation the socioeconomic level of thirty-six of the subjects was rated as average, ten were above-average and seventeen were below-average. Fifty-two visually handicapped children were found to be spending all or almost all of their school day in an integrated situation. Eleven others spent approximately half their time in the regular classroom. Thirty-three of the subjects were being served in six itinerant programs and thirty in two resource room programs.

Table 1 shows a breakdown of the ocular conditions mentioned in ophthalmological reports.

The most common eye condition was retrolental fibroplasia accounting for almost 20 percent of the subjects. Among the twenty-five blind subjects this was the primary condition of eleven (44 percent) individuals. Nystagmus was mentioned next most frequently but usually in association with another condition.

Testing of Hypotheses

Hypothesis 1

The first hypothesis was concerned with an examination of the sociometric status of the visually handicapped subjects and the contrast group. A chi-square value of 24.02 was obtained. With two degrees of freedom this represents a significant difference between the groups beyond the 0.001 level. As a chi-square value of 3.84 was required for difference at the 0.05 level of significance for hypothesis rejection, the hypothesis that there would be a nonsignificant difference in the sociometric status of visually handicapped children and their normally seeing classmates was rejected.

Inspection of the distribution over the status categories (Table 2) indicates that this significant difference is in favor of the contrast group. Seventy-nine percent of the visually handicapped subjects were in the neglectee and isolate categories while only 38 percent of the contrast group were in these categories.

TABLE 1

Ocular Conditions of Visually Handicapped Subjects

Condition	Number*
Retrolental fibroplasia	13
Nystagmus	10
Cataracts	6
Retinitis pigmentosa	5
Albinism - photophobia	5
Myopia	5
Retinal degeneration	4
Macula degeneration	3
Color blindness	3
Glaucoma	3
Optic atrophy	3
Astigmatism	2
Chorioretinitis	2
Cerebral agenesis	1
Diabetes mellitus	1
Dislocation of lens	1
Esotropia	1
Hyperopia	1
Muscle impairment	1
Visual cortex dysfunction	1
Visual encephalitis	1
Vitreous scar tissue	1

*Note that this totals more than sixty-three as several subjects had more than one condition mentioned.

TABLE 2

Sociometric Status of Experimental and Contrast Groups

Category	Experimental	Contrast	Chi square
Star-Average	12	39	
Neglectee-Isolate	51	24	24.02*

*Significant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Mutual Choice. An examination of mutual choices received by the experimental group lends support to the above result. A mutual choice occurred when a subject named an individual who also named him. A total of 190 mutual choices was received by the experimental group and 392 by the contrast group. This represented 44.6 percent and 51 percent respectively of total choices received. The totals reflect the lower sociometric status of the visually handicapped but the proportions of total choices received that were mutual, were approximately the same.

Rejectee. Based on the original definition of a rejectee as one who received all negative choices, or had a negative-choice positive-choice ratio of three-to-one or greater, four of the experimental group compared to one of the contrast group were rejected. Total negative choices received were seventy-nine for the contrast group and eighty-two for the experimental group.

Hypothesis 2

The second hypothesis examined the association between the sociometric status of each impairment group and the control group.

Table 3 shows the comparison between the blind group and the contrast group. The chi square value of 7.45 is significant beyond the 0.01 level. The difference between the distributions is therefore a significant one.

TABLE 3

Sociometric Status of Blind and Contrast Groups

Category	Blind	Contrast	Chi square
Star-Average	7	39	
Neglectee-Isolate	18	24	7.45*

*Significant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Table 4 shows the comparison between the low vision group and the contrast group. The chi-square value of 13.29 is significant beyond the 0.001 level. The difference between the distributions is therefore a significant one.

TABLE 4

Sociometric Status of Low Vision and Contrast Groups

Category	Low Vision	Contrast	Chi square
Star-Average	2	39	
Neglectee-Isolate	15	24	13.49*

*Significant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Table 5 shows the comparison between the partially seeing group and the contrast group. The chi square value of 13.66 is significant beyond the 0.001 level. The difference between the distributions is therefore a significant one.

TABLE 5

Sociometric Status of Partially Seeing and Contrast Group

Category	Partially Seeing	Contrast	Chi Square
Star-Average	3	39	
Neglectee-Isolate	18	24	13.66*

*Significant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Based on the consistently significant chi-square values obtained above, the hypothesis that there would be a nonsignificant difference in sociometric status between each of the three impairment categories and the comparison group was rejected.

Hypothesis 3

The third hypothesis examined the association between grade level and sociometric status. Table 6 shows the distributions. A chi-square value of 4.23 was obtained. As a chi-square value of 5.99 was required to show a difference at the 0.05 level of significance the hypothesis that there would be a nonsignificant difference in sociometric status among visually handicapped students at different grade levels was accepted.

TABLE 6

Grade Level and Sociometric Status

Category	Elementary	Junior High	Senior High	Chi square
Average and Above	16	9	8	
Below Average	12	15	3	4.23*

*Nonsignificant difference. For a two-tailed test with $df = 2$ $p = 0.05$ when chi square = 5.99.

Hypothesis 4

The fourth hypothesis was concerned with the relationship between the sex of the visually handicapped subject and his sociometric status. A chi-square value of 0.45 was obtained. As a chi-square value of 3.84 was needed to show a difference at the 0.05 level of significance the hypothesis that there would be a nonsignificant difference in sociometric status between boys and girls who are visually handicapped was accepted. Table 7 shows the distributions.

TABLE 7

Sex and Sociometric Status

Category	Boys	Girls	Chi square
Average and Above	17	16	
Below Average	18	12	0.45*

*Nonsignificant difference. For a one-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Hypothesis 5

The fifth hypothesis examined the association between sociometric status and achievement level. A chi-square value of 8.14 was obtained. As a chi-square value of 5.99 was needed to show a difference at the 0.05 level of significance the hypothesis that there would be a nonsignificant difference in sociometric status between visually handicapped children of different levels of achievement was rejected. Table 8 shows the distributions.

TABLE 8

School Achievement and Sociometric Status

Category	Below Average	Average	Above Average	Chi square
Average and Above	8	12	13	
Below Average	7	20	3	8.14*

*Significant difference. For a two-tailed test with $df = 2$ $p = 0.05$ when chi square = 5.99.

Hypothesis 6

The sixth hypothesis concerned the relationship between the visually handicapped subjects' sociometric status and socioeconomic level. Table 9 shows the distribution.

TABLE 9

Socioeconomic Level and Sociometric Status

Category	Socioeconomic Level		
	Below Average	Average	Above Average
Average and Above	8 (47%)	19 (53%)	6 (60%)
Below Average	9 (53%)	17 (47%)	4 (40%)

On the basis of inspection of the table it was concluded that no significant difference exists between these distributions. A tendency for the above-average socioeconomic group to have a greater percentage in the above-average sociometric category is observable but since the numbers found in this group were so small and the difference was itself not great, no conclusions should be based on this difference.

The hypothesis that there would be a nonsignificant difference in sociometric status between visually handicapped children of different socioeconomic levels was accepted on the basis of observation of the data.

Hypothesis 7

The seventh hypothesis was concerned with the relationship between sociometric status and the amount of time spent in the integrated situation. Table 10 shows the distribution. A chi square of 1.37 was obtained. As a chi square value of 3.84 was required for a 0.05 level of significance the hypothesis that there would be a nonsignificant difference between sociometric status and the amount of time spent in regular classrooms was accepted.

TABLE 10

Time in Regular Class and Sociometric Status

Category	Full time	Half time	Chi square
Average and Above	29	4	
Below Average	23	7	1.37*

*Nonsignificant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Hypothesis 8

The eighth hypothesis concerned the relationship between sociometric status and each of the three choice criteria. Table 11 shows the distribution. A chi square of 0.54 was obtained. As a chi-square value of 5.99 was required for a 0.05 level of significance the hypothesis that there would be a nonsignificant difference in the number of choices received by the visually handicapped in each of the three choice criteria was accepted.

TABLE 11

Sociometric Status on the Choice Criteria

Category	Work	Leisure	Seating	Chi square
Average and Above	40	38	36	
Below Average	23	25	27	0.54*

*Nonsignificant difference. For a two-tailed test with $df = 2$ $p = 0.05$ when chi square = 5.99.

Hypothesis 9

The ninth hypothesis concerned the relationship between sociometric status and the type of service received. Table 12 shows the distribution. A chi-square value of 5.03 was obtained. As a chi square of 3.84 was required for a 0.05 level of significance the hypothesis that there would be a nonsignificant difference in sociometric status between visually handicapped children being served by itinerant and resource room programs was rejected. Inspection of the table indicates that the difference is in favor of the group receiving itinerant service.

TABLE 12

Service Received and Sociometric Status

Category	Itinerant	Resource Room	Chi square
Average and Above	21	12	
Below Average	12	18	5.03*

*Significant difference. For a two-tailed test with $df = 1$ $p = 0.05$ when chi square = 3.84.

Discussion

The testing of Hypothesis 1 clearly indicated that the sociometric status of the visually handicapped subjects was significantly lower than for the contrast group. A question arises here as to the nature of this contrast group. A comparison may be drawn from figures provided by Gronlund of a study involving 1,934 third to twelfth graders (23). Table 13 compares the distributions over sociometric status categories.

TABLE 13

Contrast Group Compared to Gronlund's Group

Category	Contrast Group	Gronlund Group	Chi square
Star	13	13	
Average	49	71	
Neglectee-Isolate	38	15	13.00*

*Difference significant beyond the 0.01 level of significance.

A chi square of 13.00 obtained in comparing these distributions indicates they differ significantly beyond the 0.001 level of significance. Furthermore, inspection of the table indicates that the direction of the difference is in favor of Gronlund's group. It appears then that the contrast group may not be typical of the general school population. This is to be expected and is probably a function of the matching process. In particular this contrast group is made up of more students over age for their class than would be found in the general population. This over-age situation reflects the tendency of the experimental group to be among the oldest in their class.

Studies have shown that over-age children tended to have lower sociometric status than their classmates (24). However, despite the fact that the contrast group was probably lower in sociometric status than the school population in general, they still evidenced significantly higher sociometric status than the experimental group. Based on the number of negative and mutual choices received it cannot be said that there was any strong rejection of the visually handicapped. Though not generally considered as desirable companions, only a small number were seen as strongly undesirable and rejected.

This general finding of lower sociometric status among the visually handicapped subjects in regular school classes tended to support the results of previously rather limited research that has been cited.

The results of testing the subsidiary hypotheses shed some light on the question of what factors, apart from the handicap itself, contributed to the lower sociometric status of the experimental group.

The testing of Hypothesis 2 showed that each impairment group differed significantly from the contrast group with results at least beyond the 0.01 level of significance. In other words the blind, low vision, and partially-seeing groups when compared with the contrast groups were each shown to have significantly lower sociometric status. There is no evidence here to support any contention that one or other of the groups approached normal sociometric status. The blind group had more children in the star and above-average categories. In fact seven of the twelve experimental subjects at this level were blind. However, as stated, the blind group was still significantly different from the contrast group. A further chi square was calculated to compare the distribution of each of the groups. Table 14 shows the distribution. The distribution did not prove to be significantly different.

Further chi-square comparison of blind and low-vision groups, which by inspection showed tendency to differ, did not reveal any statistically significant difference. A chi-square value of 2.74 was obtained. A difference at the 0.05 level of significance required a chi square of 3.84.

TABLE 14

Impairment Level and Sociometric Status

Category	Blind	Low Vision	Partially Seeing	Chi square
Average and Above	15	6	12	
Below Average	10	11	9	2.48*

*Nonsignificant difference. For a two-tailed test with $df = 2$ $p = 0.05$ when chi square = 5.99.

The results of testing Hypothesis 3 showed a tendency for the visually handicapped to be least well accepted at the junior high school level. However the hypothesis that there was no significant difference between the three grade levels was accepted so that this observation cannot be carried too far. Nevertheless, research should not ignore this variable.

A significant difference was found between achievement groups with respect to sociometric status. The real difference here is between the above-average achievers and the other two groups. A chi-square test applied to below average and average groups showed that they did not differ significantly. A chi-square value of 1.04 was obtained but significance at the 0.05 level required that chi square equal 3.84. The type of service received was found to be a significant factor. Those children receiving itinerant help were found to have a higher level of sociometric status. It should be noted here that only two resource-room programs were involved in the study so that further investigation of this variable seems appropriate.

Testing of the remainder of the hypotheses indicated that sex, grade level, time in regular classes, socioeconomic level, and the choice situation did not significantly influence the sociometric status of the visually handicapped children who made up the experimental group. The fact that there was no difference in status between the three choice situations indicated that the visually handicapped were not perceived as desirable work, leisure time or seating companions.

Table 15 looks at the twelve subjects with star or average status and the fourteen subjects who were isolated or neglected. It has to be borne in mind in making any comparisons between the variables that there were not an equal number of subjects in each of the variable categories when the total group is considered.

TABLE 15

Comparison of High Status and Low Status Groups on Experimental Variables

Experimental Variables	High Status	Low Status
Sex		
Male	7	8
Female	5	6
Impairment Level		
Blind	7	4
Low Vision	3	4
Partially Seeing	2	6
Grade Level		
Elementary	7	2
Junior High	2	11
Senior High	3	1
Achievement		
Below Average	3	2
Average	3	11
Above Average	5	1
Socioeconomic Level		
Below Average	3	5
Average	7	7
Above Average	2	2
Program		
Itinerant	10	4
Resource	2	10

Sex and socioeconomic categories seem by inspection to have approximately equal proportions in high and low status categories. There is a tendency for blind students to be over represented in the upper group and partially seeing to be over represented in the lower group. A tendency also exists for elementary children to be over represented in the upper group with Junior High School students over represented in the lower group. The achievement categories show that above-average performers are over represented in the upper category. On the other hand the average performers are over represented in the below-average group. Those in itinerant programs dominate the upper category and those in resource room programs are over represented in the lower category. What emerges here is that blindness, elementary level, above-average achievement, and being served on an itinerant basis tend to be factors that are associated with higher sociometric status. On the other hand partial sight, junior high school level, average

achievement and being in a resource room program tend to be factors associated with lower sociometric status.

No statistical significance is claimed in this examination. Only two of the four variables mentioned, achievement and type of program attended were shown to be statistically significant. However, level of impairment and grade level should not be ignored in future studies of this type.

SUMMARY

The purpose of this study was to examine the peer-acceptance level of visually handicapped children integrated in regular classes. This study was considered to be important because of an assumption which seems to underly integrated programs for the handicapped, that is, that healthy social and personality development are promoted by having handicapped children educated among normal children.

Sixty-three visually handicapped children from grades four through twelve with no other handicap formed the experimental group. Each visually handicapped subject was matched with a normally seeing classmate on the basis of sex, race, age, socioeconomic level, and achievement level to form a contrast group.

A sociometric approach was used in which all children in a class where there was a visually handicapped child were asked to choose five desired companions from their classmates for each of three situations; working, leisure, and seating.

The major hypothesis compared the sociometric status of the experimental and control groups suggesting that there would be no significant difference between the groups.

The subsidiary hypotheses predicted that level of impairment, sex, school achievement level, socioeconomic level, grade level, criterion situation, and time spent in the regular classroom would not influence the sociometric status of the visually handicapped subjects. A chi-square statistical analysis to determine the significance of the observed differences was applied to each set of data.

Related literature was cited which demonstrated that opinions differ as to the acceptance and benefits a visually handicapped child receives in the regular classroom although the weight of opinion appears to be on the side of the integrated experience. Some examples of sociometric research with handicapped children in regular classes were reported which tended to show that sociometric status of handicapped children was lower than their normal classmates.

Findings

1. There was a significant difference in sociometric status beyond the 0.001 level of confidence between the experimental group and the contrast group.

2. There was a significant difference in sociometric status between each of the three impairment categories and the contrast group; at least at the 0.01 level.

3. There was no significant difference in sociometric status among visually handicapped children of different grade levels.

4. There was no significant difference in sociometric status between boys and girls who are visually handicapped.

5. There was a significant difference in sociometric status between visually handicapped children of different levels of achievement.

6. There was no significant difference in sociometric status between visually handicapped children of different socioeconomic levels.

7. There was no significant difference in sociometric status of visually handicapped children spending differing amounts of time in regular classes.

8. There was no significant difference in the number of choices received by the visually handicapped children on each of three choice criteria.

9. There was a significant difference in sociometric status between visually handicapped children being served by itinerant and resource room programs.

Conclusions

The major finding of the study was that the visually handicapped subjects were of lower sociometric status and thus less well accepted than their normally seeing classmates.

The study further indicated that level of achievement and type of service received did affect the sociometric status of the visually handicapped. Above-average achievement and itinerant service were factors which had a positive effect on status. On the basis of the hypotheses testing, none of the other variables examined, degree of impairment, grade level, sex, socioeconomic level, time spent in regular classrooms, and choice situations were particularly valuable in predicting sociometric status.

It may be concluded that the condition of being visually handicapped tends to result in low status. In other words the fact that a person is noticeably different makes social acceptance difficult. Conditions that make this difference less obvious may aid acceptance. Two such conditions were found in this study. High achievement seems to help acceptance, perhaps because it affords the visually handicapped individual the measure of respect from his peers that Raskin claims he usually lacks (25). Further, service on an itinerant basis may not emphasize the handicap to the extent that the resource-room program does. The individual receiving the resource-room service is more likely to be identified as different because of the presence of other visually handicapped children, a special resource room and specialist teachers. Another factor that may help in the itinerant situation is that the visually handicapped children usually attend their neighborhood schools so that they live in the same area as their classmates. In the resource-room program the visually handicapped children are often drawn from a wide geographic area.

The results of this study are too limited to come to any firm conclusions regarding the efficacy of integrated programs for the visually handicapped. This study looked at one aspect of visually handicapped children's adjustment in regular schools. It does raise serious questions regarding the social learning situation in which many of these children find themselves but it would be dangerous on the basis of these results to conclude, therefore, that integrated programs are failures. There are other benefits claimed for the integrated programs although these, too, are generally not research based.

The finding of low sociometric status among visually handicapped children in regular classrooms raises questions about some of the claimed social and personality benefits cited. Despite the consensus to the contrary, within the limitations of this study it has to be concluded that a very significant number of these children were not in a strong position to benefit socially. There was some evidence here to support Frampton's contention that there is real segregation of the visually handicapped in these situations (26). However, whereas his interest was in the blind, this study suggests that partially seeing and low vision children were at least as segregated.

The results supported previous research concerning the generally lower sociometric status of handicapped children in regular classes. For example the Johnson and Kirk study of mentally retarded children in regular classes found fewer stars and more isolates than is normal (27). Unlike the present study, however, the Johnson and Kirk study found more rejection. The finding of no significant rejection in the present study tends to agree with the finding of Karnes and Wollersheim, and Raskin, who found evidence of lower acceptance but not active rejection (28).

The evidence here suggests not only need for further research but also a need for serious consideration by teachers and

administrators of ways of improving the social acceptance of visually handicapped children in regular schools.

Recommendations

1. Both special and regular teachers should be aware of the need for promoting conditions which would help the acceptance of visually handicapped children in regular classes. Suggestions for possible approaches are:

   a. Try to make the integrated situation one in which the child can meet success. Care should be taken in the placement of the child so that he can at least hold his own academically.

   b. Ensure that the normally seeing children understand the true nature of the handicap and its real limitations.

   c. Explain to normally seeing children in the class the use and value of special equipment that the visually handicapped use.

   d. Draw attention, as subtly as possible, to the strengths the handicapped child might have.

   e. Promulgate the attitude that all humans differ and that difference from the norm does not mean inferiority.

   f. Take the greatest care in placing the visually handicapped in regular classes. Ensure that they are capable of coping with the situation and ensure that the regular teachers fully understand the nature of the visual handicap. Where possible, flexible teachers with some positive attitudes toward the handicapped should be used.

   g. Ensure that the children take a full part in all classroom activities. Teachers should not let visually handicapped children fade into the background. They should be given normal opportunities for responsibility and leadership.

   h. Provide special counseling sessions for the children which give opportunity to discuss problems. Counselors should work with these children in helping them make more effective contributions to the group life.

2. Where possible, administrators should consider providing itinerant services so that those children who evidence sufficient independence may attend their neighborhood schools.

3. Further research is recommended. A more fruitful approach might well involve a followup of the present study with a

much larger sample. This would involve taking a group of those with relatively poor sociometric status and comparing them with those who had the highest status to see on which, if any, variables they differ significantly. Such a study could take into account some of the variables considered here, such as impairment level, achievement and type of program attended, together with others such as personality, emotional stability, teacher and parent attitudes, educational background, and personal appearance.

4. Further study is needed of those who were shown to be rejected or isolated in this study to see if their adjustment is such that they could have their needs better met in other ways.

5. The whole question of progress and adjustment of visually handicapped children in regular classes should be looked at objectively with a real attempt at some further evaluative research so that future programs have a basis in research rather than in philosophy, opinion, and vested interest which seems prevalent at present.

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APPENDIX I

TABLE 16

Critical Raw Status Scores for Diverse Sociometric Situations*

Number of Choices Allotted to Each Person for Each Criterion	Three Criteria		
		Critical Scores	
	Expected Value	Lower Limit	Upper Limit
1	3	0	8
2	6	1	12
3	9	3	15
4	12	5	18
5	15	9	22

*Gronlund, *Sociometry in Classroom*, p. 66.

APPENDIX II

Guidance Sheet for Cooperating Teachers

Purpose

This study will examine the sociometric status of visually handicapped children in regular classes. To put it another way we want to find the number of times visually handicapped children are chosen by their classmates for certain activities. We will then compare this with the choices received by a comparable group of non-handicapped children. In this way we can learn how well accepted these visually handicapped are.

Procedure

1. The researcher will visit the classroom and brief the class teacher on the procedure.

2. With the class teacher's help one nonhandicapped child will be chosen for inclusion in the comparison group. As far as possible this child will be a match for the visually handicapped child in respect to sex, race, achievement and socio-economic level based on father's occupation.

3. The researcher will leave the room and the class teacher will administer the sociometric test in the following way. It is felt the children will be more honest in their responses if the class teacher takes them through the procedure.

Technique

Obviously the teacher will not tell the class the true purpose of the test or the results could be invalid. However, with Junior and Senior High School students, some explanation will be needed. Something along the following lines would suffice.

1. "Today I am going to ask you to make choices of classmates with whom you would like to share certain activities. We all work better when we are with people we get along with well, and the purpose of this test is to find out just who in this class would work together best. I want you to be completely honest about this. No other child will know who you have chosen."

2. Give out the preference form provided. If the visually handicapped pupil uses braille tell him to put a piece of paper in his brailler.

3. Say, "Put your full name on the top right hand side of the paper."

4. Say, "Now I want you to write down in the top part of the page the names of five classmates you would like to work with in school if you had a free choice. Remember you can choose *only* from this class. You may choose any five boys and/or girls, and you may choose anyone who is absent."

5. Say, "I want you to write down in the middle part of the paper the names of five children from this class you would like to play (or mix) with outside of school hours if you had the opportunity. You may write down any or all of the five names you wrote in the top part of the page."

6. Say, "At the bottom of the page I want you to write down the names of five children from this class you would like to have sit near you in school if you had a free choice. Remember, you may write down names you have already included in the first two parts."

7. Say, "We all have people we just could not get along with in a work or play (leisure time) activity. If there is anybody in this class you strongly prefer not to be with in the situations above please turn the paper over and write down his name. Remember anything you write is confidential; your classmates will not know any of your choices."

8. Say, "Now check to see:

   a. that your name is at the top right

   b. that you have chosen five names in each category

   c. that you have used first and last names."

9. Collect papers.

Thank you for your cooperation.

APPENDIX III

Preference Form for Students

Name: _____

Work with:

_____

_____

_____

_____

_____

Play (or mix socially) with:

_____

_____

_____

_____

_____

Sit Near:

_____

_____

_____

_____

_____

APPENDIX IV

North-Hatt Index (29)

Occupation	Score
U.S. Supreme Court Justice	96
Physician	93
State Governor	93
Cabinet member in the federal government	92
Diplomat in the U.S. Foreign Service	92
Mayor of a large city	90
College professor	89
Scientist	89
United States Representative in Congress	89
Banker	88
Government scientist	88
County judge	87
Head of a department in a state government	87
Minister	87
Architect	86
Chemist	86
Dentist	86
Lawyer	86
Member of the board of directors of a large corporation	86
Nuclear physicist	86
Priest	86
Psychologist	85
Civil engineer	84
Airline pilot	83
Artist who paints pictures that are exhibited in galleries	83
Owner of factory that employs about 100 people	82
Sociologist	82
Accountant for a large business	81
Biologist	81
Musician in a symphony orchestra	81
Author of novels	80
Captain in the regular army	80
Building contractor	79
Economist	79
Instructor in the public schools	79
Public school teacher	78
County agricultural agent	77
Railroad engineer	77
Farm owner and operator	76
Official of an international labor union	75
Radio announcer	75
Newspaper columnist	74
Owner-operator of a printing shop	74
Electrician	73
Trained machinist	73
Welfare worker for a city government	73

Occupation	Score
Undertaker	72
Reporter on a daily newspaper	71
Manager of a small store in a city	69
Bookkeeper	68
Insurance agent	68
Tenant farmer--one who owns livestock and machinery and manages the farm	68
Traveling salesman for a wholesale concern	68
Playground director	67
Policeman	67
Railroad conductor	67
Mail carrier	66
Carpenter	65
Automobile repairman	63
Plumber	63
Garage mechanic	62
Local official of a labor union	62
Owner-Operator of lunch stand	62
Corporal in the regular army	60
Machine operator in a factory	60
Barber	59
Clerk	58
Fisherman who owns his own boat	58
Streetcar motorman	58
Milk route man	54
Restaurant cook	54
Truck driver	54
Lumberjack	53
Filling station attendant	52
Singer in a night club	52
Farm hand	50
Coal miner	49
Taxi driver	49
Railroad section hand	48
Restaurant waiter	48
Dock worker	47
Night watchman	47
Clothes presser in a laundry	46
Soda fountain clerk	45
Bartender	44
Janitor	44
Sharecropper--one who owns no livestock or equipment and does not manage farm	40
Garbage collector	35
Street sweeper	34
Shoe shiner	33

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SOCIALIZATION AND SEGREGATED EDUCATION

Irving Faber Lukoff and Martin Whiteman

We have seen that social roles vary with the age of onset of blindness and differences in residual vision. The expectations for independence from the primary environment and the family also have an effect on social-role patterns. This chapter examines another factor that contributes significantly to patterns of behavior: attendance at schools especially established for blind persons.

Segregated education of the blind evolved from early efforts--first in eighteenth-century France and, later, in England--to make blind persons self-supporting and capable of fending for themselves.[1] Educational facilities for the blind have proliferated. Today there are schools for blind children in most states, and many have several such schools; most sizeable communities, in fact, have public and private institutions for training blind children. Other groups of handicapped children, including the mentally retarded, the palsied, and even the crippled, have had to wait until relatively recently for special consideration of their needs. Blind children, on the other hand, have had such facilities available for a much longer time.

Socialization, as we have seen, can focus on almost any set of experiences that influence behavior, from patterns of parent-child interaction and child-rearing techniques that have only very modest organization to experiences that are more clearly preparatory for certain kinds of positions needed by the social system. The educational system is a significant socialization enterprise, and exposure to it, as well as the response of the system to the participant, can have enduring consequences for both the individual and society. The decision to send a blind child, particularly one blinded at an early age, to a segregated school has many ramifications for the way in which the blind person ultimately responds to his handicap. This choice of educational directions, whether a regular public school (with perhaps a sight-saving class) or a residential school, can influence the kind of identification the child develops as a blind person, his patterns of social relations, even his achievement of different kinds of adjustment patterns. The problem centers on those who are still in the school-age range when they become blind, although a few adult blind as well are sent to such schools.

The residential schools range from excellent to mediocre in their formal attributes as institutions of learning; however, they are generally alike in certain other characteristics. With the exception of children whose families reside in the immediate area, the students at these schools remain within the confines of the institution except for holidays. The students are all visually handicapped; although there may be a few who exceed the legal limits of blindness, even these may need training because of visual limitations. The staff also frequently includes a large proportion of visually handicapped individuals. The organization of the entire curriculum, even where it includes the standard subjects taught at other schools, is adapted to the vision problems of the students. Even crafts, shops, hobbies, all are geared to the common denominator in the institution, the visual problems of the students. The entire education of these children in these schools, then, is attuned to their handicap.

Instead of the rhythmic alternation between home and school, students in residential schools for the blind are reared by surrogates. The adaptation to blindness occurs in an environment that shields them from direct confrontation with the sighted society in which they will have to spend their adult lives. The education may be superior in many respects, since some of these schools can amass resources available to few regular public schools. Techniques developed for teaching blind persons subjects they can only struggle with in a classroom geared to sighted students may provide them with an advantage in many fields of study, including geography and geometry as well as woodworking and braille shorthand. But education beyond the high-school level, for those equipped to go to college, means a radical transformation for these students at a fairly advanced age. Those who move into the community must learn when they are in their late teens to contend on a regular and sustained basis with sighted persons outside their family.

There is no compulsion that blind children be sent to such schools; in fact, some portion of the congenitally and the younger adventitiously blind are kept at home and educated at ordinary public and private schools. They may attend sight-saving classes or learn braille at a local agency or from an instructor; however, they are not in an environment especially constructed for blind persons. Our problem here is to determine what factors shape the decision to send blind children to special schools for the blind and whether this decision makes any difference to the blind person's ultimate adaptation.

ONSET, VISION AND SPECIAL EDUCATION[2]

Table 9.01 presents the relation between age of onset and residual vision as they influence attendance at special schools for the blind. As might be anticipated, the earlier the onset of blindness, the more likely one is to be sent to a special school for the blind. There is also a tendency for those with residual vision to receive special schooling less often, but this is more marked in the youthfully blind group than for the congenitally blind. Attendance for the congenitally blind declines from 70 percent for those with minimum vision to 54 percent for the print group. Among those born with sight but blinded during their younger years, the decline is from 53 percent to 20 percent. The few adult blind who attend such schools are concentrated into the lower vision groups.

TABLE 9.01

Age of Onset, Residual Vision, and Proportion Receiving Special Education

Maximum Vision	*Age of Onset* Congenital	Youthful	Adult	*All Onset* Groups
Light perception	70%	53%	10%	35%
	N = (36)	(55)	(100)	(191)
Moving object	68	41	6	29
	N = (40)	(44)	(88)	(172)
Print	54	20	4	28
	N = (89)	(58)	(80)	(227)
All vision groups	61	40	7	31
	N =(165)	(157)	(268)	(590)*

*Data on eight cases were unavailable.

The last column of Table 9.01 shows only modest changes in the proportion who attend residential schools as a function of vision alone. This, of course, is partly influenced by the concentration of congenitally blind in the high-vision group. The last row of the table shows that the likelihood of attendance as a result of age of onset alone declines from 61 percent among the congenitally blind to 40 percent for those blinded in youth, with only 7 percent of the adults attending such schools upon becoming blind. In every column, however, it is apparent that those with residual vision are less likely to be sent to special schools.

For those blinded somewhat later, residual vision contributes to a sharper discrimination in rates of attendance than for the congenital group.

About 31 percent of all blind persons aged fifteen to fifty-four have attended such schools; for the group in which the chances are greatest, the low-vision congenitally blind, this figure more than doubles (70 percent). Even the high-vision youthfully blinded individuals are sometimes sent off to these schools (20 percent). Onset and residual vision play important roles in the choice of educational pattern; however, other factors may also help to determine whether an individual is to receive an education especially devised for blind persons or will be sent to school with sighted persons.

FAMILY ORIENTATIONS AND SPECIAL EDUCATION

In most cases it is those blinded as children and teenagers who are sent to schools for the blind. We have noted that the amount of residual vision also influences the decision. The rates for those still young enough to go to such schools in fairly large numbers range from 70 percent to 20 percent. One factor already seen to influence a broad range of behavior, family expectations for independence, will be examined here to see if it also plays a role in the decision to send blind offspring to special schools. The family is the primary agent of socialization; at the ages that encompass most of those sent to special schools it should have the most significant influence on decisions that affect the blind child.

From Table 9.02 family expectations can be seen to vary in significance depending on age of onset.[3] Those born blind are somewhat more likely to go to special schools when family expectations are medium or high; however, the opposite is true for persons who were blinded at a young age, not born blind. When the family expectations are oriented toward dependence, about two out of three attend. This declines to 45 percent for medium expectations and to 35 percent when the family is oriented toward independence. The significance of attendance at residential schools, then, appears to be dependent on the age of onset of blindness. Congenitally blind children are more likely to attend when the family is committed to independence. In the case of persons blinded later, however, parents who feel that the capacities of blind persons are more severely limited more often send their children to segregated schools. Thus the decision to send the child to a residential school tends to be a function of different directions of the same norms as age of onset changes.

TABLE 9.02

Perceived Expectations of Family and Proportion Receiving Special Education, Controlled by Age of Onset

Family Expectations	*Age of Onset* Congenital	Youthful	Adult
Low	52%	64%	7%
	N = (23)	(11)	(56)
Medium	64	45	8
	N = (47)	(51)	(93)
High	61	35	6
	N = (95)	(95)	(120)

SPECIAL EDUCATION AND SOCIAL ROLE

The kind of education offered at residential schools is, of course, geared to the limitations that visual deficits impose. In addition, the schools have an opportunity to prepare blind children for a variety of skills that may help them in achieving independence, including reading skills, travel training, and handling themselves in a variety of situations in which they have to exploit other sensory cues for information. Most of those who attend special schools have been sheltered from sighted persons before they enter the school; when they leave, many of them come into sustained contact with sighted persons outside the immediate family and neighborhood for what is in effect the first time. The problem, then, is what consequences can be traced to special education for the type of social role they adopt, whether independent or dependent.

In Table 9.03 those who did and did not receive special education are contrasted, while controlling for family expectations, age of onset, and residual vision. Within the body of the table are the proportions who fall in the most independent social-role category.[4] Special education appears to influence individuals who differ in family background and age of onset.

The congenitally blind who derive from families where expectations are dependent are more likely to be independent if they receive special education. This is reversed for the congenital blind with low vision and high family expectations, who are more often in the most independent social-role category if they did not

TABLE 9.03

Special Education and Proportion in Role Type I, Controlled by Family Expectations, Residual Vision, and Age of Onset

Maximum Vision	*Regular Schooling* Low FPE	*Regular Schooling* High FPE	*Special Education* Low FPE	*Special Education* High FPE
1. Congenital				
Light perception and MO	14%	70%	28%	35%
	N = (14)	(10)	(32)	(20)
Print	57	59	70	63
	N = (14)	(27)	(10)	(38)
2. Youthful				
Light perception and MO	25%	41%	24%	32%
	N = (20)	(29)	(29)	(25)
Print	46	57	50	37
	N = (13)	(33)	(4)*	(8)*
3. Adult				
Light perception and MO	3%	29%	11%	33%
	N = (99)	(74)	(9)*	(6)*
Print	18	44	67	--
	N = (38)	(39)	(3)*	--

*Base less than 10.

attend special schools for the blind. For the youthfully blinded whose family is oriented toward independence the situation is the same. Whatever the vision status, those who did not attend special schools when expectations are high are more likely to fall in the most independent social-role category.

With so many variables introduced into a single analysis, the proportions in several cases are based on figures too small for

completely reliable estimates. Still, the overall trend is quite clear: when family expectations are oriented toward independence, those who do not attend residential schools are more likely to be in the most independent social-role categories.[5] When these standards are low, the congenitally blind seem to benefit from attendance at residential schools while it doesn't make much difference for the youthfully blinded whether or not they attend such schools.

Despite the fact that residential schools are likely to have the blind child for extended periods during his most crucial developmental stage, the impact on social-role independence is relatively modest.[6] It is apparent that there is some influence, even if it reverses direction, depending on family orientations and age of onset. If there is any marked trend, it is the tendency of attendance at schools for the blind to soften the influence of the family. The percentage differences for different family environments are smaller for those who attend residential schools. The differences in the proportion in role type I are substantial among those who remain at home when family expectations change. Again, the number of cases is small in several instances and the results may not be too stable.

Whatever the family norms, the type of education or the age of onset, vision retains its significance for the achievement of the most independent social-role categories; substantially more persons in the highest vision group are in role type I. The vision possessed by those who are legally blind but at the upper end of the range makes a substantial contribution to their achievement of social-role patterns independently of the several factors controlled in this analysis.

Up to this point the analysis has been concerned with blind persons who fall into the most independent categories. Those who are in role category II are also fairly independent; most of them do most things for themselves but fail to be classified in role type I because they are not employed in competitive positions. In many cases this is an indication of their inability to locate employment, not of dependency in their attitude toward work. In order to clarify the influence of special education, the proportions who are in social role type II are presented in Table 9.04, controlled by the same variables used in Table 9.03.

In most instances those who attended special schools are more often found in role type II, the moderately independent category, than those who did not do so. Especially for the youthfully blinded, the tendency is clear: attendance at residential schools lessens the likelihood of achieving the most independent social-role category and correspondingly increases the proportion who achieve a more modest level of independence. The effect traceable to special education, then, is not a dependent social role but is

TABLE 9.04

Special Education and Proportion in Role Type II (Moderately Independent), Controlled by Family Expectations, Residual Vision, and Age of Onset

Maximum Vision		*Regular Schooling* Low FPE	*Regular Schooling* High FPE	*Special Education* Low FPE	*Special Education* High FPE
1. Congenital					
Light perception and MO		36%	30%	25%	30%
	N =	(14)	(10)	(32)	(20)
Print		7	11	10	27
	N =	(14)	(27)	(10)	(38)
2. Youthful					
Light perception and MO		20%	30%	44%	40%
	N =	(20)	(29)	(25)	(25)
Print		39	22	25	63
	N =	(13)	(33)	(4)*	(8)*
3. Adult					
Light perception and MO		27%	25%	56%	50%
	N =	(99)	(74)	(9)*	(6)*
Print		19	18	33	--
	N =	(38)	(39)	(3)*	--

*Base less than 10.

a more modest level of independence, as expressed in role type II. There is one exception, however; those who derive from families that are dependently oriented more often terminate in independent categories when they are sent to special schools. Those with residual vision or whose families are committed to independence are in the more independent role type when they do not attend residential schools.[7]

Most important of all is the pervasive influence of family expectations and vision. The decision to send blind children to a residential school seems to result from different sets of conditions depending on vision and age of onset; in turn, such an education is likely to result in the achievement of a somewhat lower level of independence than for blind persons who do not attend segregated schools, with the one exception already cited, those of the congenitally blind who have severely limited vision.

FRIENDSHIP PATTERNS AND SOCIALIZATION

Much of the literature on blindness asserts a tendency for blind persons, because of the prejudice directed at them, to form groups as a response to their isolation from the sighted community. This theme, an important one, will be examined in more detail in the next few chapters. Here only one aspect, the tendency to have blind friends, will be examined.

Blind persons do not tend to congregate in particular areas since most reside with their families. Rates of blindness are low, particularly for the age range examined in this investigation. Despite the low density of blind persons, many become acquainted with other blind.[8] Those who attend schools and workshops for blind persons are likely to make acquaintances among the blind persons they meet. Others attend recreation and training programs at agencies for blind persons, where they have an opportunity to meet other blind individuals. Employment limitations compel some to work in sheltered workshops for blind persons. A number of other factors combine to make it possible for blind persons to meet on a more than random basis.

In the course of socialization, the selection of friends from the multitudinous alternatives that may be available is never likely to be a completely random process. Friends tend to be chosen from persons of similar social class, ethnic background, and, often, religious affiliation, with the added requirement of reasonable propinquity, at least in the early stages of friendship. Further, there is a propensity to maintain friendships with persons who hold certain attitudes and values consistent with one's own; this, of course, is more likely to happen when friends are selected from among those with similar backgrounds. Whether blindness serves as a sufficient basis for choosing friends, along with such factors as ethnic group and social class, hinges on the significance that the identification of blindness has for the individual. If the blind person regards his blindness as a disability to be dealt with as well as he can and believes that he shares only this singular attribute with other blind persons, he will tend to have few blind friends. Some blind persons go to great efforts to avoid any identification as blind persons because of the many negative associations this arouses.

Although many fortuitous events may determine any particular friendship, if the events that we have isolated have any significance for socialization, it is a reasonable presumption that they also account for the distribution of friendship patterns. Friendship patterns should therefore show some association with onset and vision and with family orientation toward independence. Because friendships presume personal contact, they are also likely to be influenced by whether the blind person attended a residential school for the blind. Extended exposure to other blind persons in this manner can be expected to have an impact on friendship patterns.

The measure of friendship patterns used here is a simple one: the proportion of persons who report that at least half their friends are blind. These persons tend to concentrate a large share of their informal social relationships among the blind; the balance, although most of them report some blind friends, have mainly sighted friends.

The tendency to have predominantly blind friends is a function of both onset and vision, as shown in Table 9.05.

TABLE 9.05

Age of Onset, Residual Vision, and the Proportions with Mostly Blind Friends

Maximum Vision	*Age of Onset* Congenital	Youthful	Adult
Light perception	31%	32%	25%
	N = (36)	(57)	(101)
Moving object	30	36	7
	N = (40)	(44)	(88)
Print	33	12	7
	N = (89)	(58)	(83)

All persons born blind report about the same proportion--just under one third--regardless of vision. Although among the youthfully blind similar portions of the light-perception and moving-object group report a predominance of blind friends, the high-vision group shows a sharp decline. Those blinded as adults who have low vision are almost as likely to have a majority of blind friends as are others with low vision; however, few of those with moving-object and print vision report a preponderance of blind friends.

Although the tendency to concentrate one's friendships among blind persons is most often found in the congenitally blind and for the adventitiously blind whose vision is low, there is another interesting finding: relatively few blind persons limit their friendships largely to blind persons. This is true for the congenitally blind and for those without residual vision, although to a lesser extent than for other blind persons. And the friendship patterns of the congenitally blind are unlikely to be altered by the possession of residual vision.

FAMILY EXPECTATIONS AND FRIENDSHIP PATTERNS

The variation by onset and vision raises another question: are there events associated with onset and vision that influence the friendship patterns of blind persons who choose most of their friends among the blind? As with social roles, we shall first try to determine whether the family influences friendship choice. But one event is likely to expose blind persons to each other: attendance at special schools for the blind. We have already demonstrated that there is some degree of organization behind the decision to send blind children to such schools. The problem is to assess whether this decision influences the child's subsequent behavior, especially in an area that can serve as an indication of important primary-group loyalties and one's identification as a blind person.

Table 9.06 presents the relation between family expectations and blind friends for onset and vision. A trend similar to that observed earlier for the decision to send children to residential schools also operates here. High family expectations for independence, when joined with early onset and low vision, increases the proportions who form friendships with blind persons. As onset occurs later, with perceived expectations still oriented toward independence, there is a decline in the proportion with blind friends. The adult blind, even when residual vision is absent, more often have blind friends when expectations are lowest.

The way expectations influence friendships depends on both age of onset and residual vision. As onset occurs later and as vision increases, if friends are largely selected from the blind, the respondents are likely to come from families oriented toward dependence. Among the congenitally blind, and to some extent the youthfully blind with less vision, this trend tends to be reversed: those who come from more independent families more often report blind friends.

TABLE 9.06

Perceived Family Expectations and Proportions with a Majority of Blind Friends Controlled by Age of Onset and Residual Vision

	Age of Onset					
	Congenital		Youthful		Adult	
Maximum Vision	High FPE	Low FPE	High FPE	Low FPE	High FPE	Low FPE
Light perception	36%	28%	33%	30%	18%	30%
N =	(11)	(25)	(27)	(30)	(40)	(61)
Moving object	32	29	33	41	5	8
N =	(19)	(21)	(27)	(17)	(40)	(48)
Print	29	38	5	8	8	7
N =	(65)	(24)	(40)	(48)	(39)	(44)

SPECIAL EDUCATION AND FRIENDSHIP PATTERNS

It has been observed that special education has some influence on social roles; those who derive from families oriented toward independence are more often found in the moderately independent category than in the most independent role category. The impact of selective schooling, however, is not sufficient to account for the distribution of blind persons into different social-role categories. Many of the factors examined in earlier chapters that bear no particular relation to onset or to residential school attendance also play a role. It is clear that family norms operate even among those who did attend special schools for the blind, although in a somewhat attenuated fashion. If social-role patterns show some response to special education, it is a reasonable assumption that special education might also be significant for friendship patterns. In Table 9.07 those who did and did not attend such schools are compared while controlling for both onset and vision.

Those who attend schools for the blind are much more likely to report a majority of blind friends. Among the congenitally blind, as vision increases those without special education are less likely to have blind friends. The print group who attended segregated schools more often report many blind friends than either of the low vision groups. Even the youthfully blind with less vision more frequently report that blind persons constitute at least half of their friends, if they attended segregated schools; however,

TABLE 9.07

Special Education and Proportions with Mostly Blind Friends, Controlled by Age of Onset and Residual Vision

	Age of Onset					
	Congenital		Youthful		Adult	
Maximum Vision	Spec. Educ.	Regular School	Spec. Educ.	Regular School	Spec. Educ.	Regular School
Light perception	32%	27%	41%	17%	30%	24%
N =	(25)	(11)	(32)	(23)	(10)	(90)
Moving object	37	15	61	19	--	7
N =	(27)	(13)	(18)	(26)	(5)	(83)
Print	52	9	25	9	33	6
N =	(48)	(41)	(12)	(46)	(3)	(77)

there is a marked decline for the high-vision group. Vision has an independent influence on friendship patterns, as attested by the adult low-vision blind. Here, a fair portion report a concentration of blind friends among their acquaintances even if they never attended special schools.

Although some variations remain as a function of both onset and vision, the impact of special education is substantial. Those who are sent to special schools are obviously likely to associate more often with blind persons. The low rates of blindness would make such concentrations unlikely without the aid of organized activities. The group that attended residential schools, although most of the sample had long since left, tend to follow a pattern of informal associations that reflects their attendance at such schools. For the congenitally blind this is true even for those with maximum vision; more than half are found in the high concentration group.

Friendship patterns tend to be influenced by family norms. They are even more substantially determined by attendance at residential schools. Patterns of friendship with blind persons are unlikely to occur on the basis of propinquity, since rates of blindness are low. It is the socialization experiences that have substantial influence. Even though most have long completed their training, there is sequel to such education in the tendency to locate one's informal associates among the blind.

SUMMARY

The family and milieu orientation, although significant for subsequent role performance, represents a single class of experience. For events of monumental significance for one's life chances, such as blindness, there are important experiences in addition to the direction of the norms for independence. Many other decisions may influence the blind person in his subsequent behavior, some not directly related to the loss of vision itself. In the case of many organized social roles, various kinds of patterned events, fairly predictable from the circumstances themselves, are likely to intervene. One such experience, being sent to a special school for the blind, was examined.

Not all blind children attend special schools; there is some element of choice. Special schooling tends to occur more often among those blinded earlier and those who have less residual vision. As vision increases, the likelihood of being sent to special schools declines, especially for those blinded some time after birth.

The decision to send children to schools especially established for blind persons varies in significance with age of onset and vision. Congenitally blind children are more likely to be sent to residential schools when the family is committed to greater independence on the part of the blind. Later onset results in attendance at special schools when the families expect less independence from their blind offspring. Parents who see blindness as less handicapping are more likely to keep the children at home and send them to school with the sighted. The same action, therefore, has a different relation to the orientation of the family to independence depending upon the age at which the child becomes blind. The same perspectives on behavior lead to opposite decisions as a consequence of differing settings.

The impact of family orientations toward independence on the role performance of the blind person tends to persist even when children are sent at a fairly early age to schools where they are physically removed from the family during a significant period for the socialization of the child. The influence of family norms, however, is somewhat attenuated when these children are compared to those who remain at home. The impact of special education on blind persons varies as a function of family orientation and age of onset. The congenitally blind with less vision who derive from families oriented toward modest achievement will gravitate toward a more independent social role; however, those from more independently oriented family environments are in the social-role categories that fall short of maximum independence. The overall impact of special education is a decrement in the proportion who achieve the most independent role type (role type I) and a corresponding increment in those who make a more modest independent social-role

adjustment (type II). This tends to be true for various combinations of age of onset and residual vision.

Social-role patterns are only one of many consequences which might be attributed to socialization in general, and to attendance at special schools for the blind in particular. The consequences of certain decisions can ramify into adulthood in many ways, affecting many classes of behavior. Blind persons, who are relatively few in number, sometimes confine or concentrate their friendships among other blind friends. As an index of one's basic social identification, friendship patterns illustrate how certain experiences set in motion processes that have importance for behavior that is much later in time. Some of the consequences will be treated in more detail in the next chapter.

Here it was found that early onset and little residual vision were associated with the tendency to have many blind friends. Again, as with attendance at special schools for the blind, the tendency to have blind friends varied with the families' expectations concerning independence. The congenitally blind with less vision were more likely to have blind friends when the family was oriented toward independence; the reverse was true for those with more vision and later onset.

The most discriminating factor, however, was attendance at special schools for the blind. If a person attended such a school, he was much more likely to report that most of his friends were blind than blind persons educated in regular schools, regardless of vision and onset. Attendance at residential schools, then, not only influences social-role patterns but has substantial impact on patterns of social interaction and, ultimately, on group identification. Schools established for blind persons, in addition to attenuating the achievement of social-role independence, also lay the groundwork for lifelong patterns of social affiliation which are significant for many classes of behavior. It is not so much the attitudes of others that result in the segregation of some of the blind but the institutions established for the blind that provide the essential ingredient for a group response. Those who attend such schools and who also have little vision constitute the majority of those whose friendships are heavily made up of other blinded persons.

For persons blinded at different ages, and as residual vision varies, different outcomes derive from similar orientations toward blindness on the part of the family. Social roles tend to conform to perceived expectations from the milieu in a consistent way while other dimensions of behavior can only be interpreted by identifying when one moves into the role as well as the clarity of the attributes for role assignment (for example, residual vision).

Once the decision is made to send children to schools for the blind, the consequences that emerge may override other factors that influence behavior. Those with residual vision then become part of the informal structure of blind persons, as indexed by friendship patterns, an outcome for which there is no apparent necessity outside of the early segregation of some. Those born with limited vision who can still utilize visual cues become identified as blind persons, not just as persons with visual difficulties, as is attested by their friendship patterns. While low vision and early onset will have very similar results irrespective of one's mode of education, others who are less clearly identified as blind tend to behave like the blind in significant respects when exposed to special education; the adventitious blind who do not attend such schools are different from those who do. This serves to document, again, the overriding importance of experience for one's subsequent mode of adaptation as a blind person.

NOTES

[1]A detailed description of educational facilities for the blind in New York State can be found in W. M. Cruikshank and M. J. Trippe, *Services to Blind Children in New York State*, Syracuse: Syracuse University Press, 1957. The development of special educational programs for blind children is described in H. Best, *Blindness and the Blind Child in the United States*, New York: Macmillan, 1934; G. Farrel, "Blindness in the United States," in P. A. Zahl, ed., *Blindness: Modern Approaches to the Unseen Environment*, Princeton, N.J.: Princeton University Press, 1950. See also Thomas Cutsforth, *The Blind in School and Society*, New York: American Foundation for the Blind, 1951; Pierre Villey, *The World of the Blind: A Psychological Study*, New York: Macmillan, 1950.

[2]The phrase "special education" is used here instead of "residential school" since some of the students (an unknown proportion) attend special schools for the blind on a commuting basis.

[3]Similar patterns result if extent of residual vision is introduced, but there is less stability because of the paucity of cases in some cells.

[4]In order to introduce five variables into one table, it was necessary to dichotomize family expectations and residual vision and to combine young-adult and adult onset groups.

[5]There are too few adult blind attending such schools to use in the analysis. In most cases they attend a special rehabilitation program attached to a residential school or one of the few rehabilitation centers for adventitious blind persons.

[6]In other sectors of behavior this is not the case, as will be seen later in this chapter.

[7]The overall proportions in the dependent categories (III and IV) are about the same for the two schooling groups. About 10 percent of those who attended residential schools and 13 percent of those who did not end up in type IV. The difference is a function of the larger proportion of adult blind in the group who did not attend.

[8]See Lukoff and Whiteman, *Attitudes and Blindness: Components, Correlates, and Effects* (mimeo.), for a description of social-distance scales with respect to blindness on the part of sighted.

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RESULTS OF EFFECT OF WINDOW SIZE ON VISUAL READING SPEED

Benjamin W. White

Purpose

To determine the relation of reading speed to size of aperture through which text is viewed.

Procedure

Lists of 5- or 8-letter words taken from the Thorndike-Lorge Word List, or short science fiction stories taken from various anthologies, were typed on Western Union telegram paper tape using an ordinary office typewriter which had been modified to hold such tapes. The tapes were "played" on a device which permitted control of the rate at which tapes passed by the aperture and permitted the experimenter to adjust the aperture of the window behind which the tapes moved.

Subjects were, for the most part, college students who responded to a notice sent out for paid volunteers to participate in an experimental study of reading.

Two different experiments were run. In one experiment, the subject was given lists of 5- or 8-letter words, 20 words to a list. These were presented on the tape machine at a predetermined speed and with an aperture of a given size. For the 5-letter words, the apertures were 1, 2, 3, 4, or 5 letters in width and the speeds were 17, 22, 27, 32, 39, or 44 letters-per-second. The 8-letter words were presented through apertures of 2, 4, 6, or 8 letters, and at speeds of 22, 27, 32, 39, 44, 53, or 61 letters-per-second.

The subjects were simply instructed to say each word as it passed by the aperture. The words were spaced widely enough so that there was ample time to respond. That is to say, the letter-per-second speed given above should not be used to compute a rate at which the words passed by.

In the second experiment, subjects were first asked to read silently a short story which had been dittoed on a conventional piece of 8-1/2" x 11" paper. They were told to read it as fast as possible but that they were going to be asked questions about the story when they had finished. They were then asked to read three other stories on the tape machine. They were instructed to set the control knob so that the tape moved

as fast as possible for them, and they were given permission to change tape speed at any time during the story. A fourth test story was then presented with similar instructions, except that the subjects were told that they would be asked questions about the story upon completion. Times to the nearest second were recorded for all stories. In the tape-presented material, the aperture was always set at five letters (1/2"). Five subjects were used in this experiment, one of whom had just completed a speed reading class at the local YMCA. (If his basal reading speed is any indication, such classes are quite effective.)

TABLE 1

Percentage of Words Correctly Identified in First Experiment

(Numbers underlined are 8-letter words)

	Aperture Size (Number of Letters)						
Letters-per-second	1	2	3	4	5	6	8
17	91						
22	44	87 <u>95</u>	99				
27	4	42 <u>44</u>	63	84 <u>98</u>	100		
32	2	25 <u>30</u>	41	60 <u>85</u>	86	<u>99</u>	
39		13 <u>4</u>	26	58 <u>81</u>	55	<u>75</u>	<u>96</u>
44				29 <u>42</u>	41	<u>72</u>	<u>69</u>
53						<u>56</u>	<u>63</u>
61							<u>38</u>

There is some evidence that 8-letter words were easier to identify since in the eight cells where direct comparison is possible, the 8-letter words yielded a higher percentage of correct figures in all but one cell. At higher speeds, there is evidence that one of the effects of widening the window is to slow down reading speed.

TABLE 2

Reading Speeds in Words-per-Minute for the Five Conditions of the Second Experiment

Subject	Basal Printed-Page-Speed	1st Tape, Training	2nd Tape, Training	3rd Tape, Training	Final Tape, Test
1*	1282	252	334	390	440
2	452	206	229	286	332
3	353	207	212	213	238
4	666	209	275	313	376
5	390	237	246	274	336
Means	629	222	259	295	344

*speed reader

Trial-by-trial plot of performance indicates that all subjects were still at a steep place on their learning curves for this task, so final test speed should not be considered an asymptote. There appears to be a relation between initial level of reading speed with printed page and rate of improvement on the tape reading task. The more rapid reader gains facility with this novel mode of presentation more quickly.

It is encouraging to find that with so little training people can read at better than half their normal rate with an aperture of only five letters. If Tanzer's findings can be generalized to this situation, we may hope that a tactile system capable of presenting this many letters at a time will permit reading speeds of comparable magnitude. It should be remembered, however, that Tanzer's data cover apertures smaller than two characters. It is also worth noting that the subjects in these experiments had no strong complaints about this mode of text presentation and adjusted to it readily. There were one or two interesting reports of figure-ground reversal in which, for an instant, the text appeared to be stationary and the window appeared to move in the opposite direction.

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ACTIVITIES FOR THE DEAF-BLIND IN SWEDEN DURING 1968

The close of 1968 saw the completion of a two-year experimental activity by a consultant for the deaf-blind conducted by the Swedish Red Cross and the Organization for the Blind (DBF). The following is a report of this activity.

Much time was devoted to the individual deaf-blind person and his living conditions. Relatively little time and effort was spent in organizational and administrative work.

Among the most satisfying results were the adjustment course recently started in Uppsala, the activities of the rehabilitation clinic in Jönköping, and the increasing number of courses in rehabilitation.

Inspection and Factfinding Missions

During the year several trips were made to undertake the contact of as many deaf-blind as possible. Visits were made to their homes and to institutions, and a total of 110 individuals were seen. Since the consultant for the deaf-blind serves the whole country there were some deaf-blind who were not visited and only a very few had a return visit.

For those not visited we were able to get a satisfactory picture of their present situation by contact with their families and institution personnel by phone and letter.

Through the cooperation of the many authorities and institutions, doctors, social workers, district nurses, and others often contacted and relayed information about the deaf-blind. Consultants in charge of the blind in every province reported on the deaf-blind they came across in their work.

Number of Deaf-Blind

The total number of deaf-blind in Sweden is not known. For many reasons it has been difficult to estimate the number. It is thought that there are proportionately more deaf-blind in certain areas, especially in the northern provinces. Among many families with a deaf-blind member, one often finds others in the family with severe sight and hearing disorders.

On December 31, 1967 there were 413 deaf-blind registered at the DBF. On December 31, 1968 there were 609, a net increase of 196. Of the 609 persons, 33 were children or young people under 20 years of age. There were also 25 deaf-blind over 16 about whom we lack information. These two groups have not been recorded in Tables 1 and 2, which account for 551 deaf-blind only.

TABLE 1

Schooling*

Age	Primary School	Deaf School	Blind School	Unfinished Schooling	Lack of Schooling	Unknown	Total
16-19	10	2	1		1		14
20-29	3	15	2				20
30-39	6	16	1		1	1	25
40-49	14	29	2	3		2	50
50-59	43	27	1	1	1	7	80
60-69	47	34	5	3	1	7	97
70-79	85	15	7	5	3	13	128
80-89	84	11	3		2	11	111
90 and over	21	1				4	26
Total	313	150	22	12	9	45	551

*From the register of DBF January 1, 1969.

Nursing and Rehabilitation

Unfortunately, care of, and residential circumstances for many deaf-blind has proven to be very unsatisfactory, especially where nursing is carried out in the home. To a great extent this has been because of an acute shortage of personnel in institutions responsible for the deaf-blind. While they are generally physically well cared for, the staff usually does not have the necessary skills

TABLE 2

Living Conditions

Age	Secluded Home	Old Peoples Home	Deaf Institution	Institution for Mentally Retarded	Mental Hospital	Unknown	Total
16-19	13			1			14
20-29	18			1		1	20
30-39	22			1	1		24
40-49	42			6	1	1	50
50-59	60	1	4	7	3	6	81
60-69	66	4	9	5	8	2	94
70-79	92	21	2	2	9	5	131
80-89	75	21	2	1	7	4	110
90 and over	11	10			3	3	27
Total	399	57	17	24	32	22	551

for communication with the deaf-blind. The result is unreasonable isolation and complete loneliness despite the physical closeness of other people. One woman, 44 years in an institution, was unable to communicate with anyone.

During 1968 a few deaf-blind were transferred from a mental hospital to an institution for the deaf. At the time it was not possible to make more transfers because of the scarcity of facilities for nursing care.

Occupational Therapy

Only a limited number of deaf-blind earn a living competitively, even in sheltered workshops. Many more would be able to go to work if special arrangements could be made. Discussions took place in 1968 in an attempt to deal with the possibility of providing a place of refuge which would provide residency and special care.

Few of the deaf-blind have any kind of occupational therapy at home. Even in institutions where occupational therapy exists, the staff is inexperienced and lacking in technical skills. Often time is spent administering the wrong therapy.

In 1967 group activities for the deaf-blind were originated in Piteå, a town in northern Sweden. It has been very successful, and at present ten people participate in the program. It would be worthwhile for this program to be initiated in other parts of the country.

Technical Aids

New technical aids have been developed during the year, and existing aids for deaf or blind people have been improved. There is still much to do in this field. Technical aids facilitate the life of the deaf-blind, making him more independent and self-reliant.

Information Exchange

It is important that all available means be used to spread information about the blind.

During the year, arrangements were made to give lectures at nurses' training schools and other institutions. Those interested were given primary instructions in the hand alphabet.

The Swedish Red Cross arranged a number of evening courses on the deaf-blind in which instruction in the hand alphabet and general information was given. In addition, the Red Cross also uses the press, radio, TV, and other news media to keep the public informed.

Information for the Deaf-Blind and Their Families

Presently the only way of reaching the deaf-blind with new information is by letters and magazines written in braille. Unfortunately, very few of them know braille and most of the information is in ink print, relying on other people to interpret. This is most unsatisfactory, denying ready access of information to the deaf-blind.

Two regional meetings were held during the year, the first from March 8 to 10 at Tallnäs, Skillingaryd, with 15 participants. The second was from June 14 to 16 at the People's High School in Fristad, with 17 participants. Each participant brought a relative or other person from their local institution. At these meetings, technical aids were demonstrated and instructions given for their

use, instruction was given in braille and other methods of communication, and the availability of legal aid and economic assistance were made known. The meetings were financed through contributions from the Association for Deaf-Blind in Sweden.

Adjustment Course at Uppsala

The first 36-week adjustment course for the deaf-blind took place at Uppsala in September 1968. Four male pupils between 25 and 30 years of age were enrolled. They learned braille, cane-technique, auditory-speech and visual-training communication techniques.

A partially modified form of this adjustment course will be arranged for others in the future.

Activity Courses

Three activity courses were arranged during the year. From January 17 to 31 at Vallbo, Jämtland, a course in skiing was offered in which 12 deaf-blind young people and their guides participated. They skied and walked during the day. At night they danced and played games, and they received instruction on technical aids and communication methods. The course was a great success.

From May 13 to 27 an activity course was given at Tallnäs, Skillingaryd with 29 participants. From August 21 to September 4 there was a course for 27 participants at the recreation home in Almåsa, Västerhaninge. Travel and lodging was financed by contributions from the provincial assemblies. During the courses there was instruction in cane technique, braille, communications, housekeeping and the like. Spare time was devoted to playing games, dancing, entertainment, and other leisure activities. The results from these courses were very positive.

From August 3 to 10 there was a mountaineering excursion for ten deaf-blind young people. They lived in tents in Björkliden with their guides, members of the Swedish Red Cross, and made long daily excursions in the mountains. Although they lived under primitive circumstances the arrangements were very much enjoyed by the participants.

Rehabilitation of the Deaf-Blind

The entire staff of the Rehabilitation Clinic in Jönköping has studied the Swedish hand alphabet, and two deaf-blind persons have been at the clinic for rehabilitation and to try the technical aids whenever necessary.

During May 6 to 22 there was a course at the Clinic for Hearing Disorders in Stockholm. There were nine deaf-blind participants.

In Norrbotten, a northern province of Sweden, all deaf-blind are entitled to free dental care at all public clinics.

In sum, it has been of great support for many deaf-blind and their families to be able to contact others who understand their problems for advice and information.

DE BLINDAS FÖRENING

Stockholm, Sweden, April 1969

THE PUSS PROJECT

A Swedish Educational Research Project Concerning the Learning Situation of the Blind

BACKGROUND

In modern education, printed verbal and graphic information is gaining more and more importance. The original one-dimensional process of reading is being replaced by a reading technique which might be described as two-dimensional in character. Authors have at their disposition a great variety of optical, typographical signals, which they use to guide the attention of the reader and to facilitate the understanding of the material. Pupils are systematically taught to utilize these signals and at an early stage in education they are taught modes of selective reading. Pupils also learn to understand the language of graphical information early in school and such information is used to an increasing extent in educational literature.

In the education of the blind there are three main media which serve as substitutes for the ink-print book, the talking book, the braille book and tactile graphical material. In comparison with the information potential of the ink-print book and of visual reading these special media have very definite limitations and, as they utilize other sensory channels, each of these media has its different and specific way of functioning. The information processed through these media is, therefore, likely to be filtered. This information process and various measures for reducing the problems in connection with the use of these special media have not as yet been sufficiently investigated. The most apparent shortcomings of these special media, which will be an important background of the present project, might be summarized as follows:

The Talking Book

As a substitute for ink print the talking book is rapidly gaining more and more importance as a convenient and relatively quick information medium. In comparison with the ink-print book the talking book has many shortcomings which become apparent when the talking book is used as an educational information medium. The limitations of this medium might be summarized in the following manner:

Loss of Survey. Reading in the second dimension, using various signals in the text for guidance, is not possible.

Loss of Rapid Means of Orientation in the Text. Even finding the beginning of a chapter may take several minutes.

Loss of Means for Post Reading Reference. The talking book is a very poor helper when you want to return to information you have consumed earlier in your studies.

Loss of Means for Selective Reading. There is no way of structuring the information as may be done by the ink-print reader by means of various pencil markings.

Loss of Active Reading Attitude. The talking-book machine is doing the actual reading and there is a risk that the reader's role will be reduced to that of a passive listener.

Loss of Means for High Speed Reading. The reading rate of a talking book normally is between 175 to 200 w.p.m., which in comparison with normal visual reading rates among students gives the talking-book reader a substantial reading handicap.

Loss of Means for a Variable Reading Speed. In visual reading, the speed is set in relation to individual reading capacity, kind of information, and purpose of reading. In talking-book reading the speed is fixed, which of course gives the reader an immense reading handicap.

The Braille Book

Braille has for a century been the only medium of written communication for the blind. Being a tactile reading medium, braille has its specific way of functioning and the information potential of braille reading is naturally smaller than that of ink print. The most obvious shortcomings might be summarized as follows:

Loss of Means for High-Speed Reading. A reading rate of 80 to 120 w.p.m. might be considered as fairly normal. This of course gives the reader an enormous reading handicap.

Loss of Survey. Braille-book reading has a two-dimensional character only to a limited extent. Some of the optical signals of ink print have their corresponding signs in braille, but these do not function in the same way.

Loss of Means for Selective Reading. There is no way of structuring the information as may be done by the ink print reader by means of various pencil markings.

Tactile Graphical Information

Embossed maps, diagrams, etc. are rather frequently used in the education of the blind. Reading such material gives you a very different starting point in comparison with ink print reading. You have to go from detail and try to build up the whole. It has been said that tactile reading of graphs gives you about the same survey of the material as you will get if you study a wall map by means of a magnifying glass. The process of perceiving forms, sizes, and relations within the tactile graph is much slower and the information received is significantly reduced in comparison with visual reading of graphs. The actual potential of tactile graphical information is still largely unknown.

AIM OF PROJECT

The process of arranging, distributing, and receiving information through special media for the blind will be investigated. The critical stages of this information process shown in the following illustration will be the primary objects of investigation.

ORGANIZATION OF PROJECT

The project is sponsored by the Swedish Board of Education. Planning and administration will be carried out in cooperation between the Swedish Association of the Blind and the Institution of Educational Research at the Teachers' College of Uppsala. The actual research will be performed by Prof. K. G. Ahlstrom and his associates and students at the Institution of Educational Research, Teachers' College, Uppsala.

Distribution through special media

Choice of medium

TALKING BOOK

Ink print information to be transferred

BRAILLE

TACTILE GRAPHICAL INFORMATION

Information is filtered by a special media

Receiving student

Learning methods and techniques

Responsibilities of Association of the Blind	Cooperation	Responsibilities of Institution of Educational Research
	Planning	
Formulation of relevant problems		Formulation of scientific problems
	Administration	
Information to investigators		Investigations
	Testgroups	
International coordination		
Information about research results		Scientific information
Development work		
Applications		

Time Schedule

	1969	1970	1971	1972	1973	1974
Planning						
Bibliographical survey						
Pilot studies						
Investigations						
Development work						

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The Swedish Association of the Blind
Stockholm 1969

Name: Acoustic Beacon
(Revised Listing)

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Test series of a new prototype under production

This device emits sounds intermittently, thus serving the function of a beacon in orienting a visually impaired or blind person in a desired direction or course.

Name: Audible Photoconductive Light Probe
(Revised Listing)

Source: Royal National Institute for the Blind
224 Great Portland Street
London W1, England

Availability: From supplier

Price: L5 17s. 0d.
L1 19s. 0d. - Concession price to blind in Great Britain and N. Ireland (RNIB Catalogue No. 9432)

A general purpose instrument; detects light and converts it directly into sound, the frequency of which rises proportionately with the intensity of light. The device uses Type D. 23 battery, and is supplied with battery and braille and letterpress instructions. Size: 5" x 3/4". Weight: 2 oz.

Name: Device to Enable a Teacher with Defective Vision to Receive Tactile Information from Pupils
(Revised Listing)

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Project finished.

Name: Doorbell with Tactile Receiving Device for the Deaf-Blind
(Revised Listing)

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Project finished.

Name: Electronic Thermometer for the Visually Handicapped
(Revised Listing)

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Test series under production.

A thermistor is the temperature-sensitive device; and an audible output is counterbalanced to zero by a potentiometer at the correct temperature. Tactile display by identification of position of potentiometer.

Name: Guiding Thread for the Blind
(Revised Listing)

Source: Handikappininstitutet
Bromma 3
Sweden

Availability: Test series under production.

Magnetic thread, laid down at traffic crossings, alongside pavements, railway platforms, etc. Magnetic field is picked up by a vibrator built into the ferrule of a stick, through which it is communicated to a tactile transmitter at the handle.

Name: Mono-Fonator

Source: Siemens AG Medical Equipment Div.
Germany

Availability: Production prototype.

The apparatus converts the acoustic oscillations of speech into vibrations. Designed to teach speech to deaf-mutes and deaf-blind, it was developed with the cooperation of Dr. Klaus Schulte of the Pedagogical Institute at Heidelberg. The device can be used with headphones when there is some residual hearing. It is designed for teaching one child at a time.

Name: Poly-Fonator

Source: Siemens AG Medical Equipment Div.
Germany

Availability: Production prototype.

Essentially four Mono-Fonators housed in a single unit designed for teaching four children simultaneously. Individual controls are provided for volume in each set of headphones and intensity in each vibrator.

Name: Opticron

Source: Mr. Zaid Diaz Gandia
CSI Processing Corporation
Commercial Scientific and Industrial Data
Processing and Systems Analysis Service
218 Del Parque Street
Santurce, Puerto Rico

Availability: Laboratory prototype.

The device combines a television camera, an image transducer, and a "sensorial pad" into a portable pack and helmet. Total weight about 50 lbs. Sensorial pad contains 10,000 pins which provide a reproduction of the visual shapes processed by the camera and transducer through tactual stimulation on the user's back.

Name: Radio Transmission Apparatus for the Deaf

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Project finished.

Short-distance radio transmitter-receiver of small size and capable of transmitting speech with high quality sound reproduction. Adjustable to different degrees of deafness. Its purpose is to enable a deaf person to hear a speaker anywhere, e.g. in a classroom by placing the transmitter near the rostrum and holding the receiver.

Name: Recording Indicator for Tape Recorder
(Revised Listing)

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Test series under production.

Device for tactile determination of recording level.

Name: Remote Control for Tape Recorders

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Project finished.

This device permits remote control of a tape recorder with the aid of the chin.

Name: Remote Control for Tape Recorders

Source: Handikappinstitutet
Bromma 3
Sweden

Availability: Project finished.

Device permitting remote control of a tape recorder by means of blowing and sucking.

Name: Tactile Vocoder

Source: Prof. Herman R. Weed
Biomedical Engineering Program
Electrical Engineering Department
Ohio State University

Availability: Experimental prototype.

The machine has eight vibrating keys, each capable of three conditions: off (motionless), low vibration, and high vibration. Sounds are converted electronically into mechanical vibrations. The input is normal speech into the microphone; the output, different rates of vibration to the fingers of the user through varying combinations of the keys. The Vocoder is based on an analysis of English speech sounds aimed at optimum intelligibility of the output. The spectrum of sound used by the device is 800 to 2400 Hz. Proposed uses for the device are as an aid in teaching speech and as a "hearing aid." The machine has been clinically tested at the Ohio School for the Deaf.

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PROPOSALS FOR RESEARCH ON BLINDNESS: II

1. Is vision a necessary condition for the development of a self-image during the formative years of life?

2. Is the development of a self-image inevitable?

3. What are the effects of sensory and motor impairments on the development of a self-concept, when visual impairment is excluded?

4. What consequences do different kinds of social environments have for such development in ordinary children?

5. Do certain environments inhibit the process of development of a self-image? In the case of the visually impaired? In the case of the sighted?

6. What environments are especially conducive to the development of a self-image among visually impaired children?

7. Some research suggests that verbal unreality is the most apparent attribute to be found among young blind children. What is the persistence of verbal unreality among adolescents and teenage blind youths?

8. What difference in self-attitude is found between those blind youths with siblings and those without?

9. What relation is there between reading and self-image among blind youths?

10. What is the relation between physical contact between persons and the development of self-image?

11. What are the consequences for the blind child and youth on learning or becoming aware of sexual differences?

12. What influences does blindness have on the repertoire and complexity of social roles a youth can play?

13. In the playing of social roles, is there a discernible difference between blind and sighted children in the real/ideal content of social roles that they define?

14. Of social roles that children learn, what components are critically dependent on vision? What impact has this for the blind child?

15. From the study of blind children, what inferences can one draw about the role of language in the formation of our concept of the nature of the physical and social environment? What is the role of language in acquiring common concepts about the nature of people, objects, and events? What is its role in contributing to the fundamental assumptive world of our culture?

16. Why is socialization possible among blind children?

Drawn from Scott, Robert A., "The Socialization of Blind Children," in D. A. Goslin, (ed). *Handbook of Socialization Theory and Research*, New York: Rand McNally & Co., 1969, pp. 1025-1045.

INTERNATIONAL RESEARCH REFERRAL SERVICE

We wish to bring to the attention of our readers the announcement of a service of Rehabilitation International (The International Society for the Rehabilitation of the Disabled).

It should be of interest both as a source of information on current research and as an opportunity to make information on their own work in progress available to interested colleagues.

Rehabilitation International maintains an International Research Referral Service through which interested individuals and organizations may be kept informed of current rehabilitation-related research being conducted in all parts of the world.

Summaries of current and proposed research projects are collected from individuals engaged in research and organizations supporting research. The summaries are classified and coded in cooperation with the Science Information Exchange of the Smithsonian Institute in the United States. The summaries are then distributed in subject groups which correspond to the particular interests of each recipient. The broad categories of research covered by the Service include: orthopedics, physical medicine, neurological impairments, cardio-vascular disorders, prosthetics and orthotics, technical aids, speech and hearing, special education, vocational rehabilitation and psycho-social aspects.

As the research summaries circulated through the Referral Service are provided by researchers prior to publication, they may neither be published nor used in publication reference without authorization.

All interested individuals and organizations are welcome to use the Referral Service.

Additional information may be obtained by writing to:

Rehabilitation International
219 East 44th Street
New York, New York 10017

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