RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND THE INCIDENCE AND THE DEGREE OF SEVERITY OF FUNCTIONAL ARTICULATORY DISORDERS IN ELEMENTARY SCHOOL CHILDREN

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ABSTRACT

RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND THE INCIDENCE AND THE DEGREE OF SEVERITY OF FUNCTIONAL ARTICULATORY DISORDERS IN ELEMENTARY SCHOOL CHILDREN

by Ann P. Fouts

The purpose of this study was to explore the relationship between socio-economic status and the degree of severity of functional articulatory disorders in elementary school children. An attempt was made to discover differences in socio-economic status between children who did have functional articulatory disorders and those who did not have such disorders and, also, to discover differences in socio-economic status among those having various degrees of severity of functional articulatory disorders.

The subjects included 432 children, grades one through six, from the following school districts: Waverly Schools (suburban Lansing near automotive plants), East Lansing Schools (near Michigan State University), and Stockbridge Community Schools (southeastern Ingham County in an agricultural community). A total of 216, or one-half, of the subjects were enrolled in school speech correction programs for the reason of having functional articulatory disorders. The remaining 216 children, equated by grade, by room, by sex, and by number, were randomly selected from children who did

not have functional articulatory disorders. The speech of each child with a speech disorder was judged by his school's speech correctionist as very slight, slight, moderate, severe, or very severe. A seven-category socio-economic status scale was used to categorize the parental occupations of the 432 subjects.

Observation and statistical analysis of the total numbers and percentages of children, both those with and those without functional articulatory disorders, in each of the seven socio-economic categories according to degree of severity, revealed a lack of relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders. In this sampling, no one socio-economic category included significantly more or fewer elementary school children with functional articulatory disorders than did any other one socio-economic category. Also, there was no pattern of continuous increasing or decreasing of presence of functional articulatory disorders from the highest to the lowest levels of socio-economic status. In addition, the children with functional articulatory disorders from any one socio-economic category did not have significantly more or less severe articulatory disorders than did the children from any other one socio-economic category. In each socio-economic category there were more children with slight, moderate, and severe functional articulatory disorders than with very slight or very severe disorders.

The results of this study led to the conclusion that socio-economic status should not be considered to be as significant an element in the environmental factors related to incidence and degree of severity of functional articulatory disorders as it has been considered to be previous to this time.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Professional people concerned with helping children are in agreement, as a rule, that parents are key figures in the child's situation, and that there is a certain cause-effect relationship between parental attitudes and occurrence of language and speech problems.[1] Templin has stated that the speech and language which a person develops are dependent upon his capabilities and the stimulation in his environment.[2]

It has been generally considered by authorities that parents in the lower socio-economic levels provide their children with less speech stimulation than do parents in the upper socio-economic levels. This has been one of the reasons presented when studies indicated that low socio-economic homes tend to produce children whose linguistic

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[1]Jane Beasley, "Relationship of Parental Attitudes to Development of Speech Problems," Journal of Speech and Hearing Disorders, XXI (September, 1956), 317-321.

[2]Mildred Templin, "Relation of Speech and Language Development to Intelligence and Socio-Economic Status," Volta Review, LX (September, 1958), 331-334.

development is considerably slower.[1] McCarthy reminds us that even over a century ago there was thought to be observed a relationship between speech and socio-economic status: "Degerando as early as 1847 noted that the child of the rich understands more words and less actions and the child of the poor less words and more actions."[2]

In 1927 and again in 1935 studies indicated that speech maturation was superior in the upper occupational levels.[3,4]

Although studies which would establish a relationship between socio-economic status and the presence of articulatory disorders have not been extensive, the inferred generalization in the literature has been that homes of the lower socio-economic status tend to produce a greater number of children who have functional articulatory disorders. However, most of these observations and studies were made some years ago and do not take into account recent

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[1]Dorothea McCarthy, The Language Development of the Preschool Child (Minneapolis: University of Minnesota Press, Institute of Child Welfare Monographs Series, No. 14, 1930).

[2]Ibid.

[3]A. I. Gesell and E. E. Lord, "A Psychological Comparison of Nursery School Children from Homes of Low and High Economic Status," Pedagogical Seminary, XXXIV (1927), 339-356.

[4]M. E. Smith, "A Study of Some Factors Influencing the Development of the Sentence in the Preschool Child," Journal of Genetic Psychology, XLVI (1935), 182-212.

trends in modes of living brought about to some degree by the general prevalence of television viewing and some related factors.

Templin has pointed out that language development is most accelerated when more adult language appears in the child's environment.[1] In our contemporary society we know that more adult speech is heard by children, not only because of radio and television, but because of the current trend toward permissiveness and the encouragement of children to express themselves and to carry on conversations with adults. This represents a change in general parental attitude, an attitude found, at least to some degree, at all levels of socio-economic status.

Also, because of high taxation on the large salaries and because skilled, semi-skilled and even unskilled workers are receiving much better wages than even 20 years ago, economically we are approaching a commonality in mode of living.

Do these factors have a bearing on the relationship today between socio-economic status and the presence of functional articulatory disorders? Do we tend to find just as many such disorders among children reared by parents of the upper socio-economic levels as by parents of the lower socio-economic levels? These are the questions that motivated this empirical study.

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[1]Templin, loc. cit.

Statement of Purpose of Study

The purpose of this study is to explore the relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders in elementary school children. From this research it is hoped that answers to the following questions can be obtained: (1) Is there a significant difference between various degrees of severity of functional articulatory disorders over levels of socio-economic status? (2) Is there a significant difference among levels of socio-economic status over degrees of severity of functional articulatory disorders? (3) Is there a significant difference in levels of socio-economic status between those who are classified as having some kind of functional articulatory disorder and a random sample of elementary school children who do not have functional articulatory disorders? (4) What is the variation within a socio-economic level in degrees of severity of functional articulatory disorders?

Hypotheses

To answer the above questions, the following null hypotheses have been proposed:

1. There is no significant difference between various degrees of severity of functional articulatory disorders over levels of socio-economic status.

2. There is no significant difference among levels of socio-economic status over degrees of severity of functional articulatory disorders.
3. There is no significant difference in levels of socio-economic status between those who are classified as having some kind of functional articulatory disorder and a random sample of elementary school children who do not have functional articulatory disorders.
4. There is no variation within a socio-economic level in degrees of severity of functional articulatory disorders.

Importance of Study

Even though much research has been done in the general area of etiology of speech defects, results of many of the studies, especially those involved with etiology of functional articulatory disorders, have been conflicting. It is hoped that the results of this study will define more specifically the relationship between functional articulatory disorders and one environmental factor, namely, socio-economic status.

Previous studies have determined that there is a relationship between socio-economic status and speech and language development. A slower and later speech development in children seems to have been the pattern in homes which

would have been classified as those in the lower socio-economic levels.

Recent observations of caseloads in public school speech correction classes indicate the presence of a large number of children from the upper socio-economic levels. If the results of this study bear out the above observation, that the upper class homes are producing as many if not more children with functional articulatory disorders as are the lower class homes, then possibly more parent education is warranted. Perhaps the parents from the upper levels in addition to the ones from the lower levels need to have information directed to them that will help motivate them to do a better job of stimulating the speech and language development of their infants and young children.

Definition of Terms

For the purpose of this study, the terms used are defined in the following manner:

Socio-economic status.--Chapin's definition: "Socio-economic status is the position that an individual or a family occupies with reference to the prevailing average standards of cultural possessions, effective income, material possessions, and participation in group activities of the community."[1]

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[1]F. S. Chapin, "A Quantitative Scale for Rating the Home and Social Environment of Middle-Class Families in an Urban Community: A First Approximation to the Measurement of Socio-Economic Status," Journal of Educational Psychology, XIX (1928), 99.

However, for purposes of this study, the occupation of the head of the household is used to define the level of socio-economic status of the family. This decision was made on the basis of the writings of many authorities who state that if only one item relating to socio-economic status can be taken into consideration, the occupation of the father is probably the most significant.[1,2,3,4,5,6,7] They further explain that the parental occupation is usually related to income and bears strong implications concerning the family's

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[1]Albert J. Reiss, Jr., Occupations and Social Status (New York: Free Press of Glencoe, Inc., Division of the Crowell-Collier Publishing Company, 1961), 239-258.

[2]Kingsley Davis and Wilbert E. Moore, "Some Principles of Stratification," American Sociological Review, X (April, 1945), 242-249.

[3]Talcott Parsons, "An Analytical Approach to the Theory of Sociological Stratification," American Journal of Sociology, XLV (May, 1940), 841-862.

[4]W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, Social Class in America: The Evaluation of Status (New York: Harper and Bros., 1960), 136, 171.

[5]Alba M. Edwards, Comparative Occupational Statistics for the United States (XVI Census, 1940) (Washington, D. C.: United States Government Printing Office, 1943).

[6]H. H. Remmers and N. L. Gage, Educational Measurement and Evaluation (New York: Harper and Brothers, 1943), 434.

[7]August B. Hollingshead and Frederic C. Redlich, Social Class and Mental Illness: A Community Study (New York: John Wiley and Sons, 1958), 390.

degree of economic security, advantages in travel, possession of books and magazines, and other cultural, recreational, and vocational opportunities. At least one of these authorities also points out that even though the place a person lives, the way his living is made, and his tastes and cultural orientation are generally considered to be the three factors symbolic of socio-economic status, the educational level of the head of the household is a good single index to the general area of cultural and social values.[1] In addition, a high correlation has been found to exist between educational level and occupation when both are considered as factors of socio-economic status.[2]

Articulatory disorder.--A speech disorder characterized by the substitution (as "dwink" for "drink"), omission (as "nake" for "snake"), addition (as "steven" for "seven"), or distortion (as "shing" for "sing") of the speech sounds.[3]

Functional articulatory disorder.--An articulatory disorder in which there is no demonstratable structural or constitutional deficiency involved[4] and which may be attributed to emotional disturbance or to environmental conditions.[5]

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[1]Ibid., p. 389. [2]Remmers and Gage, op. cit., p. 437.

[3]Charles Van Riper, Speech Correction: Principles and Methods (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963), 19.

[4]Ibid., p. 112.

[5]Kenneth Scott Wood, "Paternal Maladjustment and Functional Articulatory Defects in Children," Journal of Speech and Hearing Disorders, XI (1946), 255.

Organization of the Thesis

Chapter I has contained the statement of the purpose of this study, the conditions that motivated the study, the hypotheses to be considered, a discussion of the importance of this study, and definitions of the major terms which will be used throughout the study.

Chapter II will contain a review of the literature available on this subject.

Chapter III will consist of a discussion of the subjects, materials and sources, and method of research utilized in the study.

Chapter IV will consist of a discussion of the results of the study.

Chapter V will contain a summary and the conclusions of the study.

CHAPTER II

REVIEW OF THE LITERATURE

Relationship Between Socio-Economic Status and Language and Speech Development

Socio-economic status has been considered as a factor in language and speech development in several studies. Gesell and Lord, on the basis of research in language ability with children from both upper and lower levels of socio-economic status, concluded that speech maturation was superior in the upper occupational levels in the population samples they investigated in 1927.[1]

McCarthy in 1930 concluded that low socio-economic homes tend to produce children whose linguistic development is considerably slower.[2] In measuring verbalization of children she found that children from the low socio-economic homes ask fewer questions. She included such aspects of language development as length of responses, functional analysis, construction analysis, and word analysis, in children between ages one and one-half and four and one-half.

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[1]A. I. Gesell and E. E. Lord, "A Psychological Comparison of Nursery School Children from Homes of Low and High Economic Status," Pedagogical Seminary, XXXIV (1927), 339-356.

[2]McCarthy, op. cit., p. 80.

Her findings indicated that the children from the upper socio-economic homes exhibited earlier language development.

Smith, in a study in 1935, concluded that children from the upper occupational levels exhibited speech maturation that was superior to children from the lower levels.[1]

In 1942 Beckey studied certain factors related to retardation of speech.[2] After studying groups of children, ages two to seven, she found that those with speech retardation were usually members of the lower occupational groups, and that children whose parents were members of the professional and managerial groups more often demonstrated normal speech. She cited three reasons, as follows: More children from the laboring groups may inherit an inferior genetic endowment; these same children may have less opportunity for exposure to enlightening and stimulating cultural advantages, and such children also may hear inferior patterns of articulation. However, only severe cases of speech retardation were considered in this study.

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[1]M. E. Smith, "A Study of Some Factors Influencing the Development of the Sentence in the Preschool Child," Journal of Genetic Psychology, LXVI (1935), 182-212.

[2]Ruth E. Beckey, "A Study of Certain Factors Related to Retardation of Speech," Journal of Speech Disorders, VII (1942), 223-249.

In 1948 Irwin concluded that family occupational status was a significant variable in speech development.[1,2] After measuring the phoneme type and frequency of infants under 30 months of age, he found that occupational status made only a negligible difference in the first year and a half, but there was a highly significant difference between 18 and 30 months. The difference was in favor of the professional and business groups over the skilled and unskilled laborers. In 1952 Irwin reached the same conclusions in a similar study.[3]

Templin in 1947 reported on an extensive study of certain language skills in children.[4] Factors which were measured were development of articulation of speech sounds, sound discrimination, sentence structure, and vocabulary. Included in her summary was the statement that when the socio-economic status samples over the entire age range are

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[1]Orvis C. Irwin, "Infant Speech: The Effect of Family Occupational Status and of Age on Use of Sound Types," Journal of Speech and Hearing Disorders, XIII (September, 1948), 224-226.

[2]Orvis C. Irwin, "Infant Speech: The Effect of Family Occupational Status and of Age on Sound Frequency," Journal of Speech and Hearing Disorders, XIII (December, 1948), 320-323.

[3]Orvis C. Irwin, "Speech Development in the Young Child: 2. Some Factors Related to the Speech Development of the Infant and the Young Child," Journal of Speech and Hearing Disorders, XVII (September, 1952), 269-279.

[4]Mildred C. Templin, Certain Language Skills in Children (Minneapolis: The University of Minnesota Press, 1957), 147.

combined, the performance of the upper socio-economic status group is consistently higher than that of the lower socio-economic status group, and for nearly all measures these differences are statistically significant. She further noted that these findings may reflect the fact that levels of intellectual ability of the upper and lower socio-economic levels are significantly different, but this does not account for the differences found, since correlation between intelligence and several language skills is not consistent.

Relationship Between Speech and Language Ability

Since this study is involved with a particular type of defective speech, functional articulatory disorders, it would be needless for us to examine the literature regarding studies involving language development and ability unless there is a relationship between speech and language ability. Studies which examined such relationship have been few, and even then, the findings have been somewhat inconsistent, but in most cases researchers have recognized the existence of a significant relationship between speech and language ability.

In a study in 1937 at the University of Iowa, Williams, McFarland, and Little found a moderate relationship between such measures as length of sentence, grammatical completeness and complexity, correctness of word usage, articulation ability, and chronological and mental ages of preschool

children.[1] They found some, but not a large degree of correlation between spoken and understood vocabulary and the other variables named.

Schneiderman in 1955 attempted to determine the relationship between articulation and language ability.[2] Using six- and seven-year-olds, she analyzed articulation, spoken vocabulary, sentence length, and classroom teachers' ratings of language ability. Her subjects included a total of 70 children from the upper middle social class families residing on Long Island. Children with organically-based speech disorders and those judged to be mentally retarded were excluded. She found that articulation ability was shown to be significantly associated with language ability when the mental and chronological ages of the subjects were not held constant. When the subjects were matched according to mental and chronological ages the differences in articulation ability among these groups representing different levels of language were not significant. This study offers some evidence of a relationship between articulatory ability and language ability.

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[1]H. Williams, M. L McFarland, and M. R. Little, "Development of Language and Vocabulary in Young Children," University of Iowa Studies in Child Welfare, XIII (1937), 9-18.

[2]Norma Schneiderman, "Study of the Relationship Between Articulation Ability and Language Ability," Journal of Speech and Hearing Disorders, XX (December, 1958), 359-365.

Relationship Between Parental Occupation and Articulation Disorders

Everhart has been involved in several studies designed to show the relationship between parental occupation and speech ability. In a study in 1953 he concluded that paternal occupation was not related to occurrence of articulatory deviations.[1] However, several factors may have had a significant bearing on his findings. A homogeneous group (largely in-migrants from the South) was utilized. Also, questionnaires were employed with only a limited number being returned.

In 1956 Everhart further examined paternal occupation and its relationship to maturation of articulation.[2] Again he found no significant relationship, but he attributed his failure to find such a relationship to the following factors: Small size of population (108 boys and girls) and to the relatively homogeneous character of the single school from which he obtained his samples. A large percentage of the parents were automotive factory workers.

Everhart joined with Weaver and Furbee in a study in 1960 in which they endeavored to find the relationship between

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[1]Rodney W. Everhart, "Relationship Between Articulation and Other Developmental Factors in Children," Journal of Speech and Hearing Disorders, XVIII (December, 1953), 332-338.

[2]Rodney W. Everhart, "Paternal Occupation Classification and the Maturation of Articulation," Speech Monographs, XXIII (1956), 75-77.

articulatory defects in children and parental occupational class.[1] Their findings led them to the conclusion that only the two lowest occupational classes affect significantly the number of articulatory defects exhibited by children. However, they determined severity of articulation solely on the basis of number of defective sounds. Also, their study did not include a good sampling from each of the socio-economic groups, even though 437 was the number of subjects. In addition, the articulation-impaired group and the group without articulatory disorders were not equated by number, by age, and by sex.

Effects of Speech Stimulation Practices

Various reasons have been proposed as to why language and speech ability have been found to be superior among the children of the upper socio-economic levels. Most professionals are in agreement that speech stimulation during the first few years of a child's life is an important factor in his speech and language development. For that reason several studies have been conducted to determine the deterring effects of little speech stimulation in the environment as compared with the beneficial effects of larger amounts of such stimulation. Orphanage children have been studied often

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[1]Carl H. Weaver, Catherine Furbee, and Rodney W. Everhart, "Parental Occupational Class and Articulatory Defects in Children," Journal of Speech and Hearing Disorders, XXV (May, 1960), 171-175.

because speech stimulation practices in such a setting are extremely limited.

If we accept the conclusions offered by Skeels, Updegraff, Wellman, and Williams on the basis of their study in 1938, we would state that speech stimulation needs to take place before the children reach age three in order to be effective.[1] They studied children reared in orphanages and then placed in nursery schools during the third and fourth years of their lives. The researchers failed to find an increase in rate of emotional, social, mental, and speech development, even after a several months' period in the foster homes. Previous levels were usually maintained. However, emotional status was judged to have deteriorated. Apparently these institutional children were incapable of assimilating new experiences.

A study by Goldfarb in 1945 indicated likewise, that the effects of early deprivation, as would be found in an orphanage setting, tend to remain even when the children are placed in home environments as early as three years of age.[2] Two groups of children were tested for intelligence, language, motor coordination, social maturity, and personality.

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[1]H. M. Skeels, R. Updegraff, B. L. Wellman, and H. M. Williams, "A Study of Environmental Stimulation," University of Iowa Studies in Child Welfare, XV, No. 4 Iowa City, 1938.

[2]William Goldfarb, "Effects of Psychological Deprivation in Infancy and Subsequent Stimulation," American Journal of Psychiatry, CII (1945), 18-33.

Both groups were tested while they resided in an orphanage, then retested at age three years and seven months after one group had spent seven months in foster homes. The children who had been placed in foster homes at three years were found to be just as retarded in language ability as the orphanage children.

In a study by Brodbeck and Irwin in which 95 orphanage infants and the same number of family infants ranging in age from one day to six months were checked for phoneme (sound) type and frequency, the family babies were found to have a significantly earlier and more rapid rate of speech development than the orphanage infants.[1] In fact, in this study the orphanage babies deviated from the family babies more than the family babies of professional parentage differed from the family babies of unskilled parentage.

McCarthy in 1954 pointed out that the kinds of human relations which provide few stimulating situations occur at all socio-economic levels, but are most often found in less favored homes.[2] She continued by saying that more leisure time exists now in many homes, but this does not assure the child's optimum language growth. The important thing is how

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[1]Arthur Brodbeck and Orvis C. Irwin, "The Speech Behavior of Infants Without Families," Child Development, XVII (1946), 145-156.

[2]Dorothea McCarthy, "Language Disorders and Parent-Child Relationships," Journal of Speech and Hearing Disorders, XIX (December, 1954), 514-523.

these hours are spent. Although television provides more opportunities for the child to hear adult language, the mother who encourages television is not only depriving him of opportunities to practice language, but is also depriving him of herself. The attitude of the parents is the key factor, and both "good" and "bad" parents can be and are found at all socio-economic levels.

Goda and Smith in 1959 conducted a survey in which 75 mothers of preschool children were interviewed regarding the number of hours per week that their children were involved in each of six different speech stimulation activities.[1] In each case at least one of the parents was a teacher. Results showed that about one-half the waking hours of each child, on the average, were spent in speech stimulation activities. The type of activity and the average number of hours per week spent participating in each were as follows:

1. Television--12.9 hours
2. Family conversations--11.2 hours
3. Play situations--8 hours
4. Outings--5.3 hours
5. Being read to -- 3.8 hours
6. Radio -- 1.5 hours

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[1]Sidney Goda and Kay Smith, "Speech Stimulation Practices Among Mothers of Preschool Children," Journal of Speech and Hearing Disorders, XXIX (May, 1959), 150-153.

The mothers then were asked to rate each of these activities according to importance they placed on them. The compilation of their answers was as follows:

1. Conversation
2. Outings
3. Being read to
4. Play situations
5. Television
6. Radio

Two inconsistencies may be noted here:

1. Television was low in importance, high in practice.
2. Being read to was high in im portance, low in practice.

Irwin in 1950 performed an experiment in which demonstrated the beneficial effects of parents reading aloud to their children, especially when the stories and accompanying pictures were discussed with the children following the reading.[1] In this study he included 34 children, ages 13 to 30 months, all from the lower socio-economic groups. He requested each of 24 of these mothers to read aloud to her child 15 to 20 minutes each day from one of the illustrated story books which he provided them. Discussion of the story

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[1]Orvis C. Irwin, "Infant Speech: Effect of Systematic Reading of Stories," Journal of Speech and Hearing Research, III (June, 1960), 187-190.

and pictures was to follow the reading. Periodically Irwin tested the phoneme (sound) type and frequency of each of the 34 children. The mothers of the remaining 10 children were asked to continue any previous practice or lack of practice in reading to their children.

The children whose speech had been stimulated by systematic reading of stories made significantly higher scores in sound type and frequency than did the remaining 10 children.

Mothers of speech-retarded children (who had articulatory disorders plus retardation in other language areas) tend to offer their children less encouragement to talk than do mothers of non-speech-impaired children was a finding of Moll and Darley in a study made in 1960.[1]

Recent Trends in Socio-Economic Status

Templin in an article written in 1958 noted some changes in population percentages that have taken place since 1920 that would tend to alter the socio-economic picture as examined in relation to speech and language development.[2] She stated that between 1920 and 1950 there was a one per cent increase in the professional group, a four per cent rise

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[1]Kenneth L. Moll and Frederic L. Darley, "Attitudes of Mothers of Articulation-Impaired and Speech-Retarded Children," Journal of Speech and Hearing Disorders, XXV (November, 1960), 377-384.

[2]Mildred Templin, "Relation of Speech and Language Development to Intelligence and Socio-Economic Status," Volta Review, LX (September, 1958), 331-334.

in the semi-professional group, a seven per cent increase in the clerical, skilled, and retail business group, a 50 per cent decrease in the farmer group, a seven per cent increase in the slightly skilled category, and a 50 per cent decrease in the day laborer group. In only one group, in the semi-skilled workers, did she find no change, percentage-wise, during this 30-year period.

In this same article Templin further pointed out that families from all socio-economic groups, as represented by the occupation of the parent, are tending to live more alike. We are moving towards a commonality in many respects. Families from the so-called lower levels of socio-economic status, partly because of higher wages among the skilled, semi-skilled, and even unskilled workers, are now enjoying many of the pleasures and opportunities previously reserved for the families in the higher levels of socio-economic status.

According to Templin, in our society of the past 15 years we know that more adult speech is heard by children, not only because of radio and television, but because of the current trend toward permissiveness and encouragement of children to express themselves and to carry on conversations with adults.[1] This represents a change in general parental attitude, an attitude found, at least to some degree, at all levels of socio-economic status.

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[1] Ibid.

Practices of Parents in Different Social Classes

Even though generalizations should be made cautiously, Davis and Havighurst, on the basis of the findings in a study conducted in 1946, presented the following conclusions concerning parental attitudes held by parents from different social classes:[1]

1. Middle class fathers spend more time with their children in such educational activities as teaching, reading, and taking them for walks, than do lower class fathers.

2. Middle class parents expect their children to assume responsibility earlier than do lower class parents.

3. Middle class parents have higher occupation and education expectations for their children than do lower class parents.

4. Lower class parents are more permissive in their relationships with their children than are middle class parents, except in toilet-training. However, there is a recent trend towards more permissiveness in the attitudes of middle class parents.

5. Middle class parents are more rigorous than lower class parents in their training of children for feeding and cleanliness habits.

These researchers further note middle class children probably suffer more frustrations of their impulses and that

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[1]Herman D. Stein and Richard A. Cloward (ed.), Social Perspectives of Behavior (Glencoe, Illinois: The Free Press, Publishers, 1958), 424-431.

more middle class children suck thumbs than do children in the other social classes.[1]

Hyman contends that the lower class individual does not want as much success, knows he could not get it even if he wanted to, and does not want what might help him achieve success.[2]

Also regarding aspiration levels of persons in different social classes, Guest reported in 1958 these conclusions based on a study made with 202 hourly production workers in an automobile assembly plant:[3] Hourly production workers do not look for jobs that will give them higher economic and social status. Rather, they look for relief from the anonymity and impersonality of the assembly line. They want jobs they can handle as they grow older, also, but they seem afraid to strike out on their own. Some resolve the dilemma by building up hopes for the children's future while they enjoy the immediate advantage they now possess in high wages and security.

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[1] Ibid. [2] Stein and Cloward, op. cit., p. 315.

[3] Ibid., p. 220.

CHAPTER III

SUBJECTS, MATERIALS AND SOURCES, AND METHOD OF RESEARCH

Subjects

The schools in which the subjects used in this study were obtained are as follows:

1. Waverly Schools located in suburban Lansing, Michigan, but affiliated with Ingham County Public Schools since they are not within the civil district of a city or town. Two plants of the Oldsmobile Division of General Motors are located in the Waverly Schools area and the Lansing Plant of the Fisher Body Division of the General Motors Corporation is situated immediately adjacent to the Waverly Schools area. Many employees of these three industrial plants live in the Waverly area. The Waverly Schools included in this study are Windemere Park School, Windemere View School, and Meryl S. Colt School.
2. East Lansing Schools located in the city of East Lansing, Michigan, in which is situated Michigan State University. This area is considered to be educational in nature since no industries and

only a minimum of retail businesses are located within the city limits. The East Lansing Schools included in this study are Marble School and Glencairn School.

3. Stockbridge Community Schools located in an agricultural area in southeastern Ingham County and northeastern Jackson County in Michigan. A large number of Caucasian migrants from the southern states populate this area. The Stockbridge Schools involved in this study are the Emma Smith School in the town of Stockbridge and the Eldon Katz School in the village of Munith.

For purposes of this study, the "experimental" group was composed of the following: All the boys and girls, grades one through six, in each of these seven elementary schools, who were enrolled by the speech correctionist in the speech correction program during the school year 1962-1963, and who were judged to have a functional articulatory disorder. Each of these schools is served by a certified speech correctionist employed by Ingham County Intermediate School District.

Children known to have loss of hearing, cleft palate, or any other physiological or neurological condition which might be considered a cause of his articulatory disorder, were not used in the study. No children from the special classes for the mentally retarded were included.

The number of children from each school composing the "experimental" group of this study is as follows:

Waverly Schools:

Windemere Park	45
Windemere View	23
Meryl S. Colt	27
	95

East Lansing Schools:

Marble	37
Glencairn.	25
	62

Stockbridge Community Schools:

Emma Smith	35
Eldon Katz	24
	59

Total 216

A "control" group, including an equal number of children was obtained in the following manner: A number of children, equated by grade, by classroom, and by sex, was randomly selected from the remaining enrollment of each class in which there was at least one child in the "experimental" group. Therefore, the total number of children involved in the study was 432.

Materials and Sources

The following materials and sources were utilized in this study:

1. Names of all children in speech correction classes, in the seven schools indicated, who have functional articulatory disorders. Lists were made by the

speech correctionists serving those schools, according to grade, classroom, and sex.

2. Names of remaining children in each classroom in which there was at least one child who had a functional articulatory disorder.
3. School enrollment cards or other official records listing the occupation of the head of the household. This information was obtained from the records in the school offices.
4. Table of random numbers.[1]
5. Classifications of occupations into descriptive groups, such as professional, semi-professional, clerks and kindred workers, skilled workers, medium-skilled workers, semi-skilled workers, and unskilled workers.[2]
6. Rating scale listing socio-economic category for each type of occupation.[3]

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[1]Paul Blommers and E. F. Lindquist, Elementary Statistical Methods in Psychology and Education (Boston: Houghton Mifflin Company, 1960), 514-517.

[2]United States Department of Labor, Dictionary of Occupational Titles, Volumes I and II (Washington, D. C.: U. S. Government Printing Office, 1949).

[3]Warner, op. cit., pp. 140-141.

Method of Research

1. Lists of names of children, according to school, grade, classroom, and sex, of all children, grades one through six, in each of seven schools indicated, who were enrolled in speech correction classes for the reason of having a functional articulatory disorder of speech, were obtained from the speech correctionists serving those schools.

2. Lists of all remaining children in each room in which there was at least one child with a functional articulatory disorder were obtained from the speech correctionists.

3. A table of random numbers was used to obtain a "control" group, a group equated according to grade, classroom, and sex, from the lists referred to in Step #2.

4. The speech correctionists were requested to rate the articulatory speech of the children in the speech classes in the schools they served, according to the following scale: very severe, severe, moderate, slight, or very slight. Each speech correctionist was instructed to be as objective as possible and to take into consideration several factors, namely, number of defective sounds, general intelligibility, rate of improvement while in the speech correction program, and type of sound that was defective according to normal speech development tables.

5. This researcher visited the school office in each of the seven schools to learn the occupation of the head of the household of each of the 432 subjects.

6. Each occupation was defined as professional, semi-professional, managerial, clerical, retail business, skilled worker, medium-skilled, semi-skilled worker, or unskilled worker.

7. The occupational scales in current usage were evaluated to determine which seemed most effectively to take into account all factors that are relevant. The modification of the Alba Edwards System (used by the U. S. Bureau of Census)[1] and the Minnesota Scale for Occupational Rating,[2] both of which have been used extensively in previous studies, were discarded as ineffective for this study, mainly because neither takes into account the various categories represented in farmers. For instance, the Minnesota Scale places owners of both large and small farms and farm workers all in one socio-economic category. Since this study included both urban and rural areas, the disposition of farmers must be a major consideration. The occupational scale presented by Warner[3] is a recent modification of both of the scales

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[1]Hollingshead and Redlich, op. cit., p. 390.

[2]Donald G. Paterson, C. d'A. Gerken, and Milton E. Hahn, Revised Minnesota Scale for Occupational Rating (Minneapolis: University of Minnesota Press, 1953).

[3]Warner, loc. cit.

mentioned above and does have several advantages, as listed here, as a tool for purposes of this study:

a. Farmers are placed in each of five of the seven categories, according to owner of a large farm, owner of a small farm, tenant farmer, small tenant farmer, and migrant farm laborer.

b. Owners of retail businesses are more easily categorized because the value range of the business is defined specifically.

c. Professors and public school teachers are placed in different categories.

d. Workers are classified into skilled, medium-skilled, semi-skilled, and unskilled instead of just skilled, semi-skilled, and unskilled.

e. More specific descriptions are listed for clerks and kindred workers.

f. Ministers are categorized according to those who are seminary graduates, those with some training, and those with no training.

Because of these advantages, the Warner occupational scale was utilized for this study. The parental occupations of the 432 subjects were categorized as follows:

I. Professionals, managers and owners of businesses $75,000 and up, gentlemen farmers.

II. Semi-professionals, smaller officials of large businesses, managers and owners of businesses $20,000-$75,000.

III. Clerks, kindred workers, owners and managers of businesses $5,000-$20,000.

IV. Skilled workers, owners and managers of businesses $2,000-$5,000.

V. Medium-skilled workers, owners and managers of businesses $500-$2,000.

VI. Semi-skilled workers.

VII. Unskilled workers, day laborers.

The Appendix lists the parental occupations according to socio-economic categories of each of the 432 subjects in this study.

CHAPTER IV

RESULTS AND DISCUSSION

Results

The number of subjects in each of the seven socio-economic categories, according to degree of severity for those with functional articulatory disorders, were totaled and are listed in Table 1.

Several graphs are presented to show percentages, both in regard to socio-economic categories and to degrees of severity in those children with functional articulatory disorders.

Graph 1 is involved only with the children with functional articulatory disorders and indicates the percentages of these subjects in each of the seven socio-economic categories. Graph 2 presents a comparison of the children with and those without functional articulatory disorders according to the socio-economic categories represented.

Graphs 3 through 9 are each involved with a single socio-economic category. Each of these graphs indicates the percentages of children with each of the five degrees of severity with each particular socio-economic category.

The final graph, Graph 10, presents a summary picture of the percentages of children with functional articulatory

disorders according to socio-economic categories and to degree of severity.

The figures representing the total number of subjects in each of the seven socio-economic categories and in each of the five degrees of severity were subjected to two statistical treatments. First, t tests were computed as tests of significance of the total figures obtained, both in regard to degree of severity of functional articulatory disorders and in regard to socio-economic categories. The formula used for obtaining the t score is as follows:[1]

$$t = \frac{(\bar{X}_1 - \bar{X}_2) - (m_1 - m_2)}{s(\bar{x}_1 - \bar{x}_2)}$$

$\bar{X}_1$ = the mean of Group 1

$\bar{X}_2$ = the mean of Group 2

m_1 = the population mean of which $\bar{X}_1$ is an estimate

m_2 = the population mean of which $\bar{X}_2$ is an estimate

$$s(\bar{x}_1 - \bar{x}_2) = \sqrt{\left(\frac{\Sigma x_1^2 + \Sigma x_2^2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

n = number of items

The results of these analyses are presented in Table 2 and Table 3.

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[1]Allen L. Edwards, Statistical Analysis (New York: Rinehart and Co., Inc., 1946), 130-133.

Table 2 indicates the results of t tests for evaluation of differences among degrees of severity of functional articulatory disorders. Seven of the ten t scores were found to be significant at 1% level of confidence.[1]

The results of t tests for evaluation of differences among socio-economic categories are presented in Table 3. Seven of the 21 t scores were significant at 1% level of confidence. Nine of the scores were so small that they were not significant even at 5% level of confidence. The remaining five t scores were significant at 5% level of confidence.[2]

Standard deviation was used as the measure of variability. The formula utilized was as follows:[3] $\sqrt{\frac{\Sigma (X - \bar{X})^2}{N-1}}$ The standard deviations for evaluation of differences among socio-economic categories are listed in Table 4.

Discussion

Examination of the graphs and tables reveals a lack of relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders. According to the results of this study, it is not true that a higher incidence and a greater degree of severity of functional articulatory disorders occur in the children from the homes represented by the lower socio-economic levels. Nor is it true, according to these results, that a higher incidence and a greater degree of severity of functional

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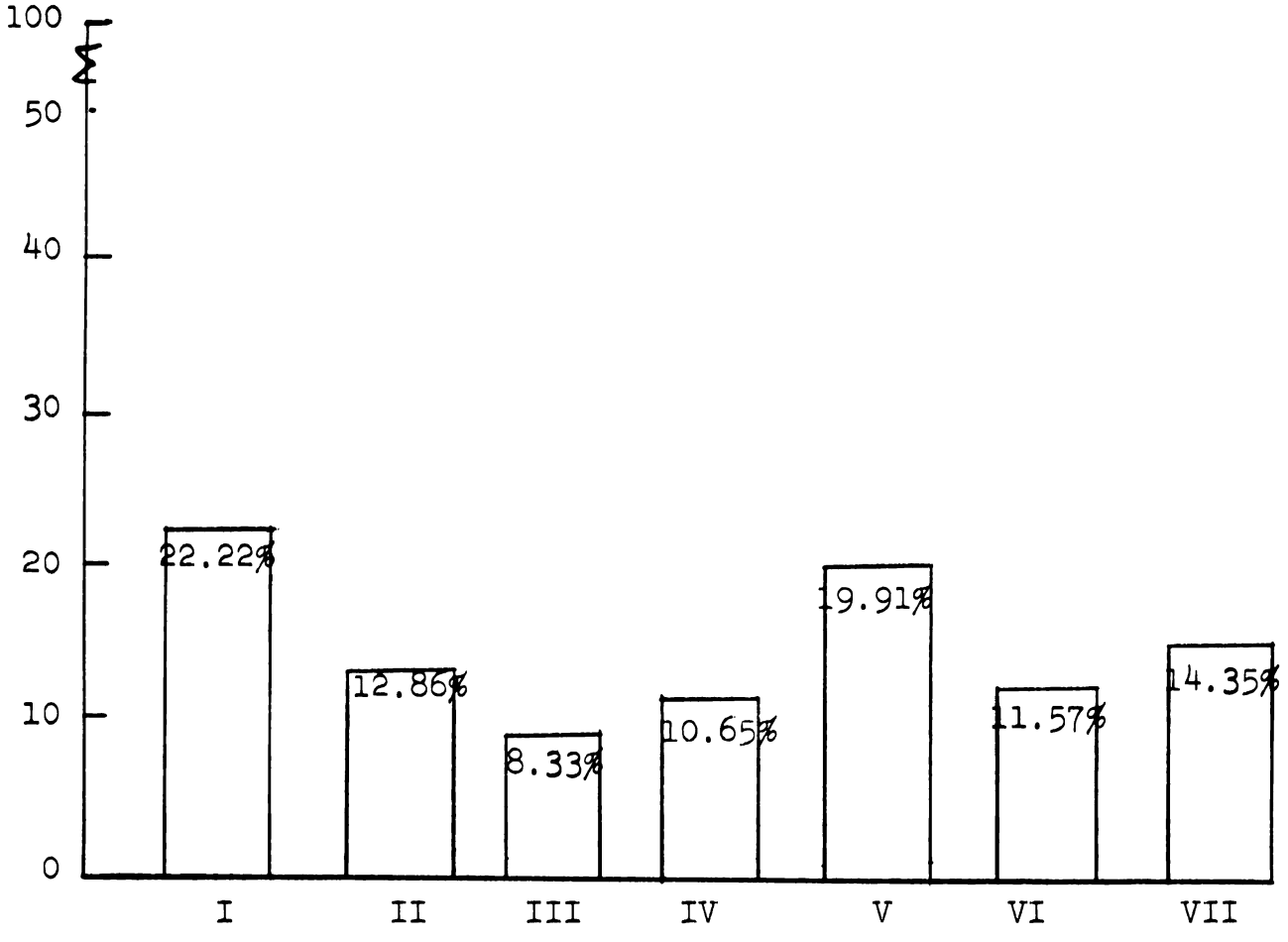
[1] Ibid., p. 220. [2] Ibid. [3] Ibid., p. 53.

ECONOMIC CATEGORY ACCORDING TO DEGREE OF

TABLE 1

NUMBER OF SUBJECTS IN EACH SOCIO-ECONOMIC CATEGORY ACCORDING TO DEGREE OF FUNCTIONAL ARTICULATORY DISORDER, AND ALSO NUMBER OF SUBJECTS, IN EACH CATEGORY, WITH NO FUNCTIONAL ARTICULATORY DISORDER

Socio-Economic Categories	Very Slight Disorder	Slight Disorder	Moderate Disorder	Severe Disorder	Very Severe Disorder	Number With Functional Articulatory Disorders	Number With No Functional Articulatory Disorders
I. Professionals, proprietors of large businesses	4	13	11	16	4	48	40
II. Semi-professionals, lesser officials of large businesses	4	14	8	1	1	28	42
III. Clerks and kindred workers	2	7	4	3	2	18	19
IV. Skilled workers	4	6	11	1	1	23	27
V. Proprietors of small businesses, medium-skilled workers	5	12	16	8	2	43	36
VI. Semi-skilled workers	2	8	9	5	1	25	29
VII. Unskilled workers	4	12	8	5	2	31	23
TOTAL	25	72	67	39	13	216	216



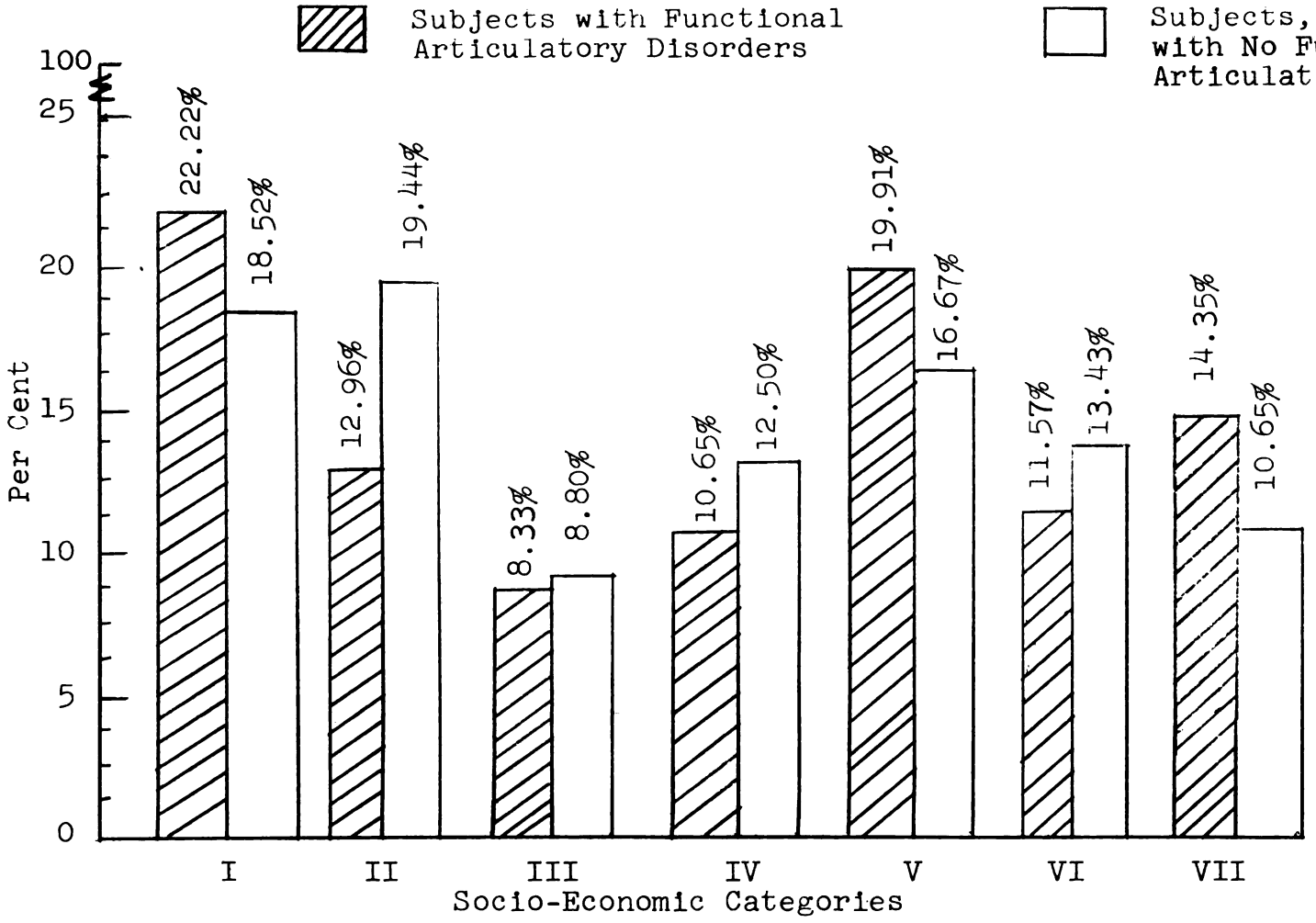
Graph 1.--Socio-Economic Categories Represented by 216 Children with Functional Articulatory Disorders.

Key:
I = Professionals and proprietors of large businesses
II = Semi-professionals and lesser officials of large businesses
III = Clerks and kindred workers
IV = Skilled workers
V = Proprietors of small businesses and medium-skilled workers
VI = Semi-skilled workers
VII = Unskilled workers

articulatory disorders exist in any particular socio-economic category.

Graph 2 shows that in this sample of population among the children in Category I (professionals and proprietors of large businesses), Category V (proprietors of small businesses and medium skilled workers), and Category VII (unskilled workers), a larger percentage of children had functional articulatory disorders than did not have such disorders. In this sample of population, on the other hand, among those children in Category II (semi-professionals and lesser officials of large businesses), Category III (clerks and kindred workers), Category IV (skilled workers), and Category VI (semi-skilled workers), a larger percentage of children existed in the group which did not have functional articulatory disorders. It is also noteworthy that the percentage differences were small, ranging from .47% to 6.48%. It should also be noted that the socio-economic categories in which there were larger percentages of children with functional articulatory disorders were not "neighboring" categories. The highest level (I), the lowest level (VII), and one of the middle categories (V) were the levels at which this situation existed. This would be further indication of the lack of correlation between socio-economic status and incidence of functional articulatory disorders.

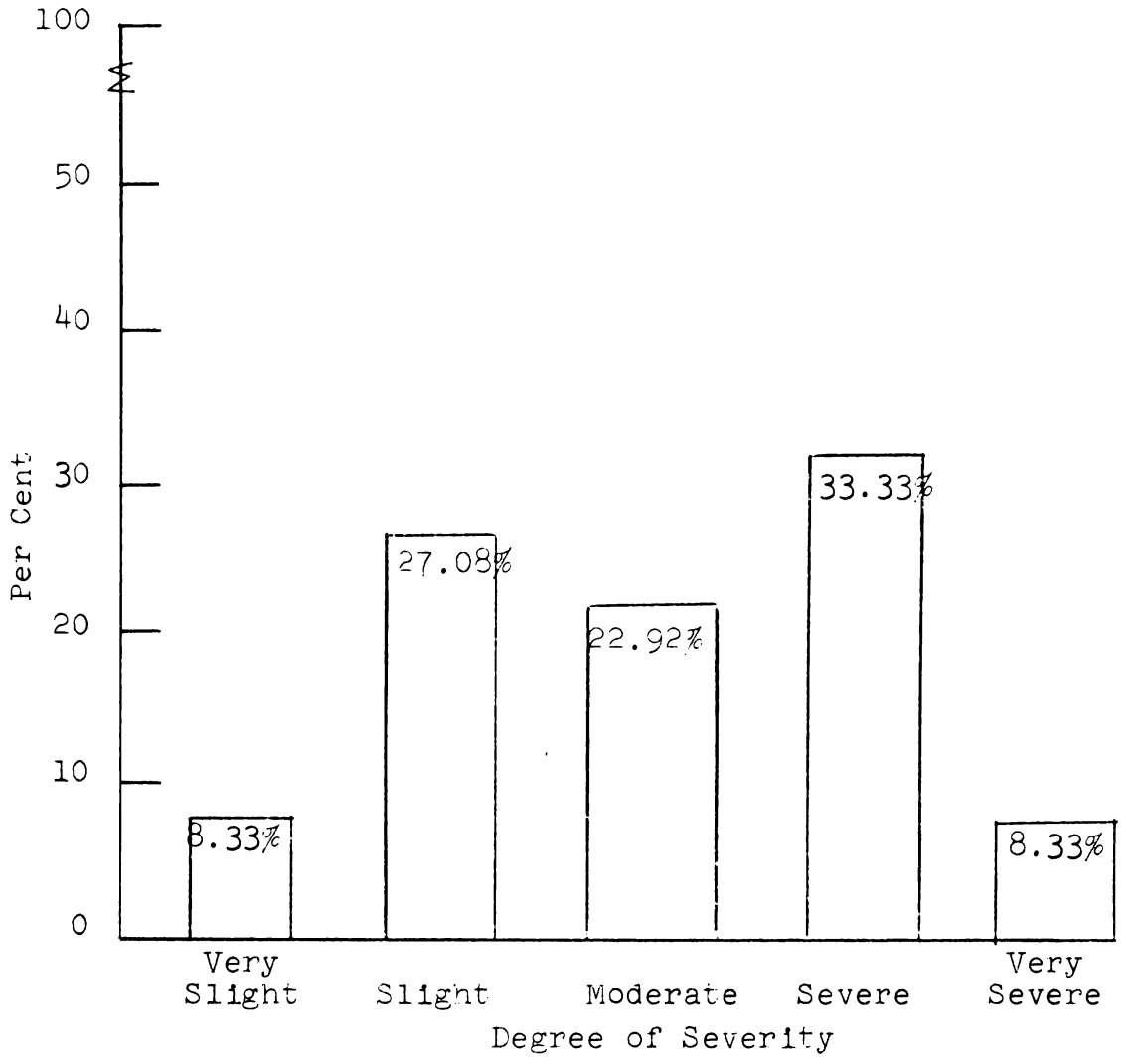
A study of the graphs in which the degree of severity of the functional articulatory disorders is pictured for



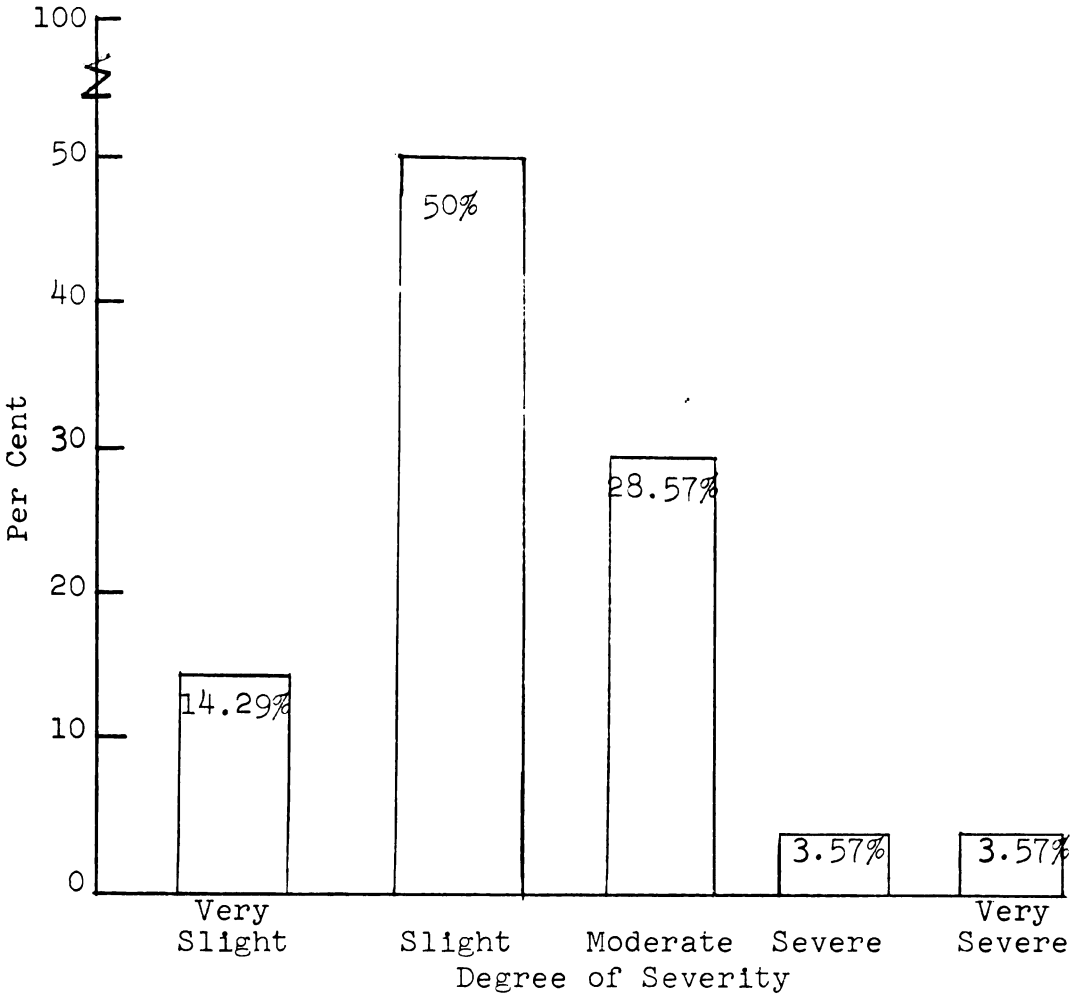
Graph 2.--Comparison of Socio-Economic Categories Represented by 216 Children with Functional Articulatory Disorders and the Same Number of Children, Randomly Selected, with No Functional Articulatory Disorders.

each individual socio-economic category (Graphs 3 through 9) shows a tendency for more children in this sample of population to have slight, moderate, and severe disorders rather than the two extremes, the very slight and very severe degrees. This could be attributed partly to the fact that there might be a normal tendency for speech correctionists to adopt a "middle-of-the-road" policy in rating the speech of the children. However, this graph seems to indicate no definite trend in one category or "neighboring" categories to have a marked exception to the pattern of the larger percentages of children having the slight, moderate, or severe degrees of severity with the percentages tapering off at the extremes. These results would further substantiate the finding that there is a lack of relationship between socio-economic status and degree of severity of functional articulatory disorders.

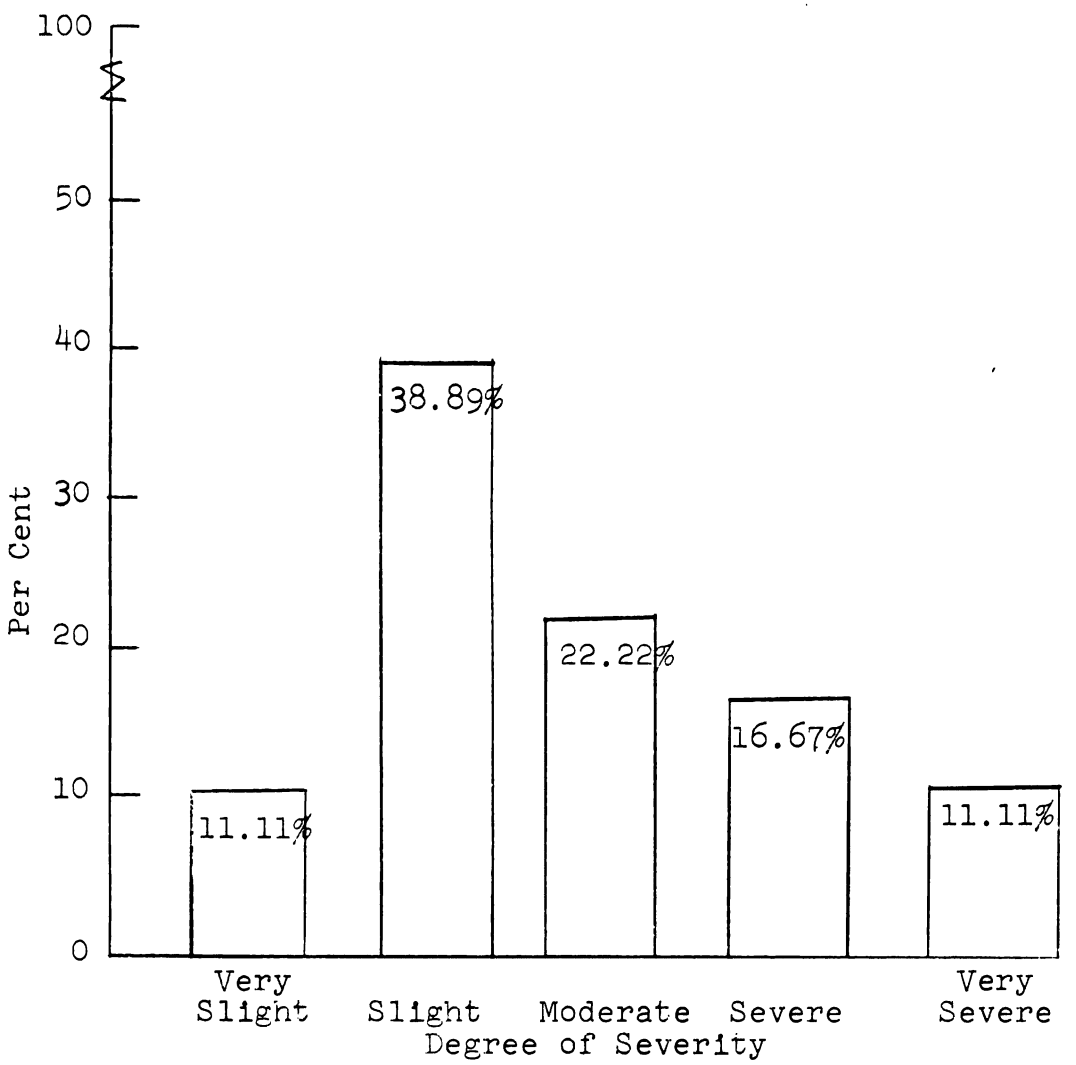
The scores on the *t* tests and the standard deviations that were obtained in this study are consistent with the general results illustrated in the graphs. In Table 2 in which the results of *t* tests for evaluation of differences among degrees of severity of functional articulatory disorders are tabulated, all but three of the ten *t* scores were significant at 1% level of confidence. This means that the probability associated with the degrees of severity in these subjects is great, and, therefore, we would reject the proposed null hypothesis which states that there is no



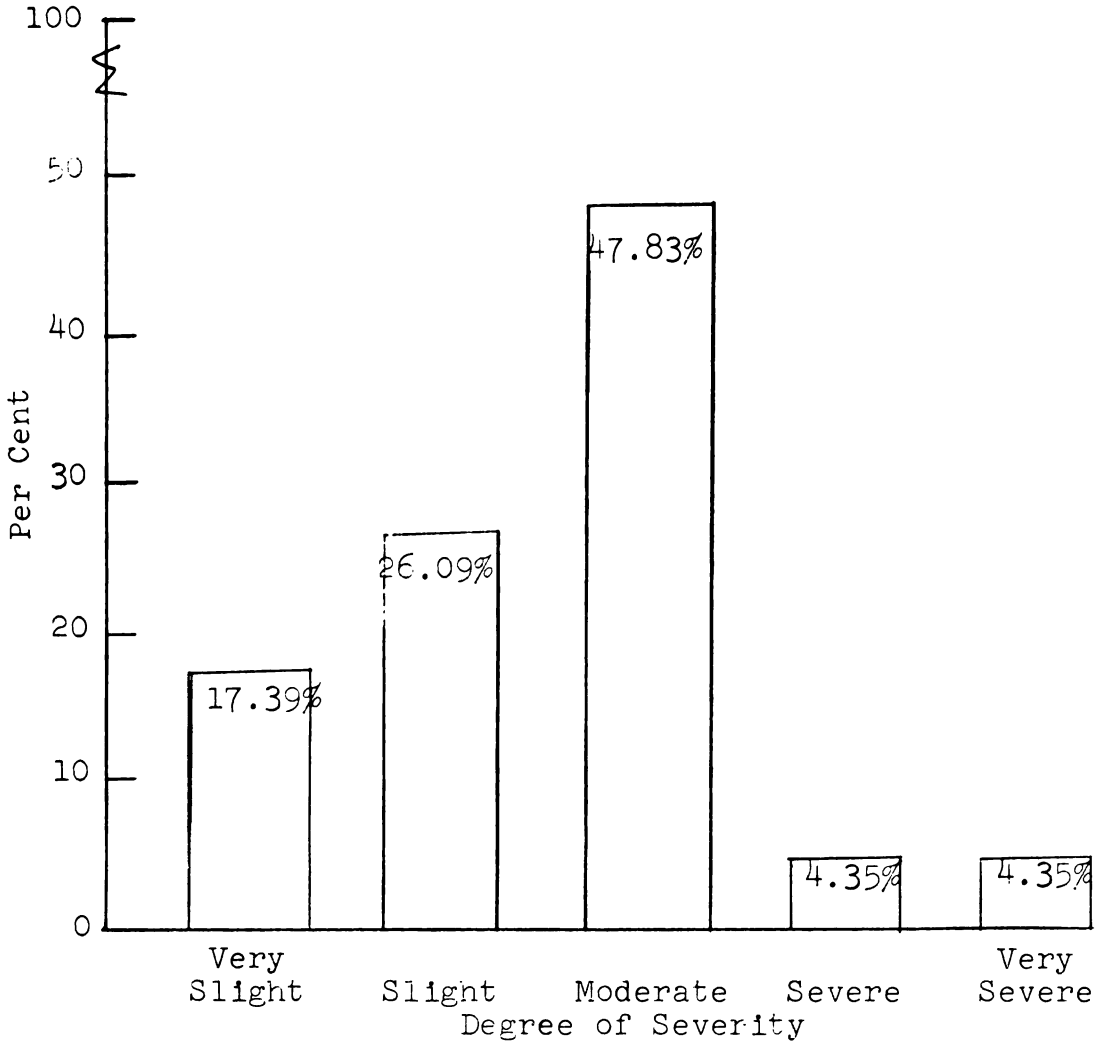
Graph 3.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category I (professionals, proprietors of large businesses).



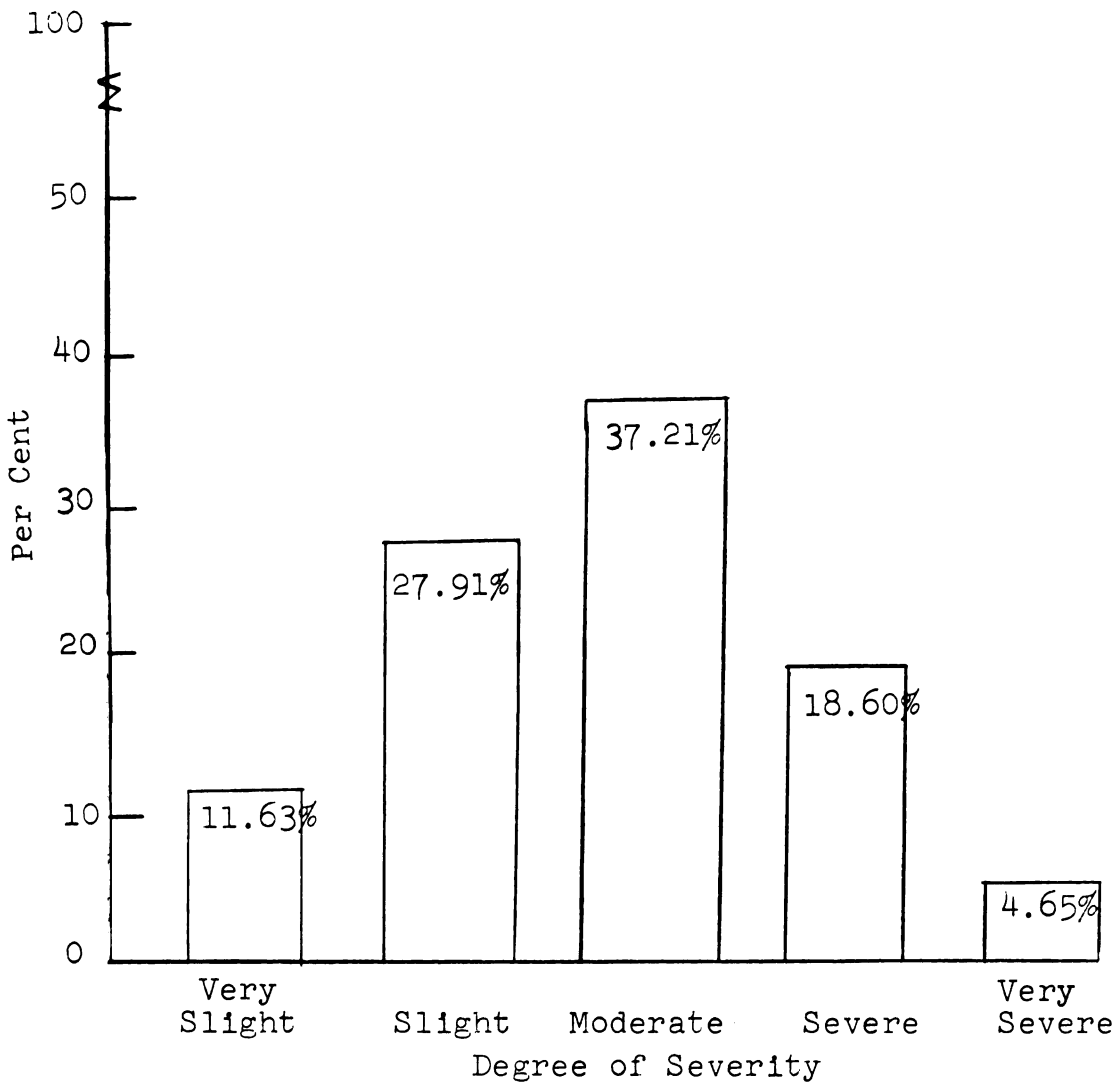
Graph 4.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category II (semi-professionals, lesser officials of large businesses).



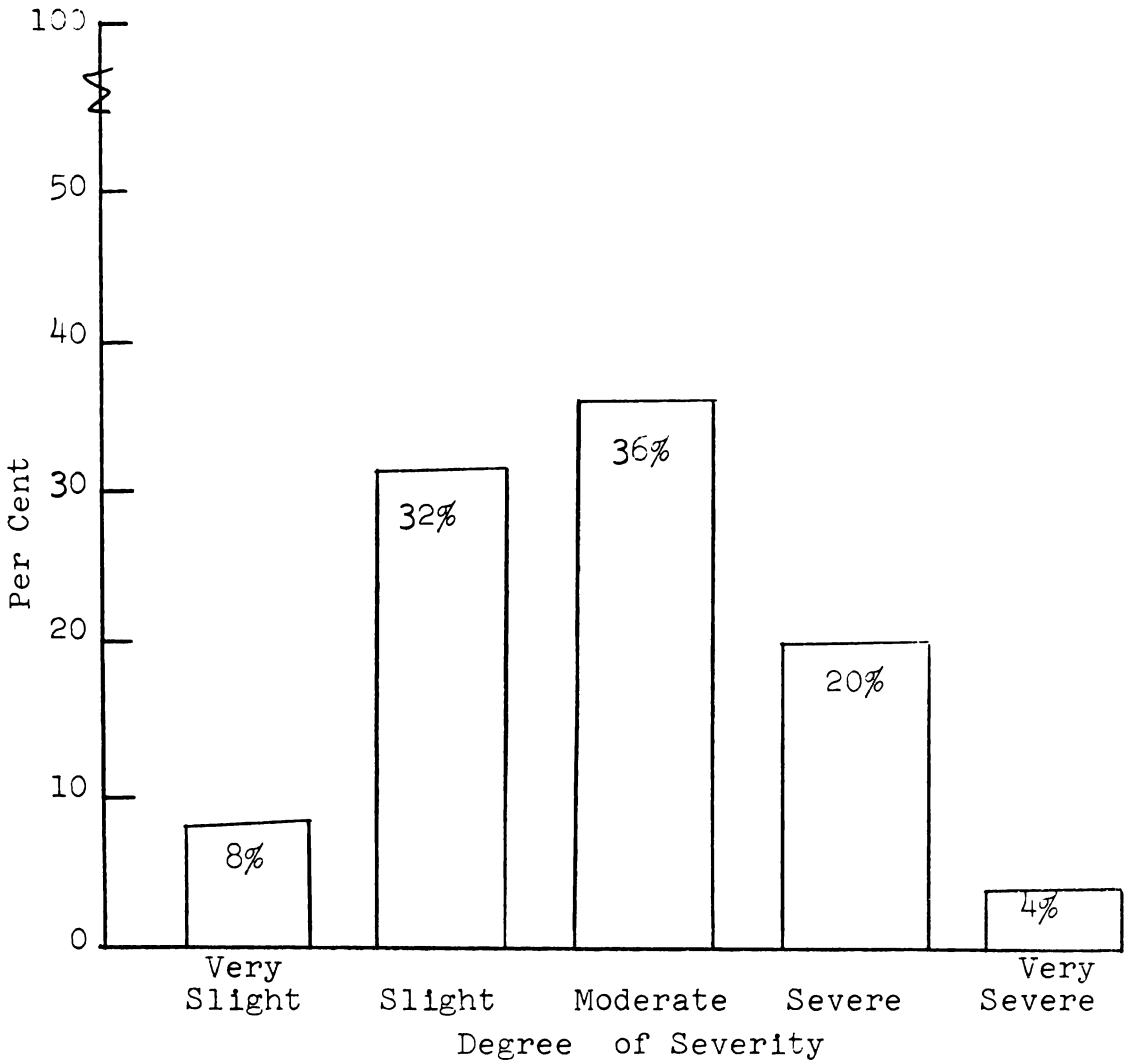
Graph 5.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category III (clerks and kindred workers).



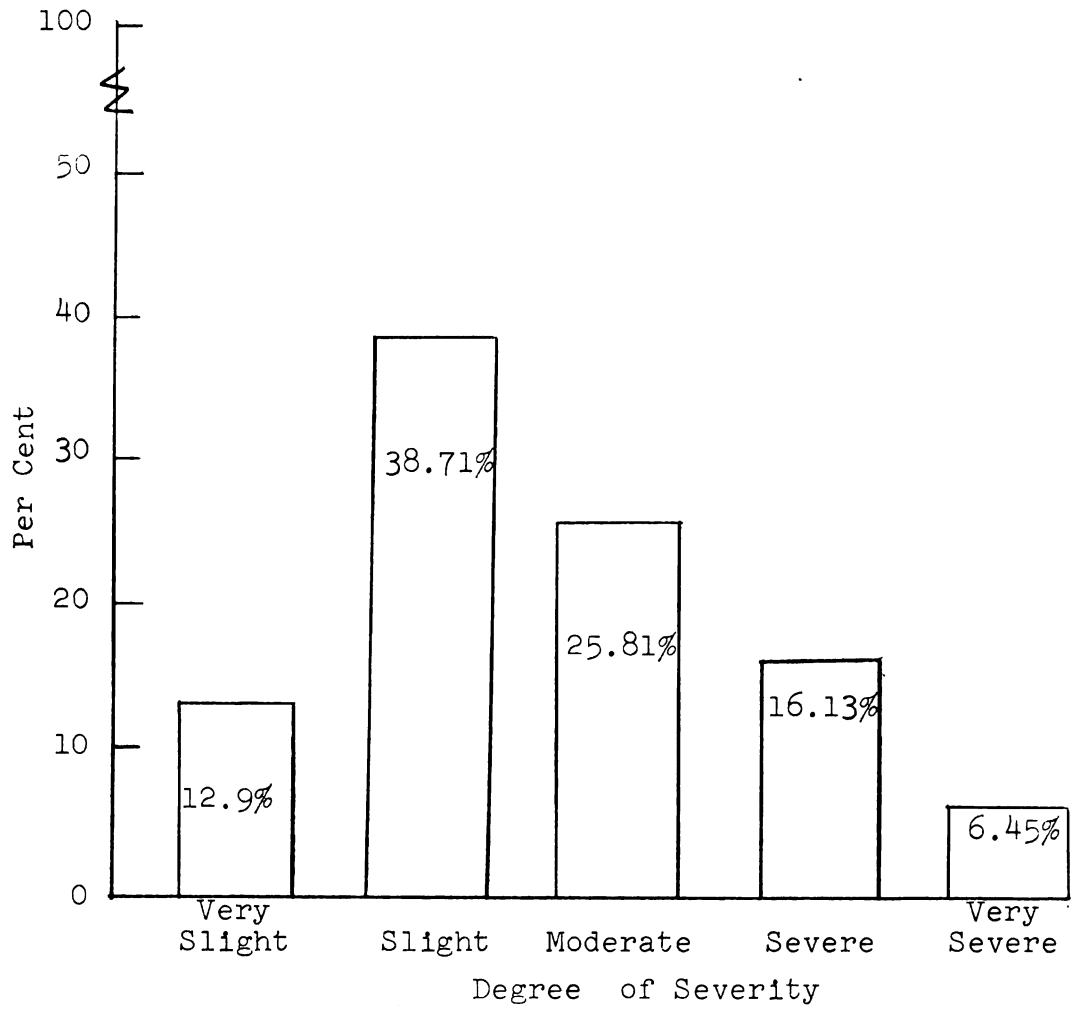
Graph 6.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category IV (skilled workers).



Graph 7.--Degree of Severity of Functional Articulation Disorders, in Percentages, for Subjects in Socio-Economic Category V (proprietors of small businesses, medium-skilled workers).



Graph 8.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category VI (semi-skilled workers).



Graph 9.--Degree of Severity of Functional Articulatory Disorders, in Percentages, for Subjects in Socio-Economic Category VII (unskilled workers).

TABLE 2

RESULTS OF t TESTS FOR EVALUATION OF DIFFERENCES AMONG DEGREES OF SEVERITY OF FUNCTIONAL ARTICULATORY DISORDERS

Group	Mean	df	t	Level of Confidence
Very slight Slight	11.95 34.38	8	6.39	Significant at .01
Very slight Moderate	11.95 31.51	8	5.15	Significant at .01
Very slight Severe	11.95 16.09	8	1.03	Not significant at .05
Very slight Very severe	11.95 6.07	8	3.61	Significant at .01
Slight Moderate	34.38 31.51	8	.59	Not significant at .05
Slight Severe	34.38 16.09	8	3.64	Significant at .01
Slight Very severe	34.38 6.07	8	8.21	Significant at .01
Moderate Severe	31.51 16.09	8	2.94	Significant at .01
Moderate Very severe	31.51 6.07	8	6.80	Significant at .01
Severe Very severe	16.09 6.07	8	2.52	Significant at .05

significant difference between various degrees of severity of functional articulatory disorders over levels of socio-economic status. Table 2 further shows that only two comparisons, between very slight and moderate and between slight and moderate, were not significant at 5% level of confidence. Only one comparison, between severe and very severe, was significant at 5% level of confidence, though not at 1% level of confidence.

In Table 3 we see the results of *t* tests for evaluation of differences among socio-economic categories. In this computation each socio-economic category was compared with each other category. Only seven of the 21 comparisons were found to be significant at 1% level of confidence. However, five the *t* scores were discovered to be significant at 5% level of confidence. This means that 12 of the 21 *t* scores, a little over half, were significant at 5% or lower level of confidence. The remaining nine *t* scores were small. Therefore, the null hypothesis which states that there is no significant difference among levels of socio-economic status over degrees of severity of functional articulatory disorders could not be completely rejected.

In Table 3 there is no observable pattern of comparisons that were highly significant or not highly significant. One can only conclude that the probability associated with differences among socio-economic categories in this population sample is small. However, since 12 of the 21 *t* tests were

TABLE 3

RESULTS OF *t* TESTS FOR EVALUATION OF DIFFERENCES AMONG SOCIO-ECONOMIC CATEGORIES

Group*	Mean	df	*t*	Level of Confidence
I II	24.46 11.53	12	2.23	Significant at .05
I III	24.46 9.29	12	2.91	Significant at .01
I IV	24.46 10.20	12	2.54	Significant at .05
I V	24.46 19.29	12	.99	Not significant at .05
I VI	24.46 10.61	12	2.72	Significant at .01
I VII	24.46 14.56	12	1.96	Significant at .05
II III	11.53 9.29	12	.66	Not significant at .05
II IV	11.53 10.20	12	.33	Not significant at .05
II V	11.53 19.29	12	2.32	Significant at .05
II VI	11.53 10.61	12	.29	Not significant at .05
II VII	11.53 14.56	12	.97	Not significant at .05

*Key:
I = Professionals, proprietors of large businesses
II = Semi-professionals, lesser officals of large businesses
III = Clerks and kindred workers
IV = Skilled workers
V = Proprietors of small businesses, medium-skilled workers
VI = Semi-skilled workers
VII = Unskilled workers

TABLE 3--Continued

Group*	Mean	df	t	Level of Confidence
III IV	9.29 10.20	12	.29	Not significant at .05
III V	9.29 19.29	12	4.52	Significant at .01
III VI	9.29 10.61	12	.58	Not significant at .05
III VII	9.29 14.56	12	2.82	Significant at .01
IV V	10.20 19.29	12	2.98	Significant at .01
IV VI	10.20 10.61	12	.14	Not significant at .05
IV VII	10.20 14.56	12	1.55	Not significant at .05
V VI	19.29 10.61	12	4.52	Significant at .01
V VII	19.29 14.56	12	2.69	Significant at .01
VI VII	10.61 14.56	12	2.62	Significant at .05

significant at least at the 5% level of confidence, we cannot entirely discount the results.

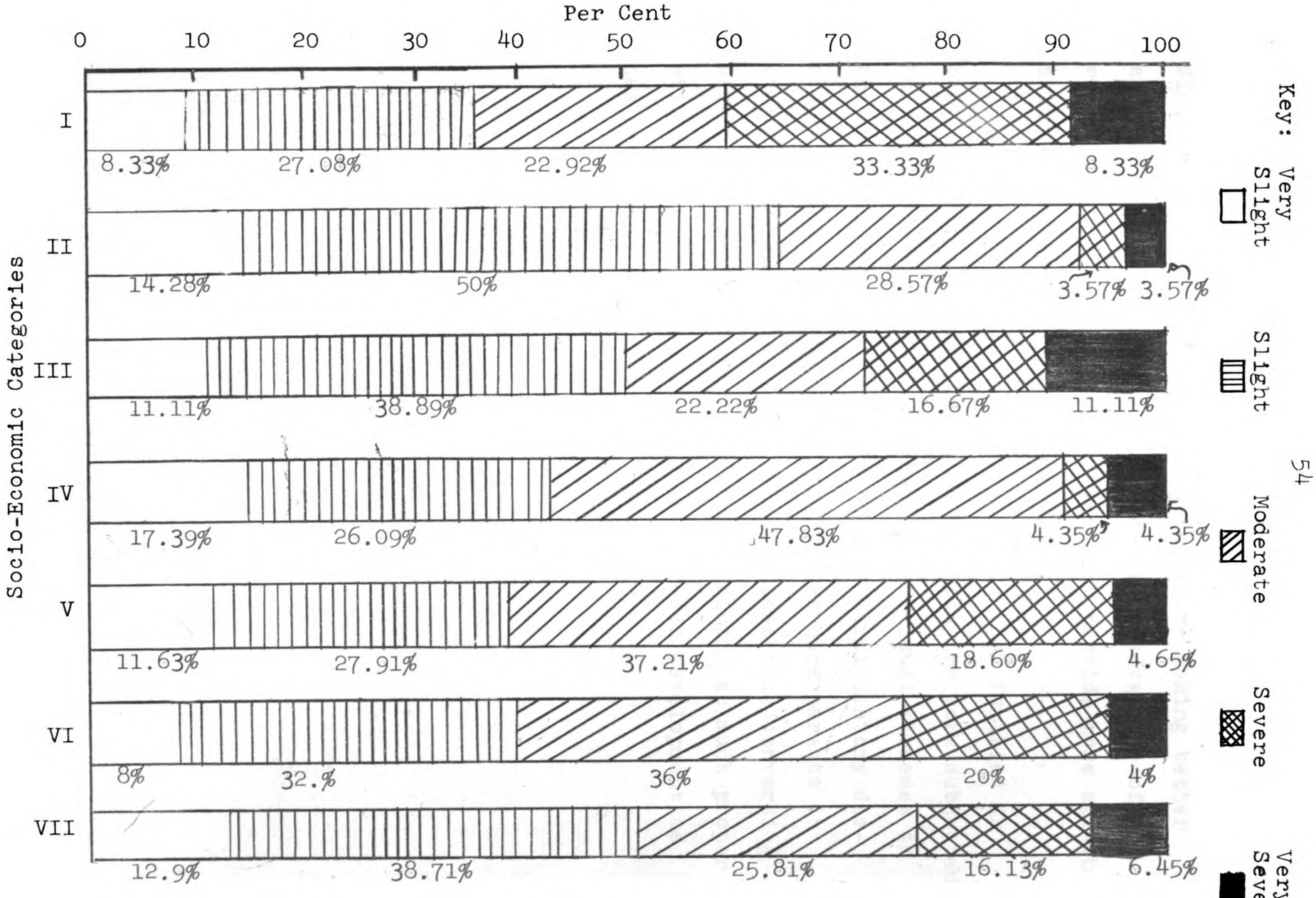
Standard deviations for evaluation of differences among socio-economic categories may be noted in Table 4. The variability of numbers of subjects in socio-economic categories ranged from 5.67 in Category II (semi-professionals and lesser officials of large businesses) down to 2.08 in Category III (clerks and kindred workers). The standard deviations, in order of size, were Category II, I, V, IV, VII, VI, and III. Here we see no regular lessening nor increasing of standard deviations from the lower to the higher or from the higher to the lower levels of socio-economic levels. On this basis we would reject the proposed null hypothesis stating that there is no variation within a socio-economic level in degrees of severity of functional articulatory disorders. The finding that there is no relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders is here further substantiated.

If it can be accepted that there is no relationship between these factors, we would wonder what factors are at work in present-day society to alter this speech situation. Early studies indicated a positive relationship between socio-economic status of the family and language and speech development in the children. Perhaps the fact that children today may hear more adult speech in their environment,

TABLE 4

STANDARD DEVIATIONS FOR EVALUATION OF DIFFERENCES AMONG SOCIO-ECONOMIC CATEGORIES

Comparison	SD
I (Professionals, proprietors of large businesses)	5.41
II (Semi-professionals, lesser officials of large businesses)	5.67
III (Clerks and kindred workers)	2.08
IV (Skilled workers)	4.16
V (Proprietors of small business, medium-skilled workers)	4.47
VI (Semi-skilled workers)	3.54
VII (Unskilled workers)	3.90



Graph 10.--Comparison of Socio-Economic Categories and Incidence of Functional Articulatory Disorders, in Degrees of Severity, in 216 Elementary School Children.

especially due to television, may be an influencing factor. Since skilled and semi-skilled workers are making better and better wages, perhaps they are taking advantage of opportunities, such as traveling, which provide more speech stimulation for their children.

On the other hand, it may be true that families in the higher socio-economic levels may today be more subjected to social pressures that are causing emotional stresses in their family relationships. Functional articulatory disorders in the children could result. Perhaps parents in the upper social classes are spending less time conversing with their young children and are not giving as much proper stimulation during their children's speech development as has been previously observed.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

According to past studies, a relationship does exist between socio-economic status and speech and language development. It has been concluded that children from the lower socio-economic levels develop their speech patterns at a slower rate and begin their speech development at a later age, than do children from the higher socio-economic levels. A higher incidence of articulatory disorders of a functional nature would, therefore, be expected in elementary school children who have been reared in homes from the lower socio-economic levels.

Recent trends in modes of living, especially an increase in cultural opportunities among the lower socio-economic levels and new social pressures at all economic levels, may have altered the relationship between socio-economic status and speech and language development. For instance, children are exposed to more adult speech via television at all socio-economic levels.

The purpose of this study has been to examine the relationship between socio-economic status and the incidence and degree of severity of functional articulatory disorders in elementary school children.

If the results of this study indicate that the upper class homes are producing as many children with functional articulatory disorders as are the lower class homes, then perhaps parents of pre-school children, especially in the upper classes, need to be motivated to further stimulate the speech development of their children, but without pressuring the children to achieve a speech standard beyond their capabilities at each age.

A review of the literature regarding relationships between speech and language development and socio-economic status and between presence of functional articulatory disorders and socio-economic status indicates conflicting results. Early studies showed a correlation between speech and language development and socio-economic status. More recent studies in this regard indicate less correlation between speech and language development and socio-economic status and suggest that related factors, such as radio and television, may be having an influence on speech development. Recent studies in which an attempt was made to learn the correlation between incidence of articulatory disorders and socio-economic status have indicated a relationship between the two factors, but methods of research have discounted the results to some extent.

The subjects for this study were 432 elementary school children, 216 with functional articulatory disorders and 216 children, randomly selected, with no functional articulatory

disorders. The articulatory speech of each child with a functional articulatory disorder was rated as very severe, severe, moderate, slight, or very slight. Each of the 432 subjects was placed in a socio-economic category according to the parental occupation. The categories were as follows: professionals and proprietors of large businesses, semi-professionals and lesser officials of large businesses, clerks and kindred workers, skilled workers, proprietors of small businesses and medium skilled workers, semi-skilled workers, and unskilled workers.

The results of this study indicate that there is no significant relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders in elementary school children.

Conclusions

On the basis of the results of this study that showed an absence of a significant relationship between socio-economic status and the incidence and the degree of severity of functional articulatory disorders, the following conclusions are stated:

1. Socio-economic status should not be considered to be as significant an element in the environmental factors related to incidence of functional articulatory disorders as it has been considered to be previous to this time.

2. Socio-economic status should not be considered to be as significant an element in the environmental factors related to degree of severity of functional articulatory disorders as it has been considered to be previous to this time.
3. In no particular socio-economic category are there significantly more elementary school children with functional articulatory disorders that in any other one socio-economic category.
4. In no particular socio-economic category are there elementary school children with more severe functional articulatory disorders than in any other one socio-economic category.

Implications for Further Research

Since the results of this study are not necessarily in agreement with the findings of most previous studies, especially those involving correlations between socio-economic status and speech and language development, more extensive research in the area of socio-economic status and speech would be recommended. Personal interviews could be utilized effectively to determine even more precisely the socio-economic category of the family. Different types of geographic areas could be examined to discover if these same results would be obtained.

A very valuable type of research would involve attempts at learning what factors may be operating in society that may

be altering the relationship between socio-economic status and speech and language development as well as the relationship between socio-economic status and the occurrence of functional articulatory disorders. It would be valuable to learn whether the relationship has changed, if it has, because of changes in speech stimulation practices between parents and other adults and children or whether an increase in emotional problems is a significant factor.

Finally, research related to examining the relationship between socio-economic status and speech and language development would add to our body of information regarding functional articulatory disorders in children.

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APPENDIX A

DISTRIBUTION OF SUBJECTS AMONG LEVELS OF SOCIO-ECONOMIC STATUS ACCORDING TO PARENTAL OCCUPATION

Group	Number With Functional Articulatory Disorders	Number With No Functional Articulatory Disorders
I. Professionals and proprietors of large businesses:		
1. Lawyers	4	2
2. Doctors	11	10
3. Engineers	15	5
4. Professors	13	14
5. Veterinarians	1	1
6. Ministers (seminary graduates)	1	2
7. Chemists	1	0
8. Architects	0	2
9. Pharmacists	0	1
10. Region and division managers of large enterprises	2	3
	48	40
II. Semi-professionals and lesser officials of large businesses:		
1. High school teachers	0	9
2. Ministers (some training)	1	0
3. Proprietors of businesses, $20,000-$75,000	4	2
4. Assistant managers and office and department managers of large businesses	6	16
5. Assistants to executives	6	0
6. Accountants	3	10
7. Real estate and insurance salesmen	4	4
8. Farm owners	1	0
9. Entomologists	1	0
10. Draftsmen	2	1
	28	42

APPENDIX--Continued

Group	Number With Functional Articulatory Disorders	Number With No Functional Articulatory Disorders
III. Clerks and kindred workers:		
1. Proprietors of businesses, $5,000-$20,000	6	4
2. Social workers	2	1
3. Ministers (no training)	0	1
4. Minor officials of businesses	2	4
5. Auto salesmen	3	1
6. Cashiers	0	1
7. Postal clerks, mail carriers	2	2
8. Secretaries to executives	0	2
9. Supervisors of railroad and telephone workers	0	1
10. Contractors	3	2
	18	19
IV. Skilled workers (craftsmen):		
1. Proprietors of businesses, $2,000-$5,000	0	1
2. Stenographers	0	1
3. Railroad ticket agents	1	0
4. Retail salesmen	17	19
5. Foremen	3	5
6. Owners of electrical, plumbing, or carpenter businesses	2	0
7. Dry cleaners	0	1
	23	27
V. Proprietors of small businesses and medium-skilled workers:		
1. Dime store clerks	1	0
2. Carpenters	7	3

APPENDIX--Continued

Group	Number With Functional Articulatory Disorders	Number with No Functional Articulatory Disorders
3. Electricians	1	6
4. Radio and television repairmen	0	1
5. Telephone and telegraph repairmen	2	0
6. Barbers	1	0
7. Firemen	0	1
8. Policemen	4	1
9. Seamstresses	0	2
10. Mechanics, machinists	6	8
11. Other medium-skilled workers	21	14
	43	36
VI. Semi-skilled workers:		
1. Semi-skilled laborers	10	9
2. Moulders	0	1
3. Night policemen, watchmen	3	4
4. Taxi and truck drivers	0	6
5. Gas station attendants	0	2
6. Tenants of small farms	12	7
	25	29
VII. Unskilled workers:		
1. Heavy laborers	21	16
2. Janitors	1	1
3. Migrant farm laborers	9	6
	31	23
TOTALS	216	216