COMMUNICATION DISORDERS AS RELATED HANDICAPS AMONG NONINSTITUTIONALIZED SCHOOL-AGE HANDICAPPED CHILDREN

DONNA J RUDOLPH* and JAMES MONROE STEWART**

ABSTRACT

The purpose of this study was to determine the prevalence and demography of communicative disorders and related handicaps. The results indicated that 1.1% of the school population had related speech, language and hearing disorders. These 789 children reflected 27.4% of all communicative disorders. Speech, language and hearing disorders accounted for 62.2, 35.5, 2.3%, respectively, across all primary handicaps. In terms of specific handicaps learning disabilities (34.9%) and trainable mentally retarded (30.5%) accounted for nearly two-thirds of the primary handicaps having associated communicative disorders The study also revealed that race and sex were confounding variables. For race it was found that blacks were diagnosed more often than whites for speech and language ; this finding was reversed for hearing disorders. For sex the findings depended on both the disorder and the race. Generally males were seen 1.9 times more often than females.

INTRODUCTION

The primary purpose of the present study is to determine the prevalence of related communicative disorders among noninstitutionalized school-age children exhibiting primary disorders other than speech, language and hearing. The secondary purpose is to develop a demographic profile of these children by race and sex for each primary disorder. The purposes of this study are consistent with professional needs in speech-language pathology and audiology and special education.

To date there are no published, comprehensive studies which examine communicative disorders as related handicaps as a primary focus. Bensberg and Sigelman (1976) come close with their overview treatment of multiple handicaps and mental retardation, along with Matthews (1971) on the latter. It is also important to recognize that these investigators evaluated studies on the institutionalized. Similarly, ASHA's more recent publication, Healey et. al. (1981), is an overview rather than definitive

The rationale for the study are grounded in a professional assessment study by ASHA (1977). It cites shortcomings on prevalence data in four

*Mr Donna J. Rudolph, M.S., Beaugarde Parrish Schools, Louisiana, USA.
**Dr James Monroe Stewart, Ph.D., Communication Arts and Sciences, Howard Univ.
Washington, D.C 2C059, USA

areas. These areas include : (a) language impairments, (b) impairments categorized by etiology, (c) impairments categorized by age of onset, and (d) comparisons between treated and untreated populations With the limited exceptions on language impairments in school age children (Leske, 1981b Stewart, 1981), the prevalence data are still lacking. These needs are still recognized by ASHA (Healey, et. al, 1981). In reference to these areas the present study addresses impairments categorized by etiology (see definition by Nicolosi, Harryman & Kresheck, 1978)

Definitions: According to OSERS (1980), "Handicapped children are defined by P. L. 94-142 as those children who are... , hard-of hearing, deaf, speech impaired.....,and are in need of special education and related services" (p. 17). Implied in the inclusion of speech impaired is the language disordered (see GAO, 1981b, p. 63 ; Healey, et. al., 1981, p. 75; Dublinske & Healey, 1978, p. 190). The term handicapped also includes: (a) mentally retarded, (b) visually handicapped, (c) seriously emotionally disturbed, (d) orthopedically impaired, (e) other health impaired, (f) special learning disabilities (OSE, 1981); learning disabled (see f), deaf-blind, and (h) multihandicapped (OSERS, 1980).

Public Law 94-142 states that "the term 'related services' means transportation, and such developmental, corrective and other supportive services (including speech pathology and audiology...." (p. 775). In its national survey on information presented in IEPS. OSERS (1980) found that 13% of the handicapped in public schools received related services. However, according to them "(the survey counted speech as a special educational service-not as a related service)" (p. 62).

For special education, this fact appears more practice than principle. According to OSE (1981, p. 14), "The regulations interpret this term to include speech pathology, or any other related service, when those services are considered, 'special education' rather than 'related services' under State standards.....' The statute does not." The importance of the definitions for related services and special education is that communicative disorders are defined as both related and primary (special education) handicaps. Dublinske and Healey (1978) are in agreement. They also add depth and insight into their difference and consequences. Yet by definition of handicapped, speech imparled, hard-of-hearing, and deaf are primary handicaps ; therefore, they are already special education. Thus, the regulations governing Public Law 94-142 appear redundant. On the other hand, the Law (its regulations) creates a dual status for communicative disorders. This dual status is not afforded to other handicaps.

Primary and related handicaps. The dual status of communicative-disorders as both primary and related handicaps brings about other important issues, which have not been considered and/or ignored. First, from a historical perspective the prevalence of communicative disorders include both types. For example ASHA (1980) cites 10% of the population with communicative disorders. Of late ASHA, Healey et. al. (1981), has taken note of this dualism In doing so, its current position on the prevalence of communication handicaps is unclear. Similarly, this lack of clarity is shared by OSERS (1980) ; see especially its appendices). The Panel on Communicative Disorders (1980) cites 10% of the population are affected in varying degrees with disorders of human communication. Its prevalence figure, although the same as ASHA (1980), is more generalized and implies related handicaps.

The accuracy of the prevalence is another issue, which is beyond the scope of the present study. The area of interest for the present study is the demography and etiology of the related handicaps ; the reason is that hey have not heen studied in detail and overshadowed by the primary communicative handicaps. Without a separate perspective on each, the prevalence of communicative disorders cannot be understood.

Second, the distinction between primary and related handicaps brings into focus their severity as general classes of handicaps. For example, primary communicative disorders may or may not "adversely affect" communication or educational and learning experiences (GAO), 1981b). Related handicaps of communication are caused by other primary disorders, and therefore confound them. It appears that some communicative disorders are a natural consequence of other handicapping conditions. Herein lies the importance of considering them and their impact on the professions of speech-language pathology and audiology and special education. The importance of economic impact of the dualism has been generated, to a limited degree, by GAO (1981a).

Third, the increased caseloads on speech-language pathologists and audiologists, in part, are a consequence of related communicative disorders. This consideration is supported by the Public School Affairs Committee (TSHA, 1981). The increased caseloads of school clinicians and the type and degree of communication deficits form an alliance for determining and setting priosiities for service delivery.

The nuances and idiosyncrasies of Public Law 94-142 and its governing

regulations on special education and related services are explicated by Dublinske and Healey (1978) for speech-language pathology and audiology. The implications and consequences of this dualism in special education are clearly delineated by McDermott (1981). The overall, comprehensive impact has not been evaluated to date (however, see GAO.1981a).

Terminology: Aside from Public Law 94-142, the professional literature has generated a minor problem with terminology. For the terms (primary) handicapped and related services, one finds primary and secondary (Stewart, 1981 ; Wilson & Stewart, 1983 ; Stewart & spells, 1982) ; and unduplicated or major and duplicated (McDermott, 1981) , respectively. In discussing multiple handicaps, Bensberg and Sigelman (19 76) and Healey et. al (1981), use the terms secondary disability and concomitant handicaps, respectively, in association with the specific (communicative) disorders.

For the purposes of this study . terminology is not of major consequence. This is not true practically, however, for diagnosis and prognosis, where educational and social consequences and their interaction can be monumental. This fact can be further c o n f o u n d e d and compounded when considering the terms, primary and related, as they relate to the clinical, medical and legal perspectives on the important dimensions of handicap, disability or disorder.

As stated earlier, the present study was undertaken to determine the prevalence and to develop a demographic profile of communicative disorders as concomitant handicaps by race and sex. The study excluded the primary handicaps of communication (speech,language and hearing) because related handicaps of communication for these primary handicaps is a special case of the general problem. According to Stewart and Spells (1982), they warrant special consideration. These investigators found that they represented 0.1% of the school-age population in the Nashville public schools in academic year 1979-80. For the present study this, statistic was considered negligible.

METHODOLOGY AND PROCEDURES

The methodology and procedures were formulated by Stewart (1981) They were further refined by Wilson and Stewart (1983). Important variables relevant to this study are discussed in subsequent sections.

Data Source :

The data were obtained from the public school system in Metropolitan Davidson County (Tennessee) which included the city of Nashville. The

Divisio n of Research and Evaluation for the Metropolitan Board of Education retrieved the data on communicative disorders in the broad areas of speech, language and hearing. Stewart and Spells (1982) obtained prevalence figures on these primary handicaps : other details can be found therein. The data included information on primary, related and service delivery for communicative disorders.

Enrollment ;

The official enrollment for the academic year 1979-1980 was 71,662 in grades Kindergarten through 12 (State of Tennessee, 1981 ; Publication Committee, 1981). The distribution of children in the school system was 48,108 whites, 22,943 blacks, and 611 others The racial pattern or distribution was 67.1,32 0 and 0.9 per cent respectively (Pubil Accounting & Transfer, 1980). It can be seen from this distribution that the white-black student ratio was 2 1:1.

Communication handicaps : There were 2,728 children receiving serv ces for speech and language and 149 children for deafness and hearing impairment. These 2,877 children accounted for 3.80% and 0.20%, respectively, totalling to 3.9%.

ln looking at the 2,877 children, Stewart and Spells (1982) analyzed the 2 023 children or 2.82% with primary handicaps and excluded the 65 children or 0.1% with secondary communicative handicaps as a function of primary communicative disorders The present study analyzed the balance of the data, which included children diagnosed with primary handicaps other than speech, language and hearing. These primary handicaps manifested communicative disorders as related h ndicaps.

State of the Art :

This section more specifically addressed the limitations of the study it should be labeled as such. However, the specific administrative mechanism underlying the identification, diagnoses and management of the communicatively handicapped has not been evaluated. This is due, in part, to the more than several offices involved with the accountability for special education services. The strength of the present study depended on the efficiency and effectiveness of the administrative system. The study was intended to present what currently existed at the time of this investigation. It was not intended to evaluase the administrative system.

Professional Qualifications : **The** investigators made no attempt to deter-

mine the professional background or qualification of persons making the diagnoses. The school system employed 40 speech-language pathologists and one audiologist during the reporting period.

Assessment and criteria: Other limitations were in the use of evaluative measurements and criteria In assessing speech, the Goldman-Fristoe Test of Articulation (1969) were generally used. Language was generally assessed with the Peabody Picture Vocabulary Test (Dunn, 1965). Other tests used were ; Test for Auditory Comprehension of Language (Carrow, 1973), Carrow Elicited Language Inventory (1974), Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy & Kirk, 1968), and Roehm Test of Basic Concepts (1971). Thus, no standard measures were used for speech language ; it was also unknown what criteria were used to refer children for therapy and whether allowances were made for dialectial differences Hearing screenings were conducted but little information was available on evaluation, criteria and follow-up.

Data Analysis :

The analysis of data for the school system consisted of 13 primary disorders, which were defined by the state of Tennessee The primary disorders, were: a) learning disabilities (Lrn Dis) ; (b) trainable mentally retarded (TMR) ; (c) educable mentally retarded (EMP): (dj physically handicapped (Physical); (e) severaly multiply handicapped (Sev Mult); (f) behaviorally disordered (Behavior); (g) visually limited (Visual); (h) profoundly mentally retarded (PMR); (i) blind; (j) intellectually gifted (Gifted); (k) pregrant; (1) socially maladjusted (Social); and (m) other. For each of these primary disorders, services for communicative disorders were evaluated. These categories were further subdivided by race, sex and the frequency of occurrences.

RESULTS

Overview :

For the school year 1979-80, there are a total of 789 children with related or secondary handicaps of speech, language, or hearing (deafness and hearing impaired) ; this constitutes 1.1% of the school population. The analyses reported subsequently are a function of the variables outlined. Other perspectives involve the composition within and the distribution across the disorders.

Table I shows in the left-most column the 13 primary handicaps. They are listed from learning disabilities (Lrn Dis) through a general category labeled other. The next three columns show the related handicaps, that is,

speech, language, and hearing. The right-most column reflects the total number of children wiih the related handicaps for each primary disorder. In addition, each in divided into frequency (n) of occurrence, percentage (%P) of the total population (N = 2,877) and percentage (%G) of the group with related communicative handicaps (N = 789). The first and second sub-divisions are reflections of Stewart and Spells (1982). The third figure, that is %G, is the major dimension and focus of the present data analysis.

In overviewing the findings presented inTable 1, the bottom row reveals that there are 789 children. Of the total number 491 children or 62.25 are seen for speech. Tnis is followed by language with 280 children or 35.5% and last by hearing disorders with 18 or 2.3%. The related handicaps are clearly dominated by speech, followed by language, and hearing respectively. On closer inspection of the individual primary handicaps, this general pattern is only violated by the categories of profoundly mentally retarded and severely multiply handicapped

Specific Related Handicaps:

Speech : From Table 1 one can see that the learning disabilities, at 25.0%, reflect the greatest number. This is followed by trainable menial retardation (17.9%), educable mental retardation (10 4%), and physical handicaps (2 8%). Severely multiply handicaps (2 7%) are rather close to the physical handicaps.

Language : The order for language handicaps does not vary much from the one for speech. The largest number come from the trainable mentally retarded (11.*9%).* This is followed by learning disabilities (8.9%), educable mental retardation (8.5%), and severely muliiply handicaps (4.4%).

Hearing : Although slight in demand, hearing handicaps are rendered in the order of learning disabilities (1.0%), trainable mental retardation 10.8%), physical handicaps (0 3%), and severely multiply handicaps (0.3%), It may be noteworthy in passing that the primary disorder of educable mental retardation reveals no prevalence.

Totals: The right-most column reveals the number secondary or related handicaps for the primary disorders. The order ranks from learning disabilities (34.9%), trainable mental retardation (30 5%), educable mental retardation (18.9%), severely multiply handicaps (7.4%), physical handicaps (3.7%), and behavior handicaps (2.4%). The other handicaps, each fall below l.%0.

Nearly two-thirds of the related handicaps are accounted for by learning disabilities and trainable mental retardation. By adding educable mental

retardation, 84.3% of the related handicaps are accounted for. On the othe hand, mental retardation as a global category (including educable, trainable, and profoundly) accounts for 50.3% of the service delivery. This orientation places learning disabilities second. This perspective is important because the early literature indicates that the majority of the mentally retarded were grouped together.

Related Handicaps :

Table 2 adds depth to the data presented in Table 1. Table 2 reveals the distribution of primary disorders by race The table further shows these handicaps separated by sex with frequency (n) of communicative services and their percentage *{%)* of the total (N=789). Another dimension which is presented in the table reflects the ratio. (R) white and black children. The columns labeled combined correspond to the data presented in Table 1 with the exception of the %P column.

Table 2 excludes data on those primary handicaps which account for less than 1.0% of the service delivery for communicative disorders (see right-most column of Table 1, labeled %G). This exclusion eliminates 18 children or 2 3% of the total. Three children, who are labeled racially as other, also are not accounted for in this table. Thus, a total of 21 children or 2.7% of the data are excluded from the analysis with emphasis on race.

The excluded data are important, but do not possess the power of numbers like the other categories ; this is the primary rationale for the exclusion of this data in Table 2. Additionally, it has been found already that the first three primary handicaps listed in Table 1 account for 84.3% of the data. Thus, Table 2 contains 97.3% of the data. Also, it must be noted that calculations are still based on 789 children.

Like Table 1, minor discrepancies can be seen in Table 2 There are two reasons for the more obvious discrepancies First, round-off in computation accounts for some discrepancies, since each cell is computed separately.

Second, specific data may be missing for unknown administrative reasons. For example, sex may have been omitted, but the primary disorder and secondary service are available. This data is still usable, minus the sex. This situation can be seen in the table.

Speech : Table 2 shows, for example, that speech accounts for 25% of the related handicaps for the learning disabilities. Of this percentum 8.1% and 16 *9%* are for black and white children, respectively. The column labeled

R reveals that the white-to-black ratio is 2.1 : 1; within the school system, it is also 2.1:1. The percentage for males and females and their respective ratios can be seen in the table ; they depart considerably from the 2.1 : 1.

Each primary handicap can be viewed similarly. They decline from the 25.0% for learning disabilities down to 2. 0% with the behaviorally disordered. Only the learning disabilities and the trainable mentally retarded reflect ratios which approximate the racial ratio in the population. The educable mentally retarded and the behaviorally disordered fall below the 2.1:1.

Those ratios which fall below the racial population ratio indicate that blacks have a greater number of handicaps. On the other hand, ratios which are above indicate that white children have a greater number. This is the case with the physically and the severely multiply handicapped. With a perspective on sex, generally, whites have a higher ratio than blacks; this ratio, in some instances, is two times greater.

Speech handicaps reflect a 60. 3% rate. The overall, prevalence ratio at 1.7:1 indicates a tendency favoring blacks rather than a racial balance. On closer Inspection, one finds a slightly higher prevalence ratio for females than the norm of 2.1:1. This indicates that white females have a slightly higher prevalence than black females. This trend reverses for males; black males are seen relatively much more often than white males Thus, for speech the prevalence ratio is misleading because sex is a variable.

Language. Table 2 shows that language handicaps for the primary disorders ranged downward from 11.9% with the trainable mentally retarded to 0.4% with the behaviorally disordered. Unlike learning disabilities, the trainable mentally retarded are first in prevalence of language handicaps, followed by learning disabilites, at 8.9%, and educable mentally retarded at 8 5%, closely behind.

Of major importance for language handicaps, the table reveals a greater prevalence of blacks than whites This is reflected in the racial ratios. Although the tendency is reflected in the ratios associated with the severely multiply handicapped and the behaviorally disordered, they do approximate the racial ratio. The other primary handicaps clearly indicate that handicaps favor blacks. In total related language handicaps account for 34,7%.

Hearing: Hearing handicaps account for 2.3% of the data. The data indicate that 4 black males with learning disabilities were seen for hearing ;

blacks have related handicaps in only this primary disorder. For whites, 2 males and 2 females are seen for learning disabilites. Hearing disorders are seen three times more often in the trainable mentally retarded than for the physically or severely multiply handicapped. The right-most column, labeled combined, reflects the overall percentage of related handicaps.

From the table it is clear that hearing handicaps number much less than in the other areas. This observation in valid, but its generalization should be regarded with caution. This is especially true with prevalence ratios. In somes instances the ratios are undefined. In total the prevalence ratio of 3.3:1 indicates that whites are seen more often than blacks. In looking at sex for hearing, there is no prevalence for black females; this yields an undefined ratio. On the other hand, the table reveals that the ratio of 1.5:1 indicates that black males are seen more than their white counterparts. As with language, sex is a variable

Totals. Overall, the data indicate that blacks and whites reflect 36 5% and 60.8% of the secondary communicative disorders. The prevalence ratio of 1.7:1 indicates that blacks have a higher number of these handicaps. Based on this data, both race and sex are variables in looking at communicative disorders as secondary handicaps By exploring other related dimensions,more in sight can be gained in reference to these two variables.

Other Dimensions

Table 3 shows the distribution, composition and ratio for sex by race for each disorder. The combined column shows the joint contribution of race by disorder. This table reveals dimensions not found in the other tables, except for the distribution which is presented in a different format. This minor overlap aids in the presentation of the new dimensions. ;as well as adding continuity. Like Table 2, this data focus on those disorders which reflect secondary handicaps greater than 1 0%.

The distribution presents an interracial perspective. This perspective holds each disorder constant and varies the race. It has already been presented in Table 2 under the column labeled ratio; the distribution is given little discussion here, except in instances where it helps one to better see and understand its association with the composition.

The composition holds each race constant and varies the disorders. The composition is an interracial perspective. With it, theoretically, each race should compare favorably; in contrast, the distribution, theoretically, should match that of the school population. The ratio for sex is presented

in order to better understand the relationship between males and females by race and disorder. Historically, the implications of this variable are clear.

Speech In reference to the total, the table reveals that blacks account for 368% of the racial distribution; white children account for the remaining 63.2%. It is these two figures which reflect the 1.7:1 ratio present in Table 2.

For blacks 60.80% of the composition is for speech. White students account for 62.7%. The contribution by sex can be viewed in this manner. It is of major importance in this regard to note that the male-to female ratios for blacks and whites are different. For blacks it is 2. 9: 1; white students show a ratio of 1.8:1. The combined ratio is 2 . 1 : 1 with related handicaps at 62.0%.

Each of the primary disorders can be viewed in a similar manner for their composition by race and sex. The table clearly reveals that the related handicaps by race and sex are different. Some exceptions are worth noting. Percentages for learning disabilities are in some what close alignment with the population ; this is not the case for sex, where black males are seen more than twice as often as white males. The figures for the trainable mentally retarded are in close agreement, including sex.

Language. For the races, language handicaps represent 35. 7% of the total. The male-to-female ratio is 1.5:1. For blacks and whites the compositions and ratios differ by little. The distribution however, again, is weighted toward blacks. From Table 2 the distributions represent a white-to-black ratio of 1.5:1. This ratio is more unfavorable than the one for speech.

Some valuable trends exist with language handicaps for the various primary disorders. First, the compositions for blacks and whites are comparable; only for the educable mentally retarded is it different. Second, except for the severely multiply handicapped, the male-to-female ratio is equal to or slightly greater than the one for blacks. Third, only because there are no black females with related language handicaps for the physically disordered, one finds the combined sex ratio reflecting a greater number for females. Fourth, noting the previous trend, one finds an equivalent ratio for sex for blacks and whites with respect to the educable mentally retarded. The same is true for black females under behavioral disorders, which accounts for the combined ratio of 2.0:1.

Hearing. The profile for hearing handicaps is different from the other related handicaps The totals indicate that the distribution for race is 22.2 and

77.8% for blacks and whites, respectively. This distribution indicates that the ratio for race is 3.5:1; this is much greater than the 2.1:1 for the population. The compositions indicates that whites a;e seen more than twice as often as blacks; the composition percentages are 1.4 and 2.9% for blacks and unites, respectively. The sex variable indicates that the ratio is 1.3:1.

Table 3 reflects the fact that only black males are seen for learning disabilities. Blacks have handicaps in no other areas: whites reflect an equal number as blacks but this is shared equally by males and females. Similarly more females (twice as many) are seen than males for the trainable mentally retarded. No males are seen from the physically handicapped. From this profile of hearing as a related handicap, it can be seen that whites have a greater overall number.

Totals. The overall totals reveal some salient characteristics about related handicaps. The racial distribution of 37.5 and 62.5% for blacks and whites, respectively, or a race ratio of 1 7:1 indicates that blacks have a greater number than whites. This observation is based, again, on the population ratio.

The compositions indicate that the two racial groups have the same relative order for the primary disorders. This order is learning disabilities. trainable mentally retarded, educable mentally retarded, severely multiply handicapped, etc. The magnitude or order, as reflected in their percentages, are different, however.

In reference to magnitude the handicaps can be grouped, but differently for the races. For example, with blacks, learning disabilities and trainable and educable mental retardation account for 89.3%. This group is followed by the rest of the disorders with percentages ranging downward from 5.6 to 2.1%. With whites, there are three groups. For them learning disabilities and trainable mental retardation account for 70.2%; the second group is occupied by the educable mentally retarded at 14 4% The rest of the disorders fall into the third group which reflect a downward range from 8.5 to 2.1%

The ratio for sex varies with the primary disorder and race, The greatest extreme can be seen with the physically handicapped. Here blacks reflect a ratio of 5.0:1, whites reflect a ratio of 0 9:1, which reflects more females than males. The overall ratio is 1.9:1: race is a variable, however. The. set ratio for blacks is greater than 2.2:1 than whites at 1.7:1.

DISCUSSION AND CONCLUSION

The primary purpose of this study was to determine the prevalence of communicative disorders as related handicaps for sehool-age children with primary disorders other than those of speech, language and hearing. The second purpose was to develop and to present a demographic profile of these children by race and sex The review of literature revealed clearly the lack of data on the noninstitutionalized school-age population for related handicaps of communication

The research problem has relevance for the general area on the prevalence of communicative disorders. The current literature indicated that the prevalence of communicative disorders was approximately 4 to 5% of the population of school-age children What was not clear until recently (Stewart & Spells, 1982; McDermott, 1981) is that these figures have two components. These components are primary and secondary. The secondary component, which represents communicative disorders as a consequence of other, primary handicaps has been ignored in the literature. This was the reason this study was initiated.

The methodology was an analytical one. The metropolitan public school system of Nashville-Davidson County supplied the data on all children receiving services for communicative disorders. The data on primary disorders of communication were analyzed by Stewart and Spells (1982). This study analyzed their unused data; this data were on communicative disorders as related or secondary handicaps.

The results indicated that 1 .1% of the school population reflected communicative disorders as related handicaps. These 789 children manifested 27.4% of the communicative disorders. These related handicaps of speech language and hearing accounted for 62.2, 35.5 and 2.3%, respectively, across all primary handicaps. The relative order of secondary speech, language and hearing handicaps was generally maintained. For race, the magnitude of order, as reflected in their percentages, were different, however. The two exceptions were the profoundly mentally retarded and the severely multiply handicapped. With these primary handicaps, language disorders represented the more prevalent secondary handicaps.

Learning disabilities (34.9%) and trainable mental retardation (30.5%) accounted for nearly two-thirds (65.4%) of the primary handicaps having associated communicative disorders. By adding educable mental retardation (18.9%), 84.3% of the related handicaps were accounted for. From this it was clear that learning disabilities manifested the largest number of related

handicaps. *On* the other hand, the aggregate classification of mental retardation attributed 50.3% of the secondary handicaps. This orientation would make learning disabilities second ; this perspective is less desirable since better refinement of mental retardation was available and operable in the present study.

The results also revealed that race and sex were confounding variables for related communicative disorders : For race it was found that blacks were diagnosed more often then whites for speech and language. This finding was reversed for hearing disorders. With reference to sex the results depended on both the disorder and race. Generally, black males were seen approximately 1.6 times more often than white males relative to their respective females counterparts for speech. Language disorders could not be referenced in this fashion because of no repeated prevalence for black females. For whites, however, the data indicated that females had a higher prevalence than males.

This study cannot be clearly and directly related to the literature review. The reasons were outlined earlier. Briefly, these reasons included limited data from this study's perspective on school-age children and the methodological problems in earlier studies.

The practical implications of this investigation are clear for the profession of speech-language pathology and audiology. First, the current professional literature has no research which presents a demographic profile of related handicaps of communication. Therefore, the study is informative. Second, the study begins to initiate a perspective on where services are needed with reference to other primary handicaps. This is important because of Public Law 94-142 where children are to receive an appropriate education. Third, the more handicapped children receiving an education requires more professionals to serve them; speech language pathologists and audiologists are included in these professionals. These last two areas carry with them demands on budgets and the development of priorities for the handicapped.

There is need for still further research. Research is needed to validate the present study. It is needed in determining the relationship between primary and secondary handicaps of communication Research is also needed on the relationship and the development of caseload for clinicians as a consequence of related handicaps of communication.

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TABLE 1

Analysis of Service Delivery for Communicative Disorders by Frequency (n), Percent (%P) Served N = 2,377, and **Percent (%G) as Secondary Handicaps-N=a789 for Primary Handicaps Other Than Communicative by Race** and **Sex. Data for Grades K-12 in the Academic Year 1979-80**

	Services Received/Delivered											
Primary	Speech Language			Hearing			Total					
Handicap	n	%P	%G	n	%G	%G	**n**	%P	%G	**n**	%P	%G
Lrn Dis.	197	*6* 8	25.0	70	2 4	8 9	8 0 3	1.0		275	9.6	34.9
TMR	14!	19	17 9	94	3 3	11-9	5	0.2	0.8	241	S.4	30.5
EMR	*$2*	*2 9*	10.4	67	2 3	8.5	0 0 0	0,0		149	5.2	1S.9
Physical	22	0.8	2 8	5	0-2	0 5	2	0.1	0.3	29	1.0	3.7
Sev Muit	21	0.7	2.7	35	1.2	4.4	2	0.1	0.8	58	2.0	7.4
Behavior	16	0.6	2 0	3	0.1	0.4	0	0.0	0.0	19	0.7	2.4
Visual	3	0 1	0.4	1	00	0.1	0	0.0	0-0	4	0.1	0.5
PMK	2	0.1	0.3	5	02	0 6 .0	0 0	0.0		7	0.2	0.9
Blind	2	0.1	0 3	0	00	0.0	0	0.0	0.0	2	0.1	0.3
Gifted	2	0.1	0.3	0	0.0	0 0	0	0 0	0.0	2	0.0	0.3
Pregnant	1	0 0	0.1	0	0.0	0 0	0	0.0	0.0	I	0.0	0.1
social	1	0 0	0.1	0	0.0	0.0	0	0.0	0.0	1	0.0	0,1
Other	1	0.0	0.1	0	0.0	0.0	0	0 0	0.0	1	0.0	0.1
Total	491	**17.1**	62.2	280	9 7	35.5	18 06	2.3		789	27.4	100 0

TABLE 2

Analysis of Communicative Disorder (N=789) as Related or Secondary Handicaps by Frequency (%) and Percentage (%) for Primary Disorders Other Than Communicative by Race and Sex. Data for Grades K–12 in the Academic Year 1979-80

Primary Handicap	Speech							Language						
	Black		White		Ratio	Combined		Black		White		Ratio	Combined	
	n	%	n	%		n	%	n	%	n	%		n	%
Lrn Dis.	64	8.1	133	16.9	2.1	197	25.0	28	3 5	42	5 3	1.5	70	8 9
Female	13	1.6	45	5.7	3.5	58	7.4	8	1.0	11	1.4	1.4	19	2.4
Male	51	6 5	87	11 0	1.7	138	17.5	20	2.5	31	3.9	1.6	51	6.5
TMR	44	5 6	95	12.0	2.2	139	17.6	37	4.7	57	7.2	1.5	94	11.9
Female	17	2 2	37	4.7	2 2	54	6 8	17	2.2	20	2.5	1.2	37	4 7
Male	27	3 4	58	7.4	2.1	85	10.8	20	2.5	37	4.7	1 9	57	7.2
EMR	61	6 5	31	3.9	0 6	82	10.4	29	3.7	38	4.8	1 3	67	8.5
Female	9	1 1	8	1.0	0.9	17	2.2	15	1.9	19	2.4	1.3	34	4.3
Male	42	5.3	23	2.9	0.5	65	8.2	14	1 8	19	2 4	1.4	33	4.2
Physical	4	0.5	18	2 3	4.5	22	2.9	2	0.3	3	0.4	1.5	5	0.6
Female	1	0 1	7	0.9	7.0	8	1.0	0	0 0	3	0.4	0 0	3	0.4
Male	3	0.4	11	1.4	3.7	14	1.8	2	0 3	0	0.0	0.0	2	0.3
Sev Mult.	4	0 6	16	2.0	4.0	20	2.5	12	1.5	23	2.9	1.9	35	4.4
Female	2	0.3	9	1.1	4.5	11	1.4	4	0.5	10	1.3	2.5	14	1.8
Male	2	0.3	7	0.9	3.5	9	1.1	8	1 0	13	1.6	1.6	21	2.7
Behaviour	8	1.0	8	1.0	1.0	16	2 0	1	0 1	2	0 3	2.0	3	0 4
Female	3	0.4	2	0.3	0.7	5	0.6	0	0 0	1	0 1	0 0	1	0.1
Male	5	0.6	6	0.8	1.2	11	1.4	1	0.1	1	0.1	0.0	2	0 3
Totals	175	22 2	301	38.1	1.7	476	60.3	109	13 8	165	20.9	1 5	274	34.7
Female	45	5.7	108	13.7	2 4	153	19.4	44	5.6	64	8.1	1.5	108	13.7
Male	130	16.5	192	24.3	1.5	322	40 8	65	8 2	101	12.8	1 6	166	21.0

TABLE 2 (Continued)

Analysis of Communicative Disorder (N = 729) as Related or Secondary Handicaps by Frequency (%) and Percentage (%) for Primary Disorders Other Than Communicative by Race and Sex. Date for Grades K-12 in the Academic Year 1979-80

	Hearing							Total					
Primary	Black		White		Ratio	Combined		Black		White		Ratio	Combined	
Handicap	n	/a	n	/o		n	%	n	%	n	%		n	%
Lrn. Dis.	4	0.5	4	0.5	1.0	8	1 0	95	12.2	179	22.7	1.9	275	34.9
Female	0	0.0		0,3	0.0	2	0.3	21	2.7	58	7.4	2.8	*19*	10.0
Male	4	0.5	>	0. *i*	0.3	6	0.8	75	9.5	120	15.2	1.6	I9S	24.7
TMR	0	0.0	G	0 '6	0 0	6	0.8	81	10.3	158	20.0	2.0	239	30.3
Female	0	0.0	4	0.5	0.0	4	0 5	34	4.3	61	7,7	1.8	95	12.0
Male	0	0.0	'7	0.3	0.0	2	0 3	47	6.0	97	12.3	2.1	144	
EMR	0	0.0	0	0.0	0 0	0	0 0	80	10.1	69	8.7	0,9	149	f.s.y
Female	{)	0.0	u	0.0	0.0	0	0.0	24	3.0		3.4	1.1	51	6.5
Male	0	0.0	0	0 0	0,0	0	0 0	56	7.!	42	5.3	0.K	98	12.4
Physical	0	0 0		0.3	0.0		0.3	5	0.H	23	*i* 9	3.8	29	3.7
Female	0	0.0	2	0 3	0.0	2	0.3	1	0.1	12	1.5	12.0	13	1,6
Male	0	0.0	0	0.0	0 0	0	0.0	5	0.5	11	1.4	2.2	16	2.0
Sev. Mult	0	0.0	2	0 3	0.0	2	0 3	is	2.0	41	5.2	2.6	57	7.2
Female	0	0 0	0	0.0	0 0	0	0.0	6	0.8	19	2 4	3 2	25	3.2
Male	0	0.0	2	0.3	0.0	2	0 3	10	1.3	22	2.8	2.2	32	4.1
Behavior	0	0.0	0	0.0	0.0	0	0 0	9	1.1	10	1.3	1.1	19	2.4
Female	0	0.0	0	0.0	0.0	0	0.0	3	0.4	3	0.4	1.0	6	0.8
Male	0	0 0	(1	0.0	0 0	0	0.0	6	0.8	7	0.9	1.2	13	1.5
Total	4	0.5	14	t.s	's 5	58	2 3	233	36 5	480	60 8	1.7	763	97."
Female	0	0.0	ft	1.0	0.0	8	1 0	89	] 1.3	180	22.8	2.0	269	34.1
Male	4	0 5	6	0.8	1.5	10	1.3	199	25 2	299	37.9	1.5	498	63.1

Analysis of Communicative Disorders (N=789) as Related or Secondary Handicaps by Distribution (%), Composition (%), and Male-to-Female Ratio for Primary Disorders Other Than Communicative by Race and Sex. Data for Grades K-12 in the Academic Year 1979-80

Primary Handicap Sex	Black Dist.	Black Comp.	Black Ratio	White Dist.	White Comp.	White Ratio	Combined Dist.	Combined Comp.	Combined Ratio
Lrn Dis.	13.4	22 2	3.9	27.9	277	1.9	414	25.7	2.4
Female	2.7	45		9.5	94		P.2	76	
Male	10.7	17.7		183	18.1		29 0	180	
TMR	9.2	15.3	1.6	200	19 8	1.6	29 2	18.1	1.6
Female	3.6	59		78	7.7		11 3	7.0	
Male	5.7	94		12.2	12 1		179	11.1	
EMR	10.7	17.7	4.7	6.5	6.5	2.9	17.2	10.7	3.8
Female	1.9	3.1		1.7	1.7		3.6	2.2	
Male	88	14 6		4.8	48		13.7	85	
Physical	. 08	1 4	3 0	3.8	3.8	1.6	46	2.9	1.8
Female	0 2	03		1 5	1.5		1.7	1.0	
Male	06	1.0		2.3	23		29	1.8	
Sev. Mult.	08	1.4	1.0	34	3.3	0.8	4.2	26	0.8
Female	04	07		1.9	1 9		23	1.4	
Male	04	0.7		1.5	1.5		1 9	1 2	
Behavior	1.7	2.8	1.7	1.7	1.7	3.0	3.4	2.1	2.2
Female	06	1.0		0.4	04		1 1	0.7	
Male	I 1	1.7		13	1.3		2.3	1.4	
Total	36 8		2.9	63.2	62.7	1.8	100.0	62.0	2.1
Female	95	15.6		22 7	22 5		32.1	20.0	
Male	27.3	45.1		40.3	40.0		67.6	41.9	

TABLE 3 (Continued)

Analysis of Communicative Disorders (N =789) as Related or Secondary Handicaps by Distribution (%), Composition *(%},* and Male-to-Female Ratio for Primary Disorders Other Than Communicative by Race and Sex
Data for Grades K-12 in the Academic Year 1979-80

	Language								
Primary	Black			White			Combined		
Handicap Sex	Dist.	Comp.	Ratio	Dist	Comp.	Ratio	Dist.	Comp.	Ratio
Lrn. Dis	10.2	97	2.5	15 3	8.8	2,9	25 5	9.1	2,7
Female	2.9	2.8		4.0	2.3		6.9	2.5	
Male	7.3	6.9		11 3	8.5		18.6	6.6	
TMR	13.5	12 .8	1.2	20.8	11.9	11.9	34.3	12.2	1.5
Female	6.2	5.9		7,3	4.2		13.5	4.8	
Male		6.9			7.7			7.4	
EMR	10.5	10 !	0.9	13.9	7.9	1:1.0	24.5	8 7	! 0
Female	5.5	5,2		6.9	4.0		12.4	4.4	
Maie	5.1	4.9		6.9	4.0		12 0	4 3	
Physical	0.7	0.7		1.1	0.6	‹.0.0	1.3	0.7	0.7
Female	0.0	0.0		1 1	06		1.1	0.4	
Male	0.7	0.7		0.0	0.0		07	0.3	
Sev. Mult.	4.4	4.2	2.0	8.4	48	1.3	12 8	4.6	1.5
Female	1 5	3.4		3.6	2.1		5.1	1.8	
Male	29	2.8		4.7	2.7		7.7	2.7	
Behavior	04	0.3		0.7	04	1.0	1 1	0.4	2.0
Female	0 0	0.0		0.4	0.2		04	0 1	
Male	0.4	0.3		0.4	(t 2		0.7	0.3	
Total	39.8	37.8	1.5	60.2	?4 4	1.6	100.0	35.7	1.5
Kemale	16.1	15.3		23.4	13.3		39.4	14 1	
Male	23.7	22.6		3-5.9	21.0		60.6	21.6	

TABLE 3 (Continued)

Analysis of Communicative Disorders (N=789) as Related or Secondary Handicaps by Distribution ,'%). Composition *(%),* and Male-to-Female Ratio for Primarv Disorders Other Than Communicative by Race and Sex. Data for Grades K-12 in the Academic Year 1979-80

Primary Handicap	Sex	Black Dist.	Black Comp.	Ratio	Hearing White Dist.	Hearing White Comp.	Ratio	Combined Dist.	Combined Comp.	Ratio
Lrn. Dis.		22.2	1.4		22.2	08	1.0	44.4	1.0	3.0
	Female	00	0.0		11.1	04		11.1	0.3	
	Male	22.2	1.4		11.1	0.4		33 3	0.8	
TMR		0.0	0.0	0.0	333	1 3	05	33.3	0 8	0.5
	Female	00	0.0		22.2	08		22.2	0 5	
	Male	0.0	0.0		11.1	0.4		11.1	0.3	
EMR		0.0	00	0.0	00	0.0	0.0	0.0	00	0.0
	Female	0.0	00		00	0.0		0.0	0.0	
	Male	00	00		00	0.0		00	0.0	
Physical		0.0	0.0	00	11 1	0.4	0 0	11.1	03	0.0
	Female	00	0.0		11.1	04		11 1	0.3	
	Male	0.0	0.0		0.0	0.0		0 1	00	
Sev Mult.		0.0	0.0	0.0	1 .1	0.4		11.1	0.3	
	Female	0.0	0.0		0.0	0.0		00	0.0	
	Male	00			11.1"	04		11.1	0.3	
Behavior		00	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0
	Female	0.0	**0.0**			0 0		0.0	0.0	
	Mare	00	O.o		0.0	00		0.0	0.0	
Total		22 2	1 4		i 77.8	29	0.8	100 0	2.3	1.3
	Female	0.0	0.0		44 4	17		44.4	1 0	
	Male	22.2	1.4		33.3	1.3		55.6	1.3	

TABLE 3 (Continued)

Analysis of Communicative Disorders (N=789) as Related or Secondary Handicaps by Distribution (%), Composition (%), and Male-to-Female Ratio for Primary Disorders other Than Communicative by Race and Sex. Data for Grades K-12 in the Academic Year 1979-80

Primary Handicap	Sex	Black Dist.	Black Comp.	Ratio	White Dist,	White comp.	Ratio	Total Combined Dist.	Total Combined Comp.	Ratio
Lrn. Dis.		**12.5**	33 4	3 6	23,3	**37.3**	2.1	**35.8**	**35.8**	.2.5
	Female	2.7	7.3		7.6	*12A*		10.3	10.3	
	Male	9.8	26.0		15.6	25.0		25 4	25.4	
		10.5	28.1	1.4	20.6	32.9	1.6	31,!	31 1	1.5
	Femal e	4 4	S1.8		7.9	12.7		12.4	*12.4*	
	Male	6.1	16.3		12,6	20.2			18.8	
EMR		10.4	*27.8*	2,3	9.0	14,4	1.6	**19.4**	19.4	*1.9*
	Female	3.1	8-3		3.5	56		6.6	6.6	
	Male		1.9.4		5,5	8,8		12,8	12.8	
Physical		0.3	2.1	5,0	3.0	4.8	0,9	3.8	3.8	1.2
	Female	0.1	**0.3**		**1.5**	2.5		**1.7**	**1.7**	
	Male	0.7	1.1		1.4	2.3		2.1	2.1	
Sev. Mult.		2.1	5.6	1.7	53	8.5	1.2	74	7.4	1.3
Female		0.8	2.1		2.5	4.0		33	**3.3**	
Male		1.3	3.5		2.9	4.6		4.2	4.2	
Behavior		i.2	3.1	2,0	1.3	2.1	2.3	2,5	2.5	
	Female				0 4	0,6		0.8		
	Male					1.5		1.7	**1.7**	
Total		37.5	**100.O**	2.2	**62.5**	1000	1.7	**99.8**	1.00.0	1.9
	Female	**11.6**	30.9		23.4	37 5		35.0	35.0	
	Male	**25.9**	69.1		3.8.9	62.3 .		64.8	64.8	