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ABSTRACT

The study, involving 100 children (11 and 12 years old), was designed to generate descriptive data regarding the behavioral and psychometric characteristics of exceptional children in the public schools. A review of the literature revealed that it is difficult to make a differential diagnosis among educable mentally retarded (EMR), emotionally disturbed (ED), and learning disabled (LD) students when behavioral and psychometric characteristics of each group are considered. Limited empirical research has been undertaken to quantify similarities or differences in the characteristics of these categories of exceptional students in the public schools. Five groups of Ss (20 EMR, 20 ED, 20 LD, 20 at-risk, and 20 normal) were directly observed in the public schools and were assessed by commonly used psychometric measures. The latter two groups served as controls to evaluate the effectiveness of the behavior observation procedure and to serve as comparison groups for the observational procedure and the psychometric test battery. Teams of observers and certified psychometricians collected behavioral and psychometric data in 22 elementary schools. Results indicated that the exceptional, at-risk, and normal students did not differ in behavioral characteristics. However, data suggested that exceptional children showed lower frequencies of non-task oriented behavior and higher frequencies of task oriented behavior when placed in special education resource rooms. Cognitive, achievement, self concept, and visual-motor measures were administered to all groups. Results suggested that exceptional children do not differ among groups on achievement, self concept, and visual-motor measures. At-risk and normal Ss generally yielded significantly higher scores on all psychometric assessment devices. Findings of the investigation with regard to the labeling and placement of exceptional children in special education programs were discussed. Also considered were the efficacy of special education resource room programs, noncategorical special education models, and implications for teacher preparation. (Author/SW)

FINAL REPORT

BEHAVIORAL AND PSYCHOMETRIC CHARACTERISTICS OF EDUCABLE MENTALLY RETARDED, EMOTIONALLY HANDICAPPED, LEARNING DISABLED, AT-RISK AND NORMAL STUDENTS

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ABSTRACT

Behavioral and Psychometric Characteristics of
Educable Mentally Retarded, Emotionally Handicapped,
Learning Disabled, At-Risk and Normal Students

Recent literature has suggested that it is difficult to make a differential diagnosis among educable mentally retarded (EMR), emotionally disturbed (ED), and learning disabled (LD) students when behavioral and psychometric characteristics of each group are considered. Limited empirical research has been undertaken to quantify similarities or differences in the characteristics of these categories of exceptional students in the public schools. This study was an attempt to generate descriptive data regarding the behavioral and psychometric characteristics of these children in the public schools.

One hundred 11 and 12 year old children were directly observed in the public schools. They also were assessed by commonly used psychometric measures. Twenty students from each category of exceptionality (i.e., EMR, ED, LD) were observed in the regular class and resource room. Twenty at-risk and twenty normal students were also observed. The later groups served as control groups to evaluate the effectiveness of the behavior observation procedure and to serve as comparison groups for the observational procedure and the psychometric test battery.

Teams of observers and certified psychometricians collected behavioral and psychometric data in twenty-two elementary schools in the Charlotte-Mecklenburg Public Schools, Charlotte, North Carolina.

The results indicated that the exceptional, at-risk and normal students did not differ in behavioral characteristics. However, data suggested that exceptional children showed lower frequencies of non-task oriented behavior and higher frequencies of task oriented behavior when placed in special education resource rooms.

Cognitive, achievement, self-concept and visual-motor measures were administered to all groups. Results suggest equivocal findings. However, it also suggested by data analysis that exceptional children do not differ among groups on achievement, self-concept and visual-motor measures. At-risk and normal students generally yielded significantly higher scores on all psychometric assessment devices. There were areas of overlap of scores for exceptional children groups and the at-risk group that make differential diagnosis difficult.

Results of the investigation are discussed with regard to the labeling and placement of exceptional children in special educational programs. Also considered are the efficacy of special education resource room programs, non-categorical special education models, and implications for teacher preparation.

BEHAVIORAL AND PSYCHOMETRIC CHARACTERISTICS OF EMOTIONALLY DISTURBED, LEARNING DISABLED, EDUCABLE MENTALLY RETARDED, AT-RISK, AND NORMAL STUDENTS

Introduction

The field of special education has traditionally operated from a categorical basis; that is, handicapped children have received services after they have been identified, labeled, and placed in special classrooms based upon the type of disability they exhibited. The extent to which these separate categories represent distinct clinical and/or educational groups has recently been questioned (Hallahan & Kauffman, 1976; Neisworth & Greer, 1975; Neisworth & Smith, 1978; Sherry, 1979, 1982). Some special educators feel that the overlap in child characteristics enables teachers trained to teach one exceptionality to teach other special children as well; others suggest that differences between the groups necessitate selective instructional procedures based on classification (Becker, 1978).

Similarities and differences between exceptional children and nonexceptional children have been investigated (Bryan, 1974; Bryan & Wheeler, 1972; Gampel, Gottlieb, & Harrison, 1974; Hayes & Prinz, 1976; Kahn, 1976; McMillan, 1975; Ysseldyke, Algozzine, Shinn, & McGue, in press); as have selected features within a special education category (Hallahan, 1975; Mercer & Snell, 1977; Siperstein & Gottlieb, 1978; TeBeest & Dickie, 1976; Trippi, 1973) and between categories (Becker, 1978; Frankel & Graham, 1977; Gajar, 1979, 1980; Koegh, Becker, Kukic, & Kukic, 1972; Sherry, 1979, 1982; Sherry & Algozzine, 1978). To date, the question of whether special education categories represent distinct clinical and/or educational entities remains unanswered (Becker, 1978).

Statement of the Problem

Information regarding the similarities and differences among the special education categories of emotionally disturbed (ED), learning disabled (LD), and educable mentally retarded (EMR), remains in critical need; information regarding factors which differentiate exceptional children from their nonhandicapped peers is also needed. The present research addressed these problems by examining the following general objectives.

1. To compare psychometric test performance among groups of ED, LD, EMR, At-Risk, and non-exceptional students.

2. To compare behavioral characteristics of these groups of children in the regular classroom and the special education resource room (for exceptional students).

3. To identify a set of variables which may predict classification or non-classification of the special education categories.

The purpose, then, of this investigation was to provide additional empirical data regarding the behavioral characteristics and psychometric characteristics of the five groups of children included for study. To date, empirical studies have not clarified special class placement procedures. Collection of data regarding behavioral and psychometric characteristics may provide special educators with concrete support for placement and treatment decisions for exceptional students.

The present practice of placing students in special classes on the basis of diagnostic category (i.e., educable mentally retarded, emotionally handicapped, learning disabled) does not possess the logical appeal that grouping in terms of behavioral functioning and characteristics provide (Hallahan & Kauffman, 1976, 1977). This notion has provided the impetus for the increase in the popularity of noncategorical special education. The movement has occurred for at least three reasons. First, widespread disenchantment with "labeling" has lead many special educators to conclude that placing children in categorically labeled classrooms is an unacceptable practice. Second, there is no rational basis, in terms of instructional efficacy, for grouping in accordance with categorical labels now used (Hallahan & Kauffman, 1977).

Third, a more recent reason has occurred because of budgetary concerns that local and state educational agencies have expressed. The funding mechanism for special classes for mildly handicapped students in public schools is being altered. With reduced funding levels and changed funding priorities local educational agencies have consolidated their categorical special education classes into classrooms that contain children with varying exceptionalities. These classrooms are appearing today in many states under the rubric of cross categorical programs.

Attempts have been made at noncategorical descriptions of exceptional children (Iscoe, 1962; Quay, 1968). But, these have not had the impact on special education as those which have emerged from actual school programs (Birnbauer & Lawler, 1964; Hewett, 1968; Taylor, Artuso, Soloway, Hewett, Quay, & Stillwell, 1972). Hewett (1974) has described noncategorical school program concepts. Included in his noncategorical special education textbook is a description of the psychology of all exceptional children along four basic dimensions of human functioning related to adaptation to the physical environment, sociality, intelligence, and potential adult status. The education of all exceptional children is treated in reference to a hierarchy of learning levels. Each child is described in relation to this hierarchy of educational goals based on observable behavior. Basic classroom difficulties are managed in terms of a child's ability to attend to tasks, to follow directions, to function independently of the teacher, to function socially, and to acquire academic skills.

Hewett (1974) has interwoven nearly all significant research and curriculum literature from nine traditional categories of exceptional children within these dimensions. What emerged is that there are far more similarities among categories than differences. In short, Forness (1976) concluded that special education practices can be conceptualized more effectively outside of traditional labeling and categorical distinctions.

However, there exists little evidence from empirical research to provide support for or against noncategorical special education programs. The purpose of this study was to provide more detailed data about the behavioral characteristics of exceptional students in the classroom <u>and</u> to relate them to the psychometric characteristics of those students identified as ED, LD, EMR, at-risk, and non-exceptional. Based on the premises forwarded by Forness (1976), Hallahan and Kauffman (1976, 1977) and Hewett (1974) specific observable classroom behaviors were quantified. The behavioral characteristics evaluated by present research included those behaviors which an exceptional child exhibits in the classroom that affect his ability to attend to tasks, follow directions, function independently of the teacher, and function socially in the classroom.

The classroom behaviors observed have been operationally defined by Becker, Madsen, Arnold, and Thomas (1967) and Walker, Mattson, and Buckley (1971). Specific behaviors that were observed included: (1) gross motor behaviors, (2) disruptive noise, (3) disturbing others, (4) orienting responses, (5) blurting out, (6) talking, (7) ignoring teacher, (8) improper position, (9) task oriented independent, and (10) task oriented dependent behaviors. The first eight definitions or categories of behaviors may be described as behaviors that interfere with an exceptional child's success in the classroom (i.e., non-task oriented behaviors). The last two definitions of behaviors (9 and 10) include appropriate behavioral responses for students in the classroom (see Appendix A). This broad classification of classroom behaviors is designed to assess the extent of observable behavioral overlap among the categories of ED, LD, EMR, and at-risk students.

Each student participating in the study was also administered a battery of tests to assess psychometric characteristics. The test battery included the Wechsler Intelligence Scale for Children-Revised (WISC-R), the Peabody Individual Achievement Test (PIAT), the Bender Visual-Motor Gestalt Test, the Developmental Test of Visual-Motor Integration, and the Piers-Harris Self-Concept Scale. Descriptions of each of these devices, including information on their technical adequacy, are included in Salvia and Ysseldyke (1981). The battery was selected as one including those devices commonly used to assess ED, LD, and EMR children.

Additionally, the Woodcock-Johnson Psychoeducational Test Battery Achievement Subtests (Woodcock & Johnson, 1978) were administered to each child. The Woodcock-Johnson is an individually administered wide-range comprehensive set of measures of cognitive ability, academic achievement, and interest. Administration of the psychometric test battery to the subjects selected for the study permitted the evaluation of performance in four domains: (1) cognitive, (2) academic achievement, (3) perceptual-motor, and (4) self-concept.

In summary, the purpose of this study was to provide empirical data on the extent of overlap of specific characteristics among samples of ED, LD, EMR, and at-risk students in the classroom. Quantification of behavioral and psychometric data may provide support for theoretical positions favoring noncategorical special education placement.

Traditional identification practices are heavily based on measures (i.e., IQ scores, grade equivalent achievement scores, etc.) which have little value relative to educational programming; Salvia and Ysseldyke (1981) suggest that this may be an erroneous practice. They add that this failure to differentiate the purposes of testing and assessment (i.e., identification vs. program planning) has resulted in inappropriate use of tests and adverse effects in the decision-making process. The University of Minnesota Institute for Research on Learning Disabilities (Ysseldyke, Shinn, & Thurlow, 1978) has investigated the assessment-intervention process as it relates to learning disabled children. The Institute researchers believe this process must be studied because of the lack of an adequate definition of learning disabilities and the "lack of agreement on the kinds of behaviors assessed for the purpose of planning interventions for the learning disabled child" (Ysseldyke, Shinn, & Thurlow, 1978, p. 75).

The present study represented a replication and extension of previous research focusing on the behavioral characteristics of exceptional children (Sherry & Algozzine, 1978; Sherry, 1979, 1982). It also represented an expanded view of similar research undertaken by The University of Minnesota Institute for Research on Learning Disabilities. This investigation was an attempt to further clarify the behavioral characteristics of exceptional students and to correlate the psychometric characteristics of those students to operationally defined and observed classroom behaviors.

Impact on Handicapped Children

Recent literature has suggested that it is difficult to make a differential diagnosis between educable mentally retarded (EMR), emotionally disturbed (ED), and learning disabled (LD) students when only the behavioral characteristics of each group are considered. Behaviors of ED, LD, and EMR students are so closely intertwined that accurate differentiation is often impossible (Benda, 1954; Bialer, 1970; Cantor, 1960; Gajar, 1979, 1980; Lilly, 1977; Milgram, 1972; Sherry, 1982).

Neisworth and Greer (1975) suggested that diverse causes could produce similar functional problems and that attention to relevant instructional dimensions (i.e., stimulus organization, intensity, etc.) was more important than instruction based on categorical handicap. Hallahan and Kauffman (1976, 1977) noted that similarities in etiologies and interventions as well as characteristic behaviors make differential diagnosis of exceptional children difficult and sometimes irrelevant.

In 1972, the Department of Health, Education and Welfare commissioned a systematic review of the classification and labeling of children. The findings of the study commissioned were presented by Hobbs (1974, 1975). As a result of the study it was recommended that a priority be placed on the development of improved classification systems for exceptional children. It was reported that the knowledge base for classifying children and designing appropriate programs for them is inadequate (Hobbs, 1975). Research must be undertaken to improve the presently used classification systems.

Most states currently provide services to exceptional children based upon various categorical labels. An educable mentally retarded student is often one who is impaired in intellectual and adaptive behaviors and whose development reflects his reduced rate of learning (North Carolina Department of Public Instruction, 1980; Kirk, 1964). The emotionally handicapped student is one who exhibits persistent and consistent severe behavioral disabilities which consequently disrupt his own or others' learning processes (Algozzine, Schmid, & Mercer, 1981). For the emotionally handicapped child the inability to achieve academic progress or satisfactory interpersonal relationships cannot be attributed to physical, sensory, or intellectual deficits (North Carolina Department of Public Instruction, 1980).

Learning disabled students exhibit disorders in one or more of the basic psychological processes involved in understanding or using spoken or written language. These may be manifested in brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional handicaps, or environmental disadvantage (National Advisory Committee on Handicapped Children, 1968).

Behavior of retarded children is generally attributed to cognitive variables, emotionally disturbed behavior to personality variables, and learning disabled behavior to perceptual variables. However, retarded individuals and learning disabled students are influenced by social-emotional variables in addition to cognitive variables or disabilities. Equally, inappropriate behavior in the emotionally disturbed may be attributed to disturbances in perceiving and thinking. Future theoretical formulations should attempt to encompass characteristics within all three fields. The major shift in emphasis from differential diagnosis to delineation of behavioral patterns within the individual has been an encouraging development (Forness, 1974, 1976; Milgram, 1972).

Measured intelligence is one variable that can separate the EMR child from the ED and LD child. Becker (1978) identified several areas in which the performance of "educationally handicapped" and educable mentally retarded children could be differentiated; however, he suggested that the differences were no doubt due to "differences in IQ and mental age between the groups" (p. 508). Becker also suggested that the observed differences may have been related to differences in other behaviors of the children (i.e., attending, following directions). He suggested that it would seem that a productive area of research would be that of identifying the extent to which the classroom behaviors of these exceptional children are different.

Social and emotional adjustment is frequently used as an indicator of a differential diagnosis between the groups. Emotionally disturbed students are defined by the degree of maladjustment they exhibit. Hallahan and Kauffman (1976) state that mentally retarded individuals and learning disabled children also exhibit poor adjustment in interpersonal relationships. Therefore, the distinction between the ED, the LD, and the EMR child is even more difficult to assess. Maladaptive behavior is responsible for the initial referral for special educational and psychological evaluation. The evaluation then categorizes the student, placing a label on him based on traditional diagnostic procedures.

When examined from a behaviorist viewpoint that all behavior is learned and that learning takes place as a result of consequent reinforcement or punishment of behaviors there is little difference in theoretical etiologies of the emotionally disturbed, the learning disabled, and the educable mentally retarded (Hallahan & Kauffman, 1976, 1977). Mental retardation (Bijou, 1971), emotional disturbance (Ferster, 1961; Haring & Phillips, 1962), and learning disabilities (Lovitt, 1967; Wallace & Kauffman, 1973) have all been considered within the behavioral framework. These authors provide evidence that none of the categories of exceptionality is unique with regard to environmental causes.

Many mildly retarded students and emotionally disturbed students exhibit characteristics that fit the learning disabilities concepts and definitions. All three exceptionalities respond to similar teaching methods (Hallahan & Kauffman, 1976; Lerner, 1976). Everything else being equal, the EMR hyperactive student with a figure-ground reversal problem, the ED student with a figure-ground reversal problem, the LD student with a figure-ground reversal problem can all be taught in the same manner (Hallahan & Kauffman, 1976).

Ysseldyke and Algozzine (1982) summarize the problem of defining categories of exceptional students. They suggest that our definitions of mildly handicapping conditions (i.e., ED, LD, EMR) are subjective. With the overlap among the characteristics of some mentally retarded, learning disabled and emotionally disturbed children the degree and nature of such overlap depends upon the measures to describe performance (Neisworth and Greer, 1975). In this sense, differences among children may be psychometric contrivances rather than characteristics that have diagnostic or practical importance.

Statement of Hypothesis

While considerable effort has been devoted to the study of differences in the behavior of learning disabled and normal children (Bryan, 1974; Bryan & Wheeler, 1972), few systematic attempts have been made to compare the classroom behavior and cognitive functioning of ED, LD, and EMR children. The purpose of this investigation was to provide empirical data regarding the behavioral characteristics and cognitive domains for the populations of ED, LD, and EMR students. It was hypothesized that when comparing groups of emotionally disturbed, learning disabled, and educable mentally retarded students in the public schools no differences would be observed in selected behavioral characteristics of each group. It was also hypothesized that upon examination of the four domains of mental functioning, no differences would be exhibited among the diagnostic categories included in the investigation.

Summary

Given the current state of our knowledge and intimate relationship between emotional disturbance, learning disabilities, and mental retardation, the diagnostic goal is to aid the individual in developing behaviors that are acceptable to societal standards. The advocate of behavior analysis is not concerned with the diagnostic label of the student; but, instead, is concerned with behavioral and psychometric characteristics of the child. The collection of empirical data proposed by this study points out the weaknesses of our diagnostic categories.

The impetus begun by the Federal government's commissioning of studies to examine the appropriateness of presently used diagnostic categories has been extended by the present study. The technical adequacy of diagnostic and classification systems has been questioned. Clarification of behavioral and psychometric characteristics of ED, LD, and EMR students may provide emprical evidence for the clarification or reorganization of categorical classifications of mildly handicapped students based on observed classroom behaviors and standardized assessment devices.

It is hoped that such a clarification will enable special educators to develop identification procedures which are more predictive of educational outcomes than those currently being used. It is likely that analyses of classroom behavioral performances will be predictive of effective programming for exceptional children.

One benefit of such a development would be related to improved diagnostic reliability. Clearly defined behavioral observation instruments are generally more reliable than other more widely used standardized tests; decisions based on them are therefore more reliable. In light of problems associated with classification based upon typical assessment batteries of standardized tests (Cartwright & Cartwright, 1978; Salvia, 1978), a more reliable, functionally useful evaluation system would appear to benefit all children.

Educators routinely engage in formal and informal assessment procedures to make decisions about children. Little empirical evidence exists to support the nature of current practices in this area; more research is needed to develop ways to improve the current classification and assessment practices and to provide alternative means for developing educational programs for all handicapped children.

Review of Related Literature

Special educators have become increasingly concerned in the past few years about the use of diagnostic or categorical labels in the identification of exceptional students. Disenchantment with labeling children has led many professionals to conclude that placing children in categorically labeled classrooms is an unacceptable practice with no rational basis (Hallahan & Kauffman, 1977).

The review of related literature pertains to studies and positions presented by educators concerning the categorization of exceptional students. The review concerns the following three topics: (1) the use of categorical labels, (2) definitions of exceptional student categories, and (3) the non-categorical movement.

Uses of Categorical Labels

Special education has historically tended to conceive of each category of exceptional child as a distinct and separate unit. A child who is mentally retarded has been treated differently than a child with emotional problems or a child with learning disabilities. Each type of child was assigned to separate special classes taught by teachers who were trained to teach one area of exceptionality. This traditional categorical system of classification and placement required specific differential diagnosis. Emphasis was placed on etiology that resulted in unique characteristics for each group.

Positive Uses of Labels

The labels applied to exceptional children served specific purposes for the special educator. Gallagher (1976) identified three positive uses of labeling children for special education. The first of these purposes is that labels provide a means for providing a classification, diagnosis, and treatment sequence. This standard use of labeling provides the basis for some type of differentiated treatment. The label placed on a child creates a very different type of treatment program. The earlier in the child's life that this differentiation is made, the more effective the treatment program can become (Bower, 1960; Keogh & Becker, 1973; Martin, 1972). Gallagher (1976) states that if there is differentiated treatment available and it depends on effective diagnosis and classification then labeling is the first step in a process of effective treatment.

The second purpose of labeling a child provides the basis for further research. New research will give more insight into the etiology of the problem. As a result of inquiry into etiology, prevention and treatment possibilities for each category of exceptionality may be improved (Cruickshank, 1972; Kramer, 1975; MacMillan, Jones, & Aloia, 1974). Without making categorical distinctions educators and physicians cannot discover causes of various disorders.

Finally, the third purpose of labeling a child is to obtain financial support for research, training, and delivery of services for the child. Gallagher, Forsythe, Ringelheim, and Weintraub (1975) reported an increase of 300 percent in the money provided for special education for handicapped children from 1966-1972 was the result of categorical classifications. Legislative action designed to aid the handicapped has also been based on labels and categories of special students (Trudeau, 1972).

Negative Uses of Labels

Gallagher (1976) described three negative purposes of labeling. The first purpose provides a means for tranquilizing professionals. They can apply labels to children without following differentiated programs of treatment, i.e., labels are applied to fill a need for closure on a difficult diagnostic issue. The second negative use of a label is that a label can serve as a means to maintain a social heirarchy. By keeping minority children away from educational opportunities many may be forced to remain at the bottom of the social ladder. The basic purposes of special education programs were distorted in some situations, in order to remove troublesome minority group children from regular education programs. Special education has been used as "an exclusionary process disguised as a remedial process" (Gallagher, 1976).

Garrison and Hammill (1971) reviewed the cases of 250 children in special education classes in Philadelphia and found that placement was inappropriate for nearly two-thirds of the children. They suggested that these classes were filled with children whose behavioral problems were unacceptable in the regular classroom. These children invariably came from minority groups and low socio-economic backgrounds. Findings like these lead to major legal battles to reaffirm the rights of the handicapped and the rights of those who were wrongly labeled handicapped (Gilhool, 1972).

The third negative use of labeling focused problems on the individual. It ignored the complex social and ecological issues that needed reform (Gallagher, 1976). Needed social reform was allayed because it was the child who was labeled that needed a specific treatment program, not the society that produced that child.

Ryan (1971) suggested that the "exceptionalistic" approach to special children focused on problems that are seen as unusual and as a result of an individual defect. These problems must be remediated by programs designed for the individual. On the other hand, a "universalistic" viewpoint called for social intervention on a broader scale than just the individual child. Social problems exhibited by difficulties within the child were a function of the social arrangements of the community or society. The individual problems exhibited by children could not be remediated until the environment from which they came was treated.

MacMillan, Jones, and Aloia (1976) noted that those children over whom the debate of labeling rages do not appear to benefit from their educational experiences whether they are labeled or not. They state that the task confronting special educators is to provide the best educational experience possible for these children. The primary task is to teach children to learn skills and attitudes necessary for success in society.

Dissatisfaction with the Labeling Process

The factors that contribute to the negative uses of labels for exceptional students have provided the impetus for the practice of labeling becoming a major social issue. To answer this issue, in 1972, Health, Education, and Welfare Secretary Elliott L. Richardson commissioned a systematic review of the classification and labeling of children. As a result, the assessment of the consequences and procedures of labeling were examined by Nicholas Hobbs in an extensive review of all aspects of the topic. The findings of the Hobbs' study are presented in detail in two publications, Issues in the Classification of Children (Hobbs, 1975) and a summary report, The Future of Children: Categories, Labels, and Their Consequences (Hobbs, 1974).

The objectives of the project were (1) to increase public understanding of problems associated with the classification and labeling of handicapped, disadvantaged, or delinquent children; (2) to provide a rationale for public policy and practical suggestions for administrative guidelines bearing on classification and its consequences; and (3) to improve the performance of professionals responsible for the well-being of exceptional children (Hobbs, Egerton, & Matheny, 1975). The project focused on four major considerations:

(1) the technical adequacy of diagnostic and classification systems;

(2) the effects of labeling on individual children;

(3) the consequences (such as special class placement) that may develop as a result of classification; and

(4) the legal, social, and ethical implications of classifying and labeling children (Hobbs, 1975).

As a result of the study, seven priority recommendations were made. These recommendations were developed because of their need for immediate attention, their urgency, and their long range significance. These priorities include (1) support for parents, (2) improved residential programs for children, (3) fairness to disadvantaged and minority group children, (4) improved classification systems, (5) better organization of services, (6) help for children excluded from school, and (7) new knowledge for classifying children (Hobbs, 1975).

For the purposes of this research the priority of improved classification systems and new knowledge for classifying children is of primary importance. The priority for better classification systems called for a procedure to provide a better knowledge base about exceptional children and to provide improved programming for those children. Hobbs (1975) stated that a classification system is needed that may help understand the character and causes of handicapping conditions. Increased information for the planning of programs, the delivery of services, and the determination of accountability must be available. At the same time, improved classification is needed to decrease the possibilities of inappropriate treatment and to remove the stigma that may burden the labeled child.

Hobbs (1975) further stated that the knowledge base for classifying children and designing appropriate programs for them is inadequate. Major policy changes are adopted without evidence of their effectiveness. Research must be provided to improve classification systems themselves.

Blatt (1972), Dunn (1968), Johnson (1969), Jones (1972), and Webster, Rosenberg, Magnavita and Lafayette (1979) have all discussed the detrimental effects of labeling a child. But, the empirical literature provides no conclusive evidence for or against the labeling controversy (MacMillan et al., 1974). However, the majority of special educators view labeling as detrimental. This view seems to have been unchallenged especially when the accounts of litigation are considered.

Guskin (1974) responded to the controversy by stating that special educators should move from speculation and research activities to the development of appropriate evaluation activities aimed at modifying the negative affects of labeling. Rowitz (1974) advocated the opposite point of view by stating that each step in the labeling process must be studied. Initial behavioral observations, the labeling event, and treatment decisions require direct examination so that better programs may be planned for exceptional children.

Although the negative effects of labeling appear to outweigh the positive effects the controversy continues. Recommendations for improving the provision of services for handicapped children have been made but change has been slow in coming. Traditional evaluation and placement procedures have been modified as a result of the mainstreaming movement, but most states still maintain a categorical system of identification and placement for exceptional children (Epstein, Cullinan, & Sabation, 1977). The definition of categories has also made placement decisions difficult as will be described below.

Definitions of Exceptional Student Categories

A broad set of complications in the classification of children has come from special education professionals. Children are sifted into a variety of categories, i.e., educable mentally retarded, emotionally handicapped, and learning disabled. These three groups will be examined more closely to determine the effectiveness of labels placed on students by special educators.

Educable mentally retarded. When considering the categories of educable mentally retarded (EMR), emotionally disturbed (ED), and learning disabled (LD) as distinct and unique classifications the fact is that each of their definitions reflect a great deal of confusion (Hallahan & Kauffman, 1977). They are far from being precise. There is overlap among the definitions that makes a conclusive differential diagnosis of mildly handicapped students difficult.

In 1973, the American Association on Mental Deficiency (AAMD) published a revised manual on terminology and classification for mentally retarded individuals. The definition of mental retardation from that manual states that "mental retardation refers to significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period" (Grossman, 1973). This revised definition sets the upper limit on mental retardation at two standard deviations below the mean on individual intelligence tests. The new definition has eliminated a large number of children from the category of mental retardation. Children with an IQ between 69 (or 71 depending on whether the Binet or WISC is used) and 85 are no longer considered retarded. Hallahan and Kauffman (1976, 1977) stated that when large numbers of children once considered retarded are not retarded any more simply due to a change in definition, the original definition must not have been a very stable one.

The change in the definition of mental retardation has had critical implications for the field of learning disabilities. It would be naive to believe that children with IQs between 69 and 85 could easily be integrated into the regular classroom. The change in the AAMD definition will effect children who were once labeled as mentally retarded. Overnight they will become labeled learning disabled (Hallahan & Kauffman, 1977).

<u>Learning disabilities</u>. Lilly (1977) reported a study of the acceptability of 10 different definitions of learning disabilities. Eighty-seven respondents including teachers, speech therapists, directors of special education, school nurses, and school psychologists ranked the following definition as preferable:

> A child with a learning disability is any child who demonstrates a significant discrepancy in acquiring the academic and social skills in accordance with his assessed capacity to obtain these skills. In general these discrepancies are associated with specific disabilities such as: gross motor, visual memory, visual discrimination, and other language related disabilities. (p. 116)

Gearhart (1973) cited four generalizations which tended to describe various definitions of learning disabilities: (1) most definitions refer to both the child's capacity to learn and his/her present level of functioning; (2) some definitions assume a central nervous system dysfunction; (3) most definitions exclude the culturally disadvantaged; and (4) most definitions exclude other special education categories, such as emotional disturbance and mental retardation.

These generalizations reinforce the notion that as a category learning disabilities is a "between the cracks" category, meant to include children not includable in other special education categories. The exclusion clauses indicated there are problems in the definition (Hallahan & Kauffman, 1977).

Definitions of learning disabilities have been criticized for ambiguity and failure to be operationally defined (Lilly, 1977; Weiderholt, 1974). In fact, Lilly (1974) asserted that a clear statement is needed that reliably and consistently differentiates children labeled LD from those not labeled LD. With regard to differential diagnosis, it cannot be maintained that LD represents a homogeneous group of children distinctly different from other groups (Lilly, 1977). Forness (1974) noted that there were "many more similarities than differences across categories" (i.e., EMR, EH, and LD). Within the category of LD, Gearhart (1973) listed nine characteristics of LD children. Some of these characteristics (e.g., hyperactivity and hypoactivity) are exact opposites of each other.

Weiderholt (1974) stated that "the heterogeniety of children currently categorized and served as learning disabled defies a concise specific definition" (p. 28). Bryan (1974a) also points out that it has not been empirically demonstrated that children labeled as LD differ from "normal children" on such factors as auditory perception, auditory discrimination, visual perception, distractability, hyperactivity, or presence of signs of neurological effects.

Lilly (1977) reported that even some of the proponents of differential diagnosis for learning disabilities are willing to admit that there is not enough evidence to show that minimal brain dysfunction exists in learning disabled children. Hartman (1973) who stated that minimal brain dysfunction is a necessary element of LD, wrote:

> It is not possible to differentiate between learning disabled and culturally disadvantaged with much accuracy on the basis of psychometric instruments, and although differential programming may not be appropriate at this time, attempts at differential diagnosis may still be valuable. (p. 396).

Gillespie, Miller, and Fielder (1975) examined the nature of legislation at the state level dealing with definitions of learning disabilities. They reported that a wide range of differences exist among state laws regarding what constitutes a learning disability. A child displaying specific behavioral characteristics could be eligible for learning disabilities programs in some states but not in others. In all but two states the child must fit the specific description of learning disabilities if he/she is to receive special services provided by state monies.

A second national survey conducted by Mercer, Forgnone, and Wolking (1976) found that 25 states had revised their definitions of learning disabilities between 1973 and 1975. It was reported that several states were attempting to operationalize the definitions of LD by the examination of functional relationships between behavior and environmental conditions. However, there still remained a broad range of definitions that were characterized by contradictory terms from one state to another.

In summary, with regard to differential diagnosis for learning disabled children, it is often difficult, if not impossible, to determine exactly to which category a child should be assigned, or if he should be assigned to one at all (Lilly, 1977).

Emotionally Handicapped/Disturbed

Definitions of the emotionally handicapped category are no clearer or more standardized than definitions of learning disabilities (Hallahan & Kauffman, 1977). There are many factors which make an acceptable definition of emotional handicaps difficult to formulate. These include an abundance of theoretical models available, the varieties of professional training experiences, the range of professional situations in which one may find children with emotional handicaps, and problems associated with the assessment of these handicaps (Achenbach, 1974; Kauffman, 1977). Although similar problems face professionals in defining other categories of exceptionality, emotional handicaps are especially difficult to define because of excessive, deficient, and inappropriate patterns of behavior that deviate from normal. A great variety of deviant behaviors are classified in this category.

Shultz, Hirshoren, Manton, and Henderson (1971) surveyed state provisions for emotionally handicapped students. Their report showed that there was little consensus among states as to a single definition for the population served. Academic and behavior adjustment problems were the most frequent components of state definitions. Epstein, Cullinan, and Sabatino (1977) updated the information on state definitions of emotional handicaps. From their survey of special education programs in all 50 states a definition of emotional handicaps was presented. This definition had 11 components. These components included: (1) disorders of emotion/behavior, (2) interpersonal problems, (3) learning achievement problems, (4) deviation from behavioral norm, (5) chronicity of problems, (6) specific causal phonomena (i.e., family breakdown), (7) prognosis for improvement, (8) exclusions (i.e., no sensory or physical impairments), (9) special class placement required, (10) eligibility for services was certified, and (11) severity of problem. The state definitions were all criticized on several points. They were stated ambiguously in most cases. The number of components varied greatly from state to state, and on several points, one state's definition directly contradicted another's (Epstein et al., 1977). When the meaning of emotional disturbance in children is sifted out of the definitions, it appears that a child is disturbed when an adult authority figure says he is (Hallahan & Kauffman, 1977).

Characteristics of the Mildly Handicapped

Phillips, Draguns, and Bartlett (1975) stated that there is a "need for a classification of behaviors and not of personality, of disorders and of individuals" (p. 43). To adequately evaluate specific observable classroom behaviors across all these categories of exceptionality, those behaviors must be representative of each group as determined by traditional diagnostic schemes.

Behavior problems exhibited by the educable mentally retarded student have been documented. EMR students exhibit behavior problems more frequently than do normal populations (Garfield, 1963). Rutter and Hemming (1970) found that educable mentally retarded children were more fearful, miserable, irritable, and fidgety than their normal peers. Also exhibited by the group studied was a higher rate of aggressiveness and lower rate of concentration abilities.

Baroff (1974) reported that the educable child manifests various kinds of behavior disorders. Some of the more common behavior problems of EMR children are: low frustration tolerance, hyperactivity, aggression, and general problems of motivation. These behaviors often occur in the classroom setting and may be measured by direct observational procedures.

The learning disabled student also exhibits behavioral problems in the classroom to a greater extent than the normal child (Bryan, 1974; Lerner, 1976). Learning disabled children with behavioral disorders may be hyperactive, explosive, erratic, or otherwise uninhibited in behavior. Tarver and Hallahan (1976) and Lovitt (1968) listed the most often cited characteristics of the learning disabled child. Included in this list were: hyperactivity, emotional lability, disorders of attention, and impulsivity. All of these characteristics tend to pose behavior management problems for the classroom teacher.

Finally, the emotionally disturbed child, by categorical definition, displays behavioral excesses and deficiencies in the classroom. Kauffman (1981) categorized the behavioral characteristics of ED children into seven behavior syndromes. These syndromes included: hyperactivity, distractibility, impulsivity, aggression, withdrawal, inadequacy, and immaturity. These syndromes are an attempt to classify behaviors and not personality as Phillips et al. (1975) recommend.

By virtue of the behavior problems exhibited by all three categories of exceptionality of interest in this study, operational definitions for specific classroom behaviors were designed to assess frequencies of task oriented and non-task oriented behaviors (see Appendix A). The behaviors defined by Becker et al. (1967) and Walker et al. (1971) are mutually exclusive of the range of possible behaviors to be exhibited by exceptional students in the study.

Intervention and Identification

While the question of whether labeling is positive or negative remains unresolved, the primary factor of concern seems to be that differential treatment is not necessarily a function of identification. In fact, it is when the other effects of labeling, (i.e., negative stereotyping, biases, etc.) outweigh the possibility and/or reality of differential programming that the problem becomes an issue.

Special education is undergoing a transformation in the use of categorical labels. As a response to the (1) detrimental effects of labeling and (2) the imprecise definitions of mildly handicapped students there is a shift away from traditional labels with specifically defined and mutually exclusive categories (Forness, 1974). This trend has serious implications for the way children are taught in school settings. There have been successful attempts to group mildly retarded, emotionally disturbed, and learning disabled students together in the same classroom (Taylor, Artuso, Soloway, Hewett, Quay, & Stillwell, 1972). Teachers in these classrooms have been prepared to deal with a wide range of learning and behavior problems.

The widespread use of applied behavior analysis as an approach to educational problems has contributed to the present trend away from categorical labels. Behavior analysis minimizes use of labels and focuses on individual student performance (Forness, 1974, 1976). There is a trend toward substituting new categories which are referenced to behavioral goals and educational needs.

Similarities and Differences Among Categories

In order to group children in a functional way, a child's performance on a specified educational task must be measured precisely and continuously. Hallahan and Kauffman (1977) suggested that children be considered candidates for special education on the basis of specific social or academic performance deficits, and not solely on the basis of standardized test scores or clinical impressions. Educable mentally retarded, emotionally disturbed, and learning disabled have a great deal in common. It is nearly impossible to separate them into the traditional categorical groupings based on performance in the classroom (Hallahan & Kauffman, 1976, 1977; Kauffman, 1977).

Common behavioral characteristics among traditional groupings of exceptional students may or may not be the result of common etiologies (Gardner, 1977). O'Grady (1974) found that children labeled as learning disabled and others labeled as "emotionally disturbed" exhibited similar patterns of language difficulties. Bryan and Bryan (1975) described the emotional disturbance features of learning disabled children. Neisworth and Greer (1975) described the functional similarities of learning disability and educable mental retardation. No exceptional learning or behavior characteristic is categorically or inherently inappropriate or inadequate (Gardner, (1977).

Personality and social adjustment, IQ and underachievement were examined by Hallahan and Kauffman (1976, 1977) in relationship to the behavioral overlap that accompanies these factors for each of the three diagnostic categories. They concluded that no specific distinction could be made between the groups on all four dimensions. However, it must be pointed out that empirical research was not the basis for their decisions.

Personality and social adjustment are usually used to define a child as emotionally disturbed. Balthazar and Stevens (1975) reported that mildly retarded individuals frequently exhibit problems of personal adjustment. This overlap in behavioral characteristics between emotionally disturbed and mildly retarded students is strengthened when the AAMD definition of mental retardation is considered. A major component of that definition is deficiency in adaptive behavior. It is logical to assume that personality and social adjustment are synonomous with adaptive behavior (Hallahan & Kauffman, 1977). Zigler (1975) reported that cognitive deficits in retarded individuals was due to personality variables.

Connolly (1975) and Rubin (1971) have stated that LD children have problems in personal adjustment. McGhee and Crandall (1968) support this contention with empirical research that shows that LD children are likely to have adjustment problems. In addition, Rubin (1971) and Kauffman (1977) presented evidence showing that emotionally handicapped children have a high incidence of cognitive deficits. Therefore, Hallahan and Kauffman (1977) assumed that mildly mentally retarded, emotionally disturbed, and learning disabled children all are likely to exhibit personality and social adjustment problems.

By definition, mentally retarded children have lower IQs than do ED or LD children. Kauffman (1977) has shown that the distribution of intelligence for both the ED and LD child is below the mean for the total population. Although the lower IQs do not fall in the MR range for the ED and LD children it is argued that the teacher would be wise to approach them with the same educational strategy (Hallahan & Kauffman, 1976, 1977).

Underachievement is often used to describe a child as learning disabled. Dunn (1973), Graubbard (1975), and Kauffman (1977) reviewed the research and stated that many retarded and emotionally disturbed children are also underachievers.

These three areas have a great deal in common (Forness, 1974, 1976; Hallahan & Kauffman, 1976, 1977; Taylor et al., 1972). To achieve success, a special education teacher of any one of the three categories is not likely to approach the children differently than a teacher in any one of the other two areas. Further research is needed to determine whether the three diagnostic categories may differ on more finely defined behavioral and psychometric characteristics.

Some research evidence does exist that shows there may be differences between ED, LD, and EMR students. Hallahan (1975) and Tarver, Hallahan, Kauffman, and Ball (1976) found evidence that suggests that LD children have a greater attention deficit than do EMR children. However, the authors criticized their data because of the criteria used to select LD children in the studies was too broad. Becker (1978) compared mild and moderately learning disabled children to educable mentally retarded children on individual tasks of conceptual abilities and learning styles. Results suggested that differences between the learning disabled groups and the educable mentally retarded groups indicated differences in problem solving abilities for each group.

Gajar (1979, 1980) found through mulivariate analysis of scores in cognitive, achievement, self-concept and personality domains that some differences do exist among the categories of ED, LD and EMR students. She found that EMR subjects earned lower IQ scores than did LD students, while LD students had lower achievement scores than did ED students. ED students had higher scores on conduct disorder and personality problem measures than did EMR or LD subjects.

But as Ysseldyke and Algozzine (1982) point out the problem with defining handicapping conditions "is that the definitions are simply conceptual models: they are necessary, but we cannot specify their effects. We can say that mental retardation is (for example, subaverage intellectual functioning), but we cannot say what affect will be produced when our definition is applied (for example, special classes enrolling 80 percent boys)" (p. 49). In fact, the current definitions of mental retardation, learning disabilities and emotional disturbance is a product of social, political and moral history of a particular locality.

In summary, definitions of categories of exceptionalities are difficult to pinpoint, yet they are required for the present service delivery models set up by state and local education agencies. Implications of definitions include three components. First, prevailing definitions help shape legislative, administrative, and advocacy group decisions related to the education of each diagnostic category of exceptional child. Second, definitions are the basis for estimates of prevalence. Prevalence figures largely determine who will receive certain services. Finally, definitions are necessary for the continuing research effort to understand each exceptional child.

An alternative system for providing services is described in the next section. Heavy reliance on categories, labels, and definitions may not be necessary.

The Non-Categorical Movement

Special education is undergoing a transformation in the use of categorical labels. As a response to the (1) debilitating effects of labeling and (2) the imprecise definitions of mildly handicapped students and (3) shrinking fiscal resources, there is a shift away from traditional labels with specifically defined and mutually exclusive categories (Forness, 1974). This trend has serious implications for the way children are taught in school settings. There have been successful attempts to group mildly retarded, emotionally disturbed, and learning disabled students together in the same classrooms (Taylor, Arthuso, Soloway, Hewett, Quay, & Stillwell, 1972). Teachers in these classrooms have been prepared to deal with a wide range of learning and behavior problems.

The widespread use of behavior modification as an approach to educational problems has contributed to the present trend away from categorical labels. Behavior modification minimizes use of labels and focuses on individual student performance (Forness, 1974, 1976). There is a trend toward substituting new categories which are referenced to behavioral goals and educational needs.

Forness (1974) in his discussion of the recent deemphasis in categorical labeling has stated the trends as follows:

> Ways must be found to reconceptualize not only the way such children are grouped but the very ways in which professionals think about them. The traditional labeling stimuli associated with what a child is must be dropped, and he must be perceived in relation to what he needs in order to achieve his optimum school progress. (p. 44)

The professional should be concerned with the operationally defined requirements of meeting specific educational needs rather than matching children to definitions (Gillespie, Miller, & Fielder, 1975). Identifying discrete categories of children should not be the prerequisite for providing services. Instead, the prerequisite should concentrate on establishing processes for determining individual educational plans based upon information obtained from observable behaviors that indicate learning problems and environmental variables. In essence, these authors state that programming, not placement, should be stressed to meet each child's educational needs regardless of traditional diagnostic category.

Therefore, the non-categorical approach places more importance on teaching. Sorting learners into the categories of educable mentally retarded, emotionally handicapped, and learning disabled does not provide any additional input for educational programming (Gillespie et al., 1975). (See Appendix B for a discussion of generic services for exceptional children).

Summary

The non-categorical movement combines the three traditional diagnostic categories of educable mentally retarded, emotionally disturbed, and learning disabled students into one broad generic category. It has been argued in the literature that because of similarities in educational behavioral performance these groups should be classified together under one heading. Approaches to teaching these students may be similar. Further research is needed to determine the effectiveness of the non-categorical approach.

Summary of Selected Literature

Researchers and educators who have examined (a) the effects of labeling exceptional children, (b) the definitions of categories of exceptionalities, and (c) non-categorical approaches to the education of exceptional children have stated that there are numerous questions that still require investigation before any conclusive evidence can be proposed for more effective educational programs. In order for educators to be able to design more effective programs using a non-categorical approach, information regarding the relationship of the characteristics of mildly retarded, emotionally disturbed, and learning disabled children will require answers. Through investigation and comparison of specific behavioral and psychometric characteristics of these exceptionalities it may be possible to provide empirical support for non-categorical educational programs based on individual educational needs rather than groupings by category.

Goals and Objectives

There were two primary goals of the present study. The first was to provide empirical data on the behavioral characteristics among samples of emotionally disturbed, learning disabled, and educable mentally retarded students. Included in this comparison were a group of at-risk underachieving students. The second goal was to collect pertinent psychometric data on all subjects included in the investigation. This data provided information regarding performance in four domains: cognitive functioning, academic achievement, perceptual motor functioning, and self-concept. It was hypothesized that when comparing the three groups of exceptional children in the public schools no significant differences would be observed in the behavioral characteristics of each group. For the purposes of this study it was also hypothesized that no significant differences would be exhibited among the group of subjects on the four psychometric domains. Results of this type may suggest that placement of students in special classes based on diagnostic category may need to be re-evaluated. The efficacy of specific classification procedures for ED, LD, and EMR students may be questioned when based on classroom behaviors and psychometric data of the three groups.

Interpretation of the findings of this study may enhance the body of knowledge of the behavioral and psychometric characteristics of the exceptionalities considered. Implications that might be drawn from the data reflect support for the position forwarded by Hallahan and Kauffman (1976, 1977) and Sherry (1979, 1982). Their emphasis on the behaviorist orientation of commonality of behavioral characteristics and learning styles for ED, LD, and EMR students has been supported.

In an effort to reduce the negative effects of labeling students emotionally disturbed, learning disabled, and educable mentally retarded educators have turned to generic labels, categories and programs. But, before generic programs can be accepted as the most appropriate programming procedure for mildly handicapped students, further descriptive studies remain to be undertaken.

The present research will require duplication and/or replication. One study of this kind cannot be the sole basis for conclusive evidence. It is anticipated that this research along with future investigations will add to the developing knowledge of the relevant similarities among categories of exceptional children.

Method and Procedures

To test the hypotheses of no significant differences among emotionally disturbed, learning disabled, and mentally retarded students in behavioral and psychometric characteristics a non-experimental procedure was used. A field study approach (Kerlinger, 1973) using direct observations of subjects examined the behavioral characteristics presented by each student from each diagnostic category in two educational settings: (1) the regular classroom and (2) the special education resource room.

Direct observation of operationally defined non-task oriented and task oriented classroom behaviors yielded frequency counts that were subjected to data analysis. The frequencies of the behaviors counted produced means that were compared using a visual graphic representation and a two way analysis of variance repeated measures procedure. Psychometric data were collected and scored by qualified, trained psychometricians.

Setting

Observation of subjects for this study took place in two educational settings in the public schools. Each subject was observed six times; three times in the regular class and three times in the special education resource room.

The regular classroom was defined as any academic class that the subject had attended for at least six weeks prior to the observation procedure. Included in this setting were classes in language arts, English, social studies, science, and mathematics. The resource room was defined as a special education classroom to which students were assigned for one or more 45 minute periods per day (not exceeding three 45 minute periods per day for the purpose of this study). In the resource room the special education student (i.e., ED, LD, EMR) received special remedial or tutorial instruction in specific academic skills and/or social interaction (Hammill & Bartell, 1978).

Subjects

The total sample for the present research consisted of five groups of subjects. All subjects were randomly selected from the total population of 11-12 year old students from within the Charlotte-Mecklenburg Public Schools, Charlotte, North Carolina. Specifically, one hundred subjects were required for the investigation. Twenty subjects per group of exceptional children (i.e., ED, LD, EMR) were included. Also, forty non-exceptional students were randomly selected. These subjects made up the final two groups; the at-risk underachievers and the normal group.

The normal group served as a control group and was used to examine the ability of the behavioral observation procedure to discriminate differences in behavior between the exceptional and normal children. The at-risk group was randomly selected from among those 11-12 year old students not identified as exceptional but who were receiving reading or mathematics remedial services in Title I programs. They were included to assess any differences in behavioral characteristics and the four domains of psychometric functioning.

To control for experimental mortality a pool of subjects was developed so that in the event of subjects being unable to complete the study, a replacement subject could be randomly selected from the pool. To control for the prospect of including subjects with transient situational disorders each teacher was interviewed to determine whether any subjects were exhibiting such problems. If subjects were undergoing transient adjustment problems they were excluded from the investigation.

The age range of the sample was restricted to attempt to minimize the variability of observed behavior often characterized by children at different ages. Equally, it is likely that 11-12 year olds would be in the same grade in school (i.e., fifth grade). Therefore, it was anticipated that these procedures would yield a more homogeneous sample than selection of subjects from the whole elementary school population.

Each exceptional child subject selected was certified by a school psychologist or psychiatrist as either emotionally disturbed, learning disabled, educable mentally retarded according to district and state guidelines for categorical placement in special education programs (North Carolina Department of Public Instruction, 197) (see Appendix C). Also, subjects were not identified by name for the purposes of this study. Each student received an identification number and remained anonymous. Permission to collect all data was obtained in compliance with the University of North Carolina at Charlotte and the Charlotte-Mecklenburg Public Schools and procedures regarding informed consent.

Instrumentation

To assess the behavioral characteristics of subjects included in the study a behavior counting checklist was provided for observers. Each observer was directed to count non-task oriented or task oriented classroom behaviors defined in operational terms (see Appendix A). A behavior observation format was provided and required that each observer mark occurrences of behavior in appropriate spaces provided for each designated classroom behavior (see Appendix B). Non-task oriented behaviors were defined as non-productive behavior and/or activity not assigned by the teacher at the time of observation. Task oriented behaviors were defined as appropriate responses to teacher directed activities at the time of the observation.

To assess psychometric characteristics of students in the study three qualified psychometricians administered a battery of tests. The test battery included the Wechsler Intelligence Scale for Children-Revised (WISC-R), the Peabody Individual Achievement Test (PIAT), the Bender Visual-Motor Gestalt Test, the Developmental Test of Visual-Motor Integration, the Piers-Harris Self-Concept Scale, and the Woodcock-Johnson Psychoeducational Battery.

Data Collection

A videotaped instructional procedure was used to train observers for the field study. The observers were special education graduate students. Each observer was unaware of the diagnostic category of the subjects. The observers counted behaviors displayed by the subjects in six 20-minute time periods; three periods in the regular class, three periods in the resource room. Observers counted non-task oriented and task oriented behaviors at 15-second intervals for each observation period. A total of 60 minutes of observation time in each classroom setting yielded frequencies of non-task oriented and task oriented behaviors (see Appendix F for Behavior Observation Format).

A second observer joined the first one observation period to establish a criterion reference for the calculation of a coefficient of observer agreement (Medley & Mitzel, 1963). A reliability coefficient was also computed by employing the within subjects term from an analysis of variance procedure (Myers, 1972). This coefficient defined the accuracy of the observational procedure.

The data for all observation procedures was recorded in terms of frequency of occurrence of non-task oriented behaviors defined by the behavior checklist. The frequency of behavior per observation was represented as a total score for each component of non-task oriented and task oriented behavior was summed as the dependent measure. The two components of task oriented behavior were also summed as an additional dependent variable. Psychometric data was obtained through individual testing sessions with each subject and the psychometrician.

Data Analysis

The primary emphasis of the analysis of the data was to describe factors that discriminate characteristics among groups in the study. Data obtained from the observational procedure was analyzed by using two separate techniques. These techniques included (1) individual group graphic visual representation and (2) inferential statistical procedures.

Graphic Visual Representation. Data was summarized by transforming the numerical frequencies from each observational session into a single data point. For each subject six data points were generated; three for resource room observations and three for regular classroom observations. A loss of information was expected in this process but poses no dangers providing (a) that which was lost is redundant with that which was retained, (b) no information of value was inadvertently or mechanically discarded, and (c) new information of an artificial nature was created (Johnson & Pennypacker, in press). Previous research (Sherry & Algozzine, 1978; Sherry, 1979, 1982) has confirmed the ability of the data to retain pertinent information.

To detect relations in the data or between the data and the independent varia~~bles~~ of categories of exceptionality information is displayed in the form of tables and graphs. Tables and graphs were generated for each exceptionality. Relationships are manifested by the spatial relationships of the components of the graphical display. These components included the mean frequencies for non-task oriented behaviors for all three groups of exceptional children per observation period in the regular class and resource room settings. An equal-interval chart of the mean scores of frequencies of the operationally defined non-task oriented behaviors was used.

Statistical procedures. The data were analyzed by employing a 2 x 3 factorial analysis of variance repeated measured design (ANOVR) (Games, Gray, Herron, & Pitz, 1974) (see Appendix E). Cochran's C statistic was used to test for the assumption of homogeniety of error variance (Kirk, 1968). Also, because of the nature of the data to be obtained (i.e., frequency data) a square root transformation was to be used to (a) achieve homogeniety of error variance, (b) achieve normality of treatment level distributions, or (c) to obtain additivity of treatment effects (Kirk, 1968).

The means, standard deviations, and analysis of variance for the frequency of non-task oriented behavior for each group is presented in a summary table. Because of the descriptive nature of the field study the most pertinent information obtained by the analysis of data is the cell mean. Use of an overall omnibus test yielded additional information concerning (a) frequencies of non-task oriented behaviors and the relationship for ED, LD, and EMR categories, (b) whether there was a difference in behaviors dependent upon resource room or regular class placement and category of exceptionality, and (c) whether there was an interaction between class placement and category of exceptionality. Tukey's HSD procedure was used as a posteriori follow up examination of the results (Kirk, 1968) when necessary.

Psychometric Data Comparison. Raw scores obtained from the psychometric test battery were converted to standard scores or grade equivalent scores when possible; otherwise, all analyses were completed using the number of items correct as the unit of analysis. Frequency distributions were obtained for all groups separately and an analysis of variance was computed for subjects' scores on all tests and subtests.

Summary

One hundred subjects (each group n=20) were randomly selected from the elementary schools in the Charlotte-Mecklenburg Public Schools, Charlotte, North Carolina. Students from three diagnostic categories of exceptionality were used. In addition, a control group of normal students was employed to examine the ability of the behavior checklist to discriminate differences between exceptional students and non-handicapped children. An at-risk, under-achieving group was also included to compare their behavioral and psychometric characteristics to those students identified and labeled as exceptional.

A videotaped instructional presentation was prepared and used to train advanced special education graduate students observers. Each of the observers used a behavior counting checklist in all observational settings. An additional observer joined each observer to provide a criterion reference to establish a coefficient of observer agreement. The accuracy of the observational technique was estimated by calculating a reliability coefficient employing an analysis of variance procedure. Psychometric test results were compared by using analysis of variance procedures to determine similarities or differences in results.

The present research investigated assessment factors which may differentiate categories of exceptional children. Characteristics of classroom behaviors which differentiate special and regular children were also studied. It was anticipated that the assessment factors which differentiate the categories will have little relationship to the programming plans/activities for the identified children within the categories. Equally, it was expected that few differences will exist within the classroom behaviors of special and regular children. Results suggest that information collected for identification may need to be augmented if diagnoses are to have programming validity and value. It was anticipated that this information will form the basis for an analysis of differential teaching techniques which may be applied to mildly handicapped youngsters.

Results

The purpose of this investigation was to determine whether exceptional children differ in behavioral and psychometric characteristics. Therefore, the results of the present project are presented in two major sections: (1) behavioral observation analyses and (2) psychometric assessment battery analyses.

Behavioral Observation Data Analysis

Observational data of the behavior of educable mentally retarded (EMR) (N = 19), emotionally handicapped (EH) (N = 8), and learning disabled (LD)

(N = 24) children were recorded as frequencies of occurrence on a behavior rating checklist. Each student's frequency of non-task oriented and task oriented behavior was tallied during six observation periods; three in the regular class and three in the special education resource room.

The raw frequency data were summed for each student observed to obtain a mean score for each child for each classroom setting. These means were analyzed by employing a two-way analysis of variance repeated measures design. The category of exceptionality (i.e., EMR, EH, LD) represented the between subjects factors. Classroom setting (i.e., regular class or special education resource room) represented the within subjects factors. The category of exceptionality and the classroom setting were independent variables. The mean frequency of non-task oriented behavior and task oriented behavior represented the dependent variables. Analyses were completed to test for differences in the mean frequencies of behavior for (1) non-task oriented behavior in the regular class, (2) non-task oriented behavior in the resource room, (3) task oriented behavior in the regular class, and (4) task oriented behavior in the resource room. In addition, analyses were completed that compared the mean frequencies of behavior for each of the ten categories counted on the behavior rating checklist.

Two additional groups of students were also included in the study. These groups constituted children not labeled as exceptional but experiencing academic difficulties (at-risk children) (N = 20) and non-handicapped children (N = 20) from the regular classroom. These groups served as control groups. Each was compared to the exceptional children groups using a one-way analysis of variance procedure for each dependent variable.

Analysis of Variance

All analyses were obtained using the Analysis of Variance Repeated Measures (ANOVR) computer program developed by Games, Gray, Herron, and Pitz (1974). Two critical assumptions are required for the effects of the repeated measures design to be distributed as F-ratios. One of these is that the variance-covariance matrix of the within subjects factors be compound and symmetric; that is, it should have homogeneous variance and constant covariances. The ANOVR program tests for this property automatically.

A second critical assumption is that the population lambda be equal to 1.0. This property designates that the combinations of variance and covariances for the within subjects factors are constant and therefore permits pooling of the variance estimates into a common error term. ANOVR provides a test of this condition also.

The basic assumptions of normality, homogeneity of variance, and additivity were tested by performing a square root transformation (Kirk, 1968). The square root transformation was chosen because the dependent variables resulted in frequency counts. Examination of the transformation yielded results similar to the ANOVR. In addition, Bartlett's test for homogeneity of variance (Kirk, 1968) yielded a chi square of 5.29 with degrees of freedom equal to 2 ($p > .05$).

ANOVR Results

The means, standard deviations, and analysis of variance summaries for the frequencies of non-task oriented behavior are presented in three summary tables. Three tables are used to display the analyses because only thirteen emotionally handicapped children were identified in the entire Charlotte-Mecklenburg School System who were receiving services in resource room classes. Of those thirteen children only eight parents/guardians completed permission/consent forms permitting their children to participate in the study.

The analysis of variance comparison was made comparing those eight emotionally handicapped children with all other exceptional children. Each analysis contained eight ED students, eight EMR students and eight LD students.

Analysis of results indicated non-significant differences between the frequencies of non-task oriented behavior for the exceptionality of student ($F(2, 21) = 0.82$), ($F(2, 21) = 0.46$), and ($F(2,21) = 0.35$) as indicated in Tables 1, 2, and 3, respectively. Non-significant differences were also indicated for the interaction of exceptionality of child by classroom setting ($F(2, 21) = 0.75$), ($F(2, 21) = 0.41$), and ($F(2, 21) = 2.19$). Non-significant differences were indicated in two of the analyses (Table 1 and Table 2) for within subjects by classroom setting ($F(1, 21) = 1.96$) and ($F(1, 21) = 3.21$). Table 3 shows a significant difference indicated within subjects by classroom setting ($F(1, 21) = 5.16$).

Overall analysis of variance results suggest that students regardless of exceptionality do not differ in the frequency of non-task oriented

Table 1

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	68.37	44.15
	Resource Room	66.37	33.25
ED	Regular Class	95.62	34.62
	Resource Room	66.12	28.41
LD	Regular Class	93.62	45.61
	Resource Room	85.00	48.43

n = 24

Source	df	MS	F
Between Subjects			
Exceptionality	2	1959.18	0.82
Error	21	2394.16	
Within Subjects			
Setting	1	2146.69	1.96
Exceptionality by Setting	2	823.94	0.75
Error	21	1092.99	

$^{*}p > .05$

Table 2

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	84.37	34.35
	Resource Room	72.37	23.09
ED	Regular Class	95.62	34.62
	Resource Room	66.12	28.41
LD	Regular Class	99.50	50.73
	Resource Room	89.37	57.42

n = 24

Source	df	MS	F
Between Subjects			
Exceptionality	2	1195.19	0.46
Error	21	2597.52	
Within Subjects			
Setting	1	3553.52	3.21
Exceptionality by Setting	2	456.77	0.41
Error	21	1106.78	

$^{*}p > .05$

Table 3

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	81.00	34.35
	Resource Room	67.50	23.09
ED	Regular Class	95.62	34.62
	Resource Room	66.12	28.41
LD	Regular Class	87.87	48.82
	Resource Room	89.50	38.17

n = 24

Source	df	MS	F
Between Subjects			
Exceptionality	2	835.65	0.35
Error	21	2409.70	
Within Subjects			
Setting	1	2282.52	5.16*
Exceptionality by Setting	2	969.02	2.19
Error	21	442.76	

*$p > .05$

behaviors when placed in special education resource room classes. In addition, each category of exceptional child, when observed in the regular classroom, shows non-significant differences when compared to resource room placement. The total mean frequencies for each exceptionality of child for each classroom setting are depicted graphically in Figure 1.

Figures 1 and 2 display the non-significant levels of the variation in mean frequencies of exceptional students in the regular and resource room classes for non-task oriented behavior. Non-significant differences were also indicated for classroom setting ($\underline{F}(1, 21) = 2.73$), ($\underline{F}(1, 21) = 3.30$) and ($\underline{F}(1, 21) = 3.39$). No significant interaction effect was obtained. These results suggest that the hypothesis that there are no differences in the task oriented behavioral characteristics of the three categories of mildly handicapped children observed may be tenable.

Figures 3 and 4 graphically displays the non-significant levels of the variation in mean frequencies of exceptional students in the regular classroom and special education resource room class. The mean frequencies of observed task oriented behavior for students in the resource room are higher than in the regular class. Mean frequencies for EMR students in the resource room are higher ($\overline{X} = 167.87$) than in the regular class ($\overline{X} = 152.41$). Learning disabled children in this resource room ($\overline{X} = 154.41$) also had higher task oriented behavior levels than in the regular class ($\overline{X} = 145.58$) as did ED children in the resource room ($\overline{X} = 187.00$) and regular class ($\overline{X} = 136.75$). The nonsignificant variations of mean frequencies of behavior observed in the special education resource room may also be noted. The mean frequencies for non-task oriented behavior for students in the resource room classes are in every case lower than the regular classroom. Mean frequencies for EMR students in the regular classroom ($\overline{X}$ = 77.91) are higher than in the resource room class ($\overline{X}$ = 68.75). The same is true for the other two categories of exceptional children. Learning disabled children in the regular class also had higher frequencies ($\overline{X}$ = 93.66) than in the resource room ($\overline{X}$ = 59.62) as did ED children in the regular class ($\overline{X}$ = 95.62) and special education resource room ($\overline{X}$ = 66.12).

The means, standard deviations, and analysis of variance summaries for the frequencies of task oriented behavior are presented in Tables 4, 5, and 6. Analysis of results indicated non-significant differences among the frequencies of task oriented behavior for the groupings of eight exceptional students ($\underline{F}(2, 21) = 0.43$), ($\underline{F}(2, 21) = 0.64$) and ($\underline{F}(2, 21) = 0.94$) for each summary table respectively.

To more carefully examine similarities or differences in observed mean frequencies of behavior for exceptional children one-way analysis of variance procedures were completed for each category of observed behavior (i.e., gross motor behaviors, disruptive noise, orienting responses, etc.) These analyses were examined comparing behaviors in the regular and special education resource room class. For all exceptionalities and in each classroom setting analysis of variance procedures yielded non-significant differences. (See Appendix B for each summary table of means, standard deviations, and analysis of variance for each observed behavior category).

Additional one-way analysis of variance procedures including the at-risk and normal groups of students yielded non-significant differences for each category of observed behavior. These two final groups' mean

Table 4

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	165.00	51.63
	Resource Room	171.75	26.42
ED	Regular Class	136.75	37.84
	Resource Room	158.00	29.56
LD	Regular Class	164.00	47.41
	Resource Room	165.00	57.13

n = 24

Source	df	MS	F
Between Subjects			
Exceptionality	2	2716.58	0.43
Error	21	6248.50	
Within Subjects			
Setting	1	17025.33	2.73
Exceptionality by Setting	2	6619.08	
Error	21	6244.59	

*$p > .05$

Table 5

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	147.12	51.71
	Resource Room	169.25	37.81
ED	Regular Class	136.75	37.84
	Resource Room	158.00	29.56
LD	Regular Class	143.50	26.42
	Resource Room	149.37	51.63

n = 24

Source	*df*	*MS*	*F*
Between Subjects			
Exceptionality	2	4244.77	0.64
Error	21	6601.86	
Within Subjects			
Setting	1	16650.75	3.30
Exceptionality by Setting	2	6750.81	1.34
Error	21	5044.98	

*$p > .05$

Table 6

Means, Standard Deviations, and Analysis of Variance Summary Table for Frequencies of Non-Task Oriented Behavior for EMR, ED, and LD Students in Regular Class and Special Education Resource Room Settings

Exceptionality	Classroom Setting	Mean	Standard Deviation
EMR	Regular Class	145.12	28.53
	Resource Room	162.62	23.91
ED	Regular Class	136.75	37.84
	Resource Room	158.00	29.56
LD	Regular Class	129.25	41.48
	Resource Room	148.75	51.90

n = 24

Source	*df*	*MS*	*F*
Between Subjects			
Exceptionality	2	6410.58	0.94
Error	21	6835.83	
Within Subjects			
Setting	1	19440.75	3.39
Exceptionality by Setting	2	5680.75	0.99
Error	21	5744.03	

$*p > .05$

frequencies of behavior were compared to the mean frequencies of observed behavior of the exceptional child groups in the regular classroom setting. (See Appendices C and D for each summary table of means, standard deviations, and analysis of variance for each observed behavior).

Graphic Visual Representation

To detect relationships in the data among the independent variables of categories of exceptionality several figures are presented. Data included in these figures were generated by transforming the numerical frequencies from each observational session into a single data point. For example, each subject received eight scores on non-task oriented behavior and two scores on task oriented behavior for each observation period. The non-task oriented score consists of the total frequency scores received on the behavior checklist for the following items: (1) gross motor behavior, (2) disruptive noise, (3) aggression, (4) orienting responses, (5) vocal noise, (6) talking, (7) other, and (8) improper position. These eight items when summed provided the total non-task score for each student. The task oriented score consisted of two items: (1) task-oriented independent and (2) task-oriented dependent.

Each student was observed six times; three times in the regular classroom and three times in the special education resource room. The frequency scores for each student were summed to obtain mean scores for the total observation period in each setting. Therefore, a total mean frequency of the eight non-task oriented behaviors made up the total non-task oriented score for the resource room and regular class. The total frequencies for the task oriented scores were computed similarly.

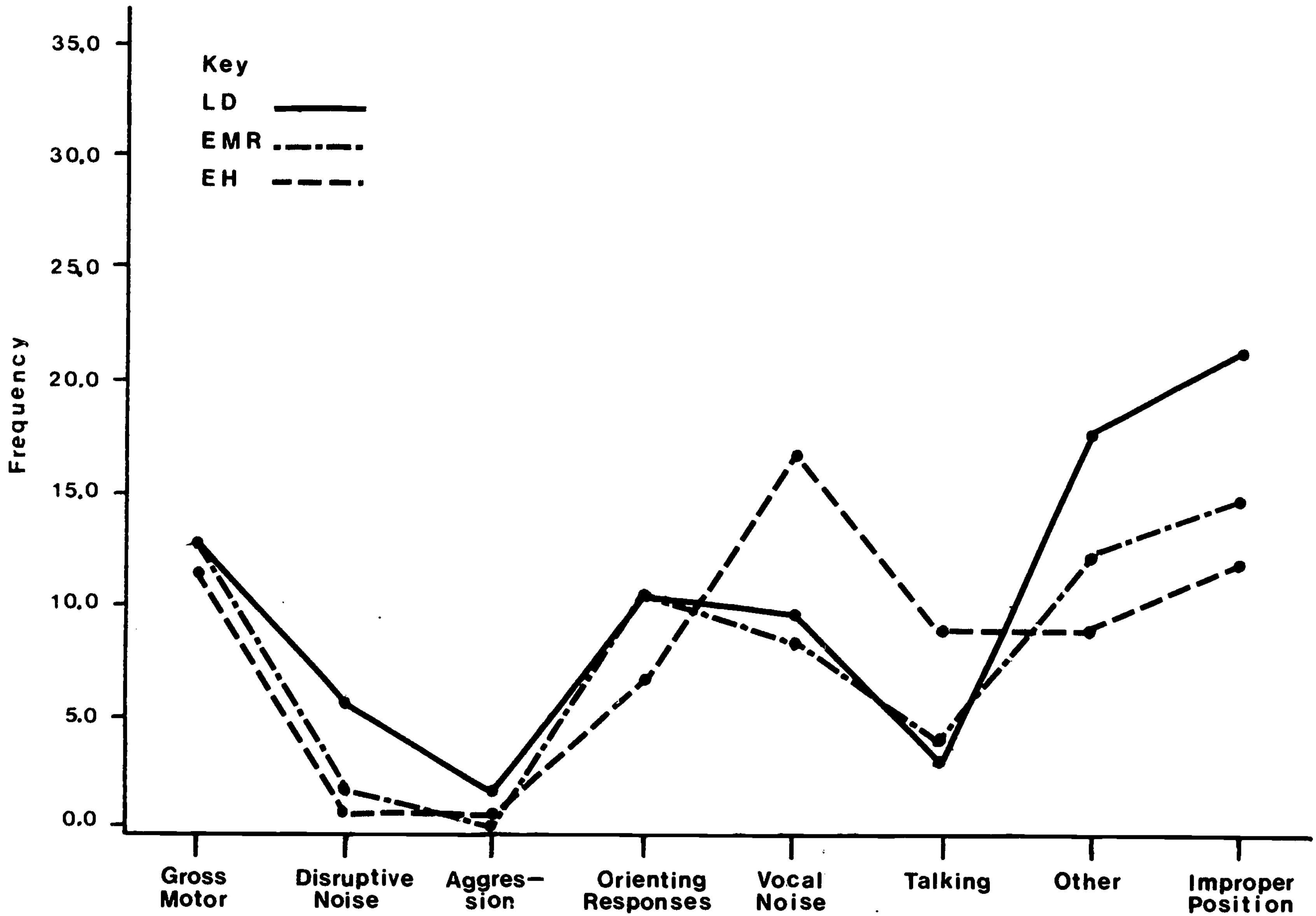
Figure 1 is an equal interval chart of the mean frequencies of the operationally defined categories of non-task oriented behavior for the three groups of exceptional children observed. The mean frequencies plotted on the graph represent averages obtained for three observational sessions in the regular class. A total for the one hour observation period is represented; a comparison of the mean frequencies of non-task oriented behavior in the regular class to those in the special education resource room is also possible (see Figure 2). Direct visual inspection of these two figures reveals that the mean frequencies of non-task oriented behavior (along all eight dimensions of behavior) are generally lower for each exceptional student in the resource room. This display of scores graphically confirms results indicated by the ANOVR procedures.

Graphic displays of mean frequencies of task oriented behavior similarly confirm ANOVR analysis results. Figure 3 represents the mean frequencies of task-oriented behaviors (across the two dimensions of operationally defined behavior) for each of the three groups of exceptional children observed in the regular classroom. The mean frequencies plotted on Figure 4 show the same behaviors for exceptional children in the resource room setting. Visual comparison suggests a greater frequency of task-oriented behavior in the special education resource room.

These graphic displays of the frequency data obtained provide an effective medium for communicating the relationships found in the data. For this descriptive study, the precise interpretation of the data is essential. The results of observation are immediately comparable for each category of exceptional child for each classroom setting.

FIGURE 1

Mean Frequencies of Non-Task Oriented Behavior for Three Groups of Exceptional Children in the Resource Room Class



58

FIGURE 2

Mean Frequencies of Non–Task Oriented Behavior for Three Groups of Exceptional Children in the Regular Classroom

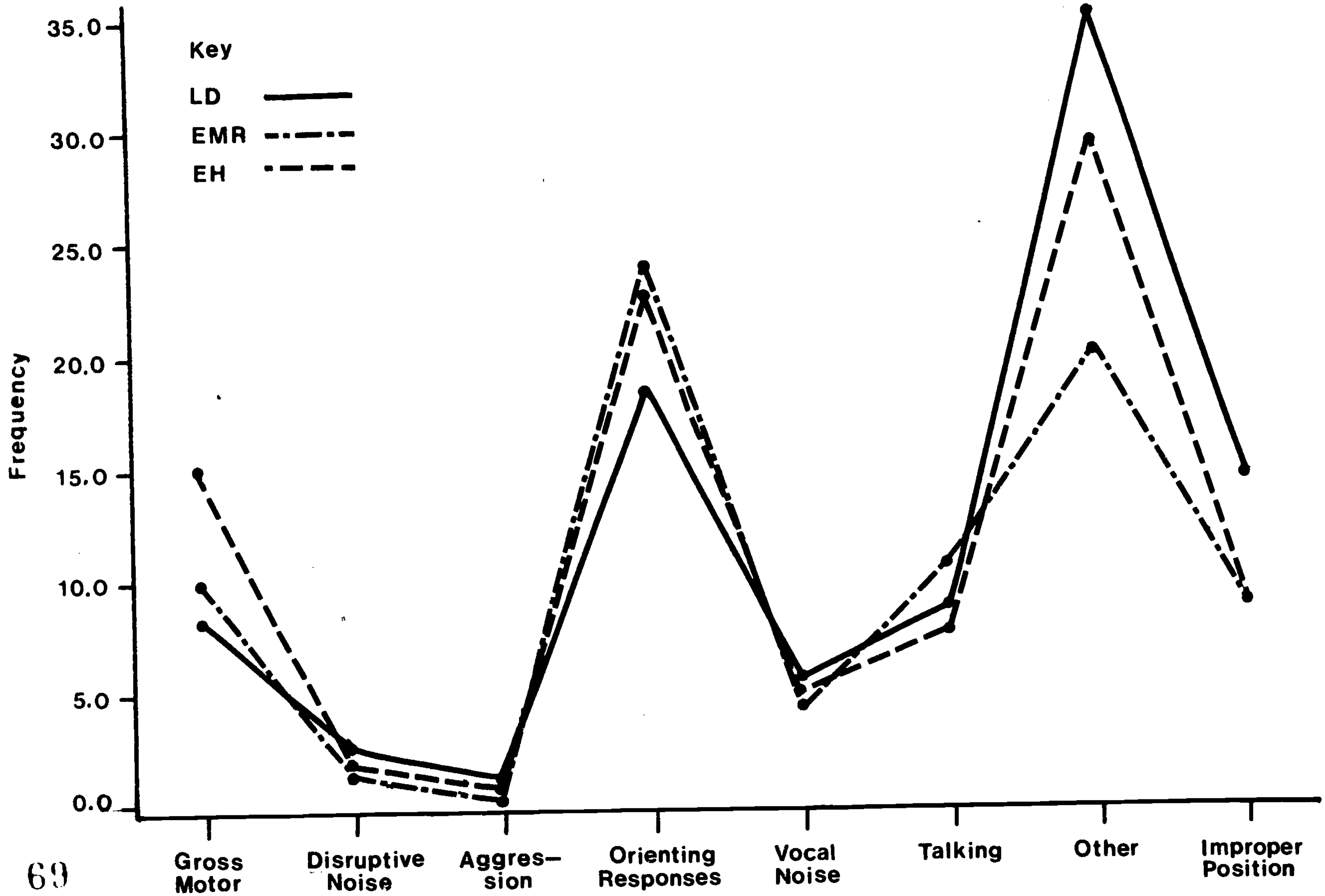


FIGURE 3

Total Mean Frequencies of Non-Task Oriented Behavior for EH, LD, and EMR Students in the Regular Class and Special Education Resource Room

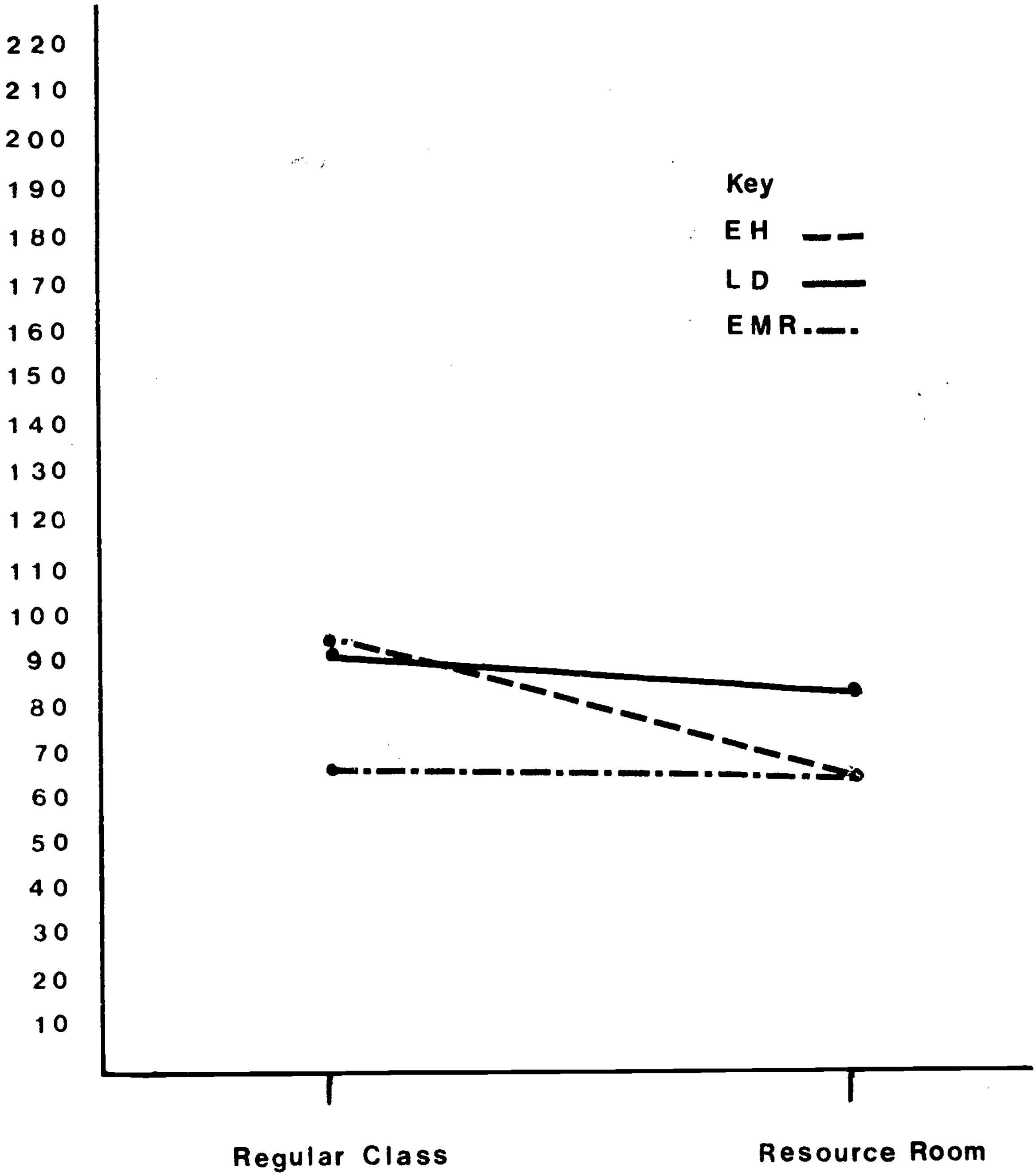
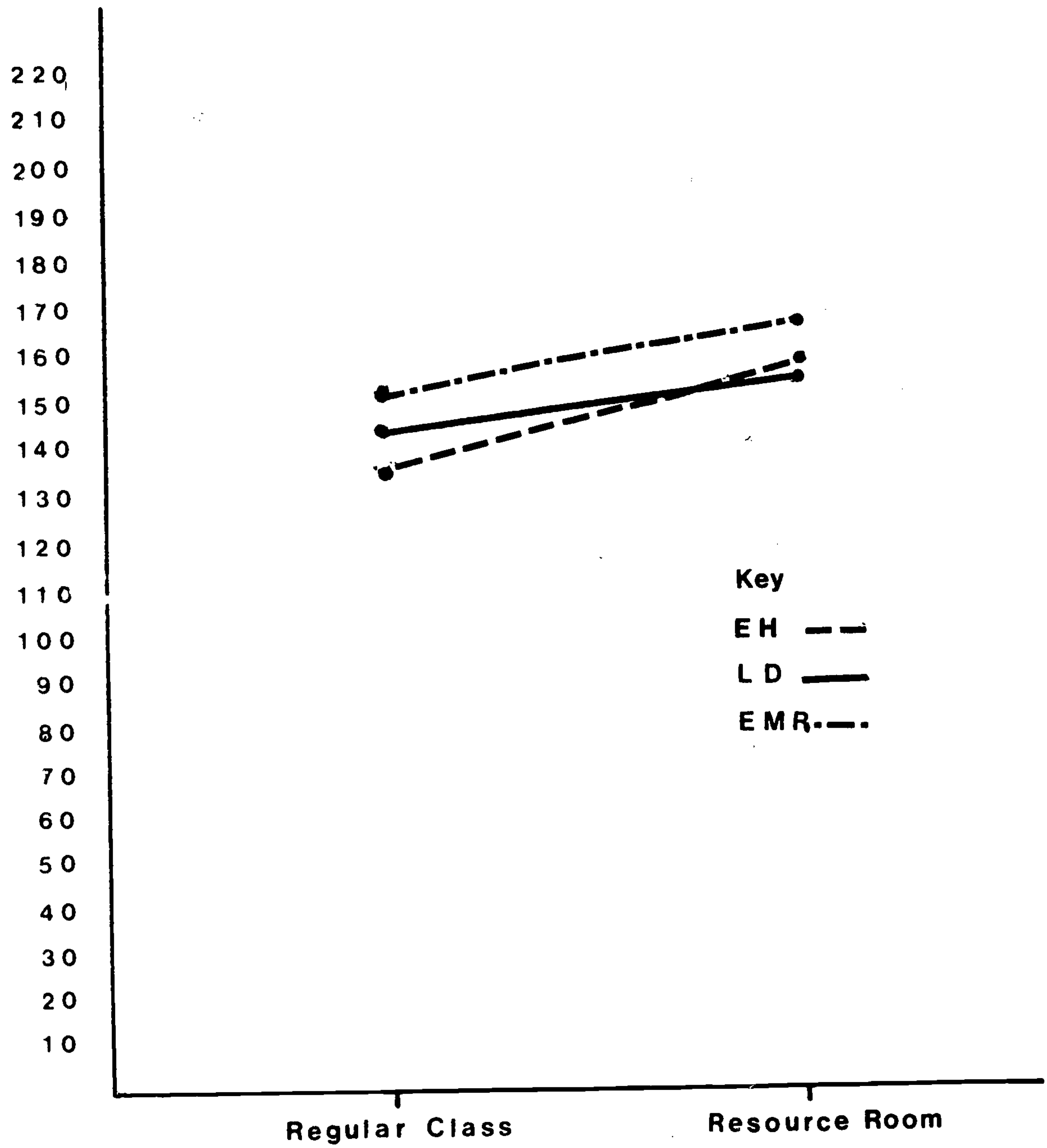


FIGURE 4

Total Mean Frequencies of Task Oriented Behavior for EH, LD, and EMR Students in the Regular Class and Special Education Resource Room



Observational Reliabilities

Two types of reliability were calculated on the data obtained from the observational technique used in this investigation. The first type of reliability is the correlation between scores based on observations made by different observers at the same time. The coefficient of observer agreement (Medley & Mitzel, 1963) was based on frequencies obtained from each observer's ratings compared to a criterion rater's observations. In the present study the three observers' ratings yielded coefficients of observer agreement of r = .76, r = .82, and r = .88, respectively.

Because observational researchers argue that a coefficient of observer agreement does not tell how closely an obtained score may be expected to approximate a true score, a reliability coefficient has been calculated (Medley & Mitzel, 1963). Using an analysis of variance procedure to obtain the reliability coefficient the proportion of total variance attributed to subjects can be measured (Myers, 1972). The reliability coefficient measures the degree to which observers measure the same behavioral traits. More specifically the coefficients are an average of the intercorrelations among the dimensions of behavior when the within-items variance is used to calculate the coefficients.

For the present observational study two separate analysis of variance procedures were completed. The first analysis was used to compute the reliability coefficient for non-task oriented behaviors for the three categories of exceptional students. The reliability coefficient that was computed was r = .65. The second analysis of variance procedure was used to compute the reliability coefficient for task oriented behaviors for the samples of exceptional children. For task oriented behavior the coefficient obtained was r = .64.

The two reliability measures can be distinguished by information they yield concerning the data. The coefficient of observer agreement gives information about the objectivity of the observational technique. The reliability coefficient tells how accurate the measures are in rating the operationally defined behaviors.

Instrumentation Reliability

The behavior counting checklist provides an economical and reliable method of assessing problem behavior in the classroom (Borich and Madden, 1977). Developed by Becker, Madsen, Arnold and Thomas (1967) as the 'Descriptive Behavior Schedule', the instrument offers a limited number of well defined categories and an uncomplicated coding system, which has consistently produced a high percentage of interobserver agreement (Borich and Madden, 1977).

The Disruptive Behavior Schedule (DBS) has been used in a number of studies. As a result several estimates of interrater reliability are available. When Becker et al. (1967) originally used the instrument reliabilities above 80% were obtained prior to baseline data collection. A similar level of interobserver agreement was obtained by O'Leary and Becker (1968), who ran six reliability checks averaging .82.

Specific validity is not reported for the DBS. However, the instrument has in several studies recorded a reduction in disruptive pupil behaviors following the introduction of behavior modification procedures in the classroom (Becker et al., 1967; O'Leary and Becker, 1968; O'Leary, Becker, Evans and Saudorgas, 1969; Thomas, Nielsen, Kuypers, and Becker, 1967).

Psychometric Assessment Battery Analyses

Psychometric data for the samples of exceptional and non-handicapped children were collected based on the current, prevalent practice of local education agencies. Local agencies use most (if not all) of the tests used in the present study to identify and place special needs students in educational programs.

The battery of tests used included: (1) the Wechsler Intelligence Scale for Children-Revised, (2) the Peabody Individual Achievement Test, (3) the Woodcock-Johnson Psychoeducational Test Battery, (4) the Piers-Harris Self-Concept Scale, and (5) the Developmental Test of Visual Motor Integration.

Raw scores obtained from each of the testing devices were converted to scaled scores, grade equivalents or percentile scores. Analysis of variance procedures were completed to compare (1) exceptional child categories, (2) exceptional child categories and the at-risk group, and (3) exceptional child categories and the two non-handicapped groups. Results are presented by describing each comparison for each psychometric device administered.

Wechsler Intelligence Scale for Children-Revised (WISC-R)

Data analysis for WISC-R results were completed using a one-way analysis of variance procedure. Intelligence Quotient (IQ) scores were initially examined followed by an analysis of the scaled scores from each subtest of the WISC-R. Figure 5 presents a summary of the results of the analysis of

Figure 5

Summary of Mean IQ Scores and Significant
F-Ratios Among Three Groups of Exceptional
Children on the WISC-R

	VERBAL IQ	PERFORMANCE IQ	FULL SCALE IQ
EDUCABLE MENTALLY RETARDED	$\bar{x}$ = 70.4 *	$\bar{x}$ = 74.2 *	$\bar{x}$ = 70.3 *
EMOTIONALLY DISTURBED	$\bar{x}$ = 67.0 *	$\bar{x}$ = 72.6 *	$\bar{x}$ = 68.3 *
LEARNING DISABLED	$\bar{x}$ = 86.8 *	$\bar{x}$ = 91.5 *	$\bar{x}$ = 88.1 *

* Significant at $p > .01$

variance procedure. Mean IQ scores are shown for each category of exceptional student for verbal IQ, performance IQ and full scale IQ. The statistical procedure yielded significant differences for two comparisons. Table 7 summarizes the means, standard deviations and analysis of variance for verbal IQ scores. Significant differences were indicated ($\underline{F}(2, 47) = 12.47$). Non-significant differences were found for performance IQ ($\underline{F}(2, 47) = 3.21$). A significant difference was also found for full scale IQ ($\underline{F}(2, 47)$ 15.63. Means, standard deviations and analysis of variance are summarized in Tables 8 and 9 respectively.

To determine the main effects Tukey's HSD posteriori multiple comparison test was used to determine pairwise comparisons among mean verbal IQ scores (Kirk, 1968). The critical value obtained by employing Tukey's HSD procedure was 3.42 ($\underline{p} > .05$). The results are indicated in Table 10 using Duncan's procedure. Tukey's HSD procedure yielded a significant difference between the Verbal IQ means of (1) learning disabled children ($\overline{X} = 86.83$) and (2) emotionally disturbed ($\overline{X} = 67.85$) and educable retarded students ($\overline{X} = 70.42$). These results suggest that LD students do differ significantly from the other categories of exceptional children on verbal IQ.

Table 10

Summary of Differences Among Mean Verbal IQ Scores on the WISC-R for EMR, ED and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
67.85	70.42	86.83

Table 7

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal IQ Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	70.42	9.11
ED	67.85	15.81
LD	86.83	10.26

n = 50

Source	df	MS	F
Exceptionality	2	1437.19	12.47 *
Error	47	115.25	

* $p > .01$

Table 8

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance IQ Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	74.21	8.35
ED	72.62	15.80
LD	88.25	11.16

n = 50

Source	*df*	*MS*	*F*
Exceptionality	2	1344.48	3.21
Error	47	418.82	

* $p > .01$

Table 9

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Full Scale IQ Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	70.26	7.02
ED	68.26	16.49
LD	88.12	10.06

n = 50

Source	*df*	*MS*	*F*
Exceptionality	2	1693.62	15.63 *
Error	47	108.29	

* $p > .01$

To determine the effects of the significant difference in mean full scale IQ scores Tukey's procedure was used. It yielded a critical value of 3.42 ($p > .05$). Differences among the mean full scale IQ scores for each group of exceptional children one represented in Table 11 using Duncan's procedure.

Table 11

Summary of Differences Among Mean Full Scale IQ Scores on the WISC-R for EMR, ED, and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
68.26	70.26	88.12

Tukey's HSD procedure yielded a significant difference between the full scale IQ means of (1) learning disabled children ($\overline{X}$ = 88.12) and (2) emotionally disturbed ($\overline{X}$ = 68.26) and educable mentally retarded children ($\overline{X}$ = 70.26). These results suggest that LD students do differ significantly from the other categories of exceptional child on full scale IQ.

Analysis of variance procedures were also completed comparing the three exceptional child categories and the at-risk and normal groups for WISC-R mean IQ scores. Means, standard deviations and analysis of variance summaries for these comparisons of mean IQ scores for exceptional children, at-risk, and normal students are presented in Tables 12, 13, 14,

Table 12

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal IQ Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	70.42	9.11
ED	67.85	15.81
LD	86.83	10.26
At-Risk	90.60	11.11

n = 70

Source	df	MS	F
Classification	3	1561.88	13.28 *
Error	66	117.63	

* $p > .01$

Table 13

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance IQ Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	74.21	8.35
ED	72.62	15.80
LD	88.25	11.16
At-Risk	90.45	10.11

n = 70

Source	df	MS	F
Classification	3	1267.74	11.06 *
Error	66	114.66	

* p .01

Table 14

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Full Scale IQ Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	70.26	7.02
ED	68.37	16.49
LD	88.12	10.66
At-Risk	89.50	8.85

$n = 70$

Source	*df*	*MS*	*F*
Classification	3	1548.06	15.53*
Error	66	99.68	

*$p > .01$

15 , 16, and 17. In all cases analyses yielded significant differences in the means of the groups.

For the comparisons containing the three exceptional student categories and the at-risk group analysis of variance procedures yielded significant differences for verbal IQ ($\underline{F}(3, 66) = 13.28$), for performance IQ ($\underline{F}(3, 66) = 11.06$) and for full scale IQ ($\underline{F}(3, 66) = 15.53$). Tukey's HSD procedure was used to test the degree of significance among the groups for all three comparisons. For verbal IQ a critical value of 3.73 ($\underline{p} > .05$) was obtained. Table 18 uses Duncan's procedure to summarize the results.

Table 18

Summary of Differences Among Mean Verbal IQ Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
67.85	70.42	86.83	90.60

The at-risk group differed significantly from the exceptional child groups in mean scores of verbal IQ. The ED and EMR groups differed significantly from the LD and at-risk groups.

Tukey's HSD procedure was used to examine the relationship of the differences among the groups for mean performance IQ scores. A critical

Table 15

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance IQ Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	74.21	8.35
ED	72.28	15.80
LD	88.58	11.16
At-Risk	90.45	10.11
Normal	122.60	68.31

n = 90

Source	df	MS	F
Classification	4	6213.20	5.48 *
Error	85	1132.33	

* p > .01

Table 16

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal IQ Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	70.42	9.11
ED	67.85	15.81
LD	86.83	10.26
At-Risk	90.60	11.11
Normal	102.80	24.01

n = 90

Source	df	MS	F
Classification	4	2764.97	12.55 *
Error	85	220.27	

* $p > .01$

Table 17

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Full Scale IQ Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	70.26	7.02
ED	79.42	16.49
LD	88.12	10.06
At-Risk	89.50	8.85
Normal	108.40	10.29

n = 90

Source	df	MS	F
Classification	4	3709.67	36.69 *
Error	85	101.10	

* p > .01

value of 3.73 ($p > .05$) was obtained. A summary of differences among mean performance IQ scores is presented in Table 19 using Duncan's procedure.

Table 19

Summary of Differences Among Mean Performance IQ Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
72.62	74.21	88.25	90.45

The at-risk group differed significantly from all others. As previously noted, the exceptional children groups did not differ in the mean performance IQ scores.

Full scale mean IQ scores were compared for the four groups (EMR, ED, LD, at-risk). Significant differences were found. Tukey's HSD post hoc procedure was used to determine the differences among the mean full scale IQ scores for the groups. A critical value of 3.73 ($p > .05$) was found. Duncan's procedure is used in Table 20 to represent the differences among the groups of exceptional and at-risk students.

Results suggest that the at-risk group is significantly different than the ED and EMR group. Also, the at-risk students do not differ significantly in full scale IQ from learning disabled children.

Table 20

Summary of Differences Among Mean Full Scale IQ Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
68.37	70.26	88.12	89.50

As previously noted, each analysis of variance procedure yielded significant differences when all five groups of children were compared on mean scores. Post hoc comparisons using Tukey's HSD procedure suggest that the normal and at-risk groups differed from the exceptional child groups. Summaries of these differences are presented in Tables 21, 22, and 23 using Duncan's procedure.

Table 21

Summary of Differences Among Mean Verbal IQ Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
67.85	70.92	86.83	90.60	102.80

Table 22

Summary of Differences Among Mean Performance IQ Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
72.62	74.21	88.25	90.45	122.60

Table 23

Summary of Differences Among Mean Full Scale IQ Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
68.37	70.26	88.12	89.50	108.40

Summary of Mean WISC-R IQ Scores

An examination of WISC-R IQ scores suggests that non-handicapped children (at-risk and normal) are clearly distinguished from exceptional children by mean verbal, performance and full scale IQ scores. The problem that exists is that IQ scores do not necessarily distinguish among categories of exceptional children. There is no clearly delineated cut-off point or specific definition that defines a handicapping condition (or so it is suggested by the present results).

An examination of the range of IQ scores for the three groups of exceptional children shows that there are no clear cut IQ score cut-off points. Figure shows the range and percent of overlap of WISC-R Verbal IQ scores for the three groups of exceptional children. Educable mentally retarded children, in the present sample, ranged in IQ from a score of 51 to a score of 92. Emotionally disturbed children ranged from 50 to 102 and learning disabled children's scores ranged from 68 to 107. When the 'area of overlap' is examined, it can be seen that 69% of all the exceptional children scored in the range of scores from 63 to 85 on the WISC-R verbal subtests.

Area of overlap is defined as that range of scores where children from all three exceptional child groups had scores in common. In Figure 6 , for example all children sampled had scores in common in verbal IQ as indicated by the shaded area. Figure 7 depicts the range and percent of overlap for the WISC-R performance IQ scores. In this case 47% of all scores fell in the range of 63 to 87. Figure 8 displays the area of overlap for WISC-R full-scale IQ scores. The range of overlap extends from a full scale score IQ of 63 to a score of 85. A total of 56% of

FIGURE 6

Range and Percent of Overlap of WISC-R Verbal IQ Scores for Three Groups of Exceptional Children

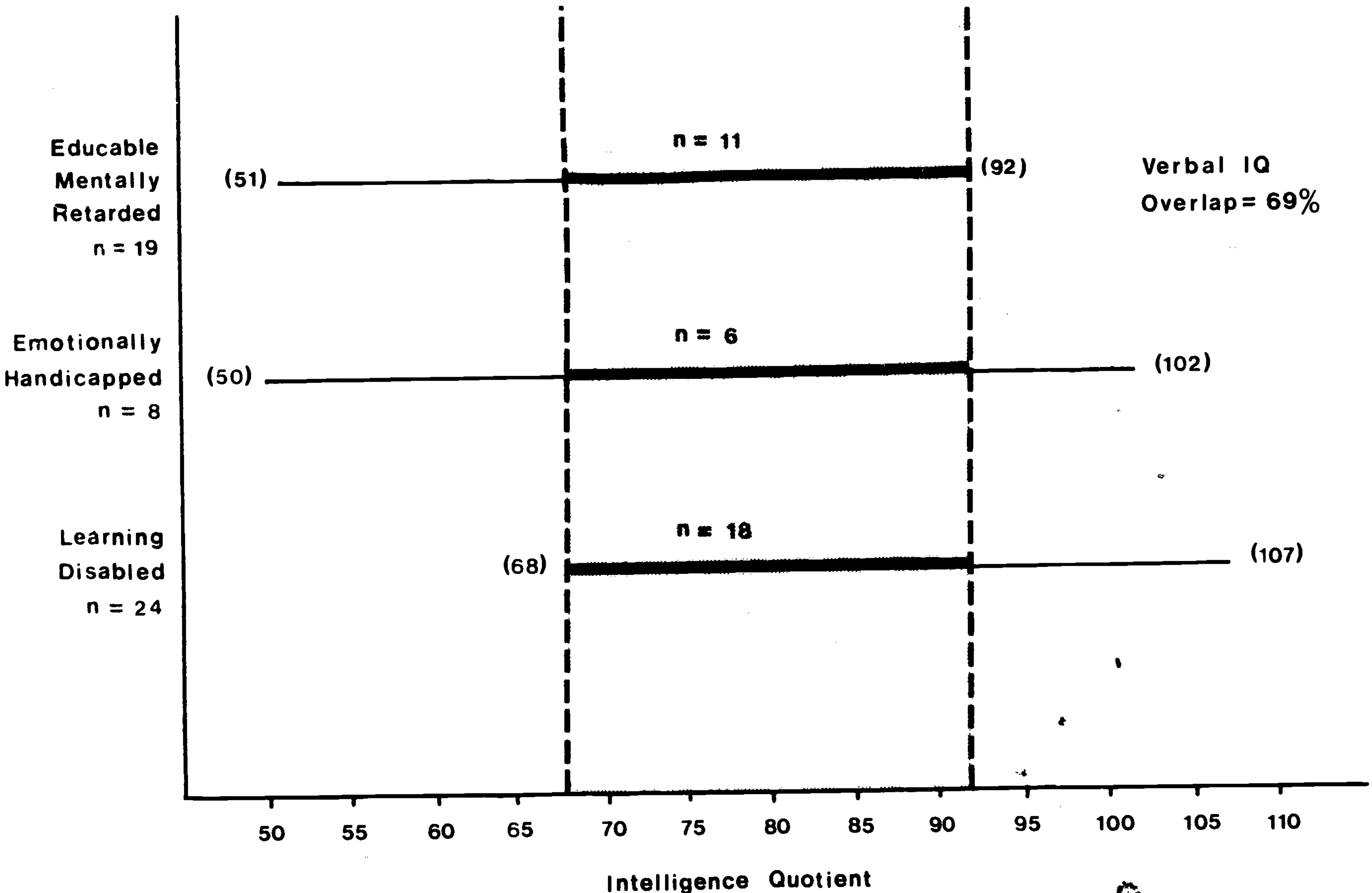


FIGURE 7

Range and Percent of Overlap of WISC-R Performance IQ Scores for Three Groups of Exceptional Children

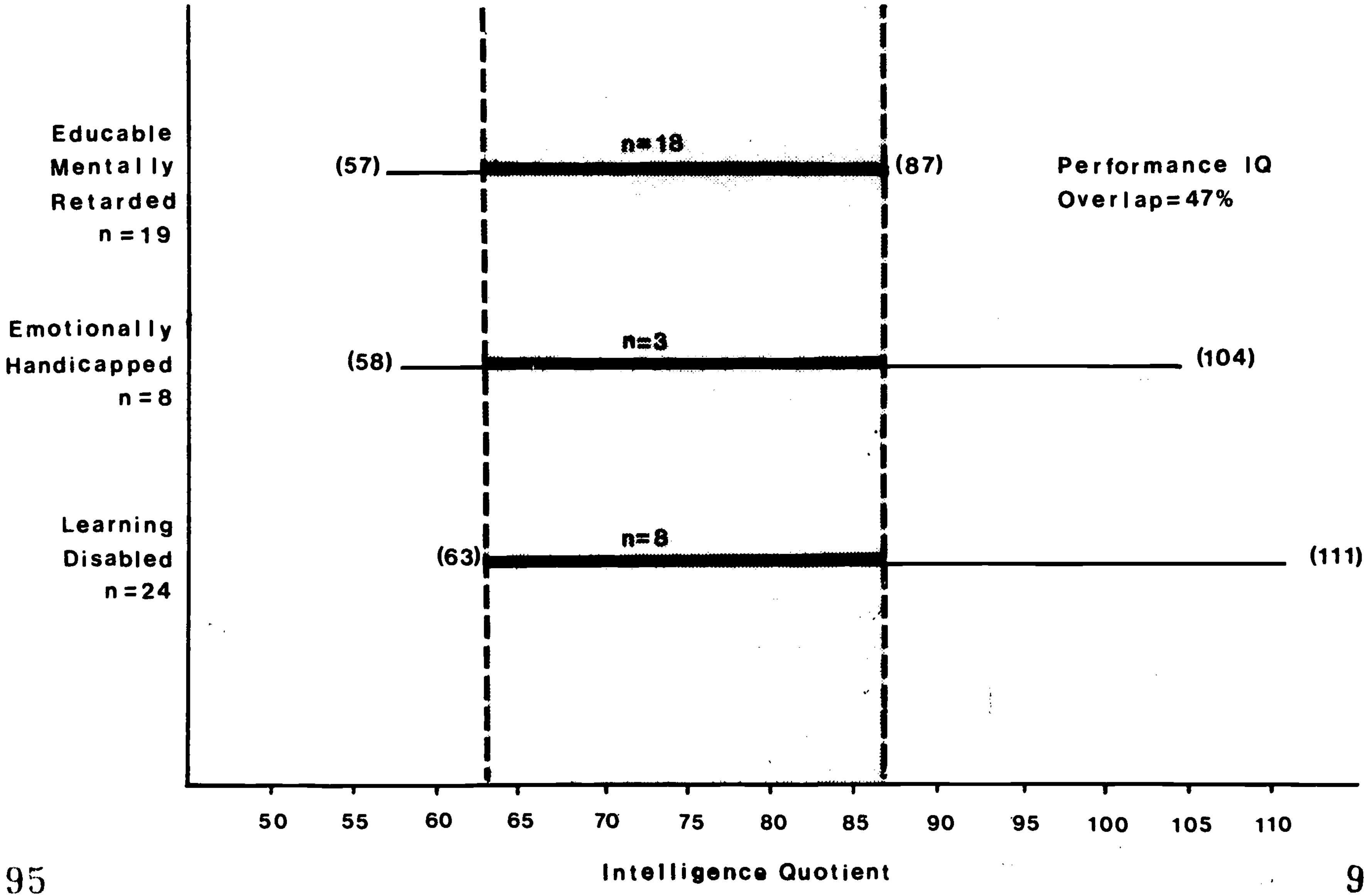
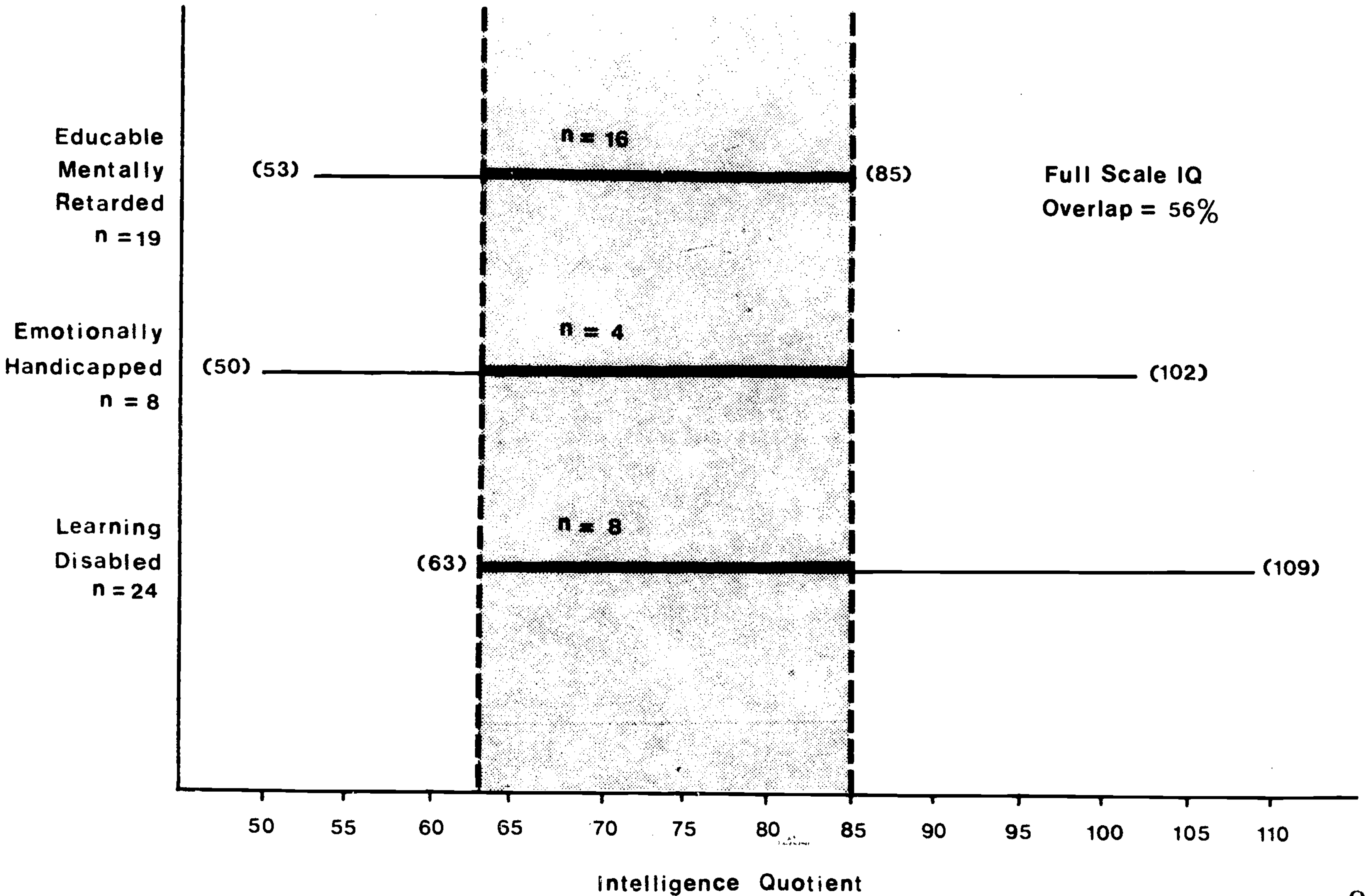


FIGURE 8

Range and Percent of Overlap of WISC-R Full Scale IQ Scores for Three Groups of Exceptional Children



all EMR, ED, and LD children scored in that range.

WISC-R Subtest Scores

A summary of the mean scaled scores of WISC-R subtests that resulted in significant differences for ED, LD and EMR students is presented in Figure 9. All verbal subtests yielded significant differences except for the verbal arithmetic score. A non-significant difference was indicated for that subtest ($F(2, 46) = 2.00$). All performance subtests yielded significant differences among the exceptional child groups except for the performance picture completion subtest ($F(2, 46) = 5.01$) and the performance coding subtest ($F(2, 46) = 1.61$). Means, standard deviations and analysis of variance summary tables for these three non-significant comparisons of WISC-R scaled scores are presented in Table 26(verbal arithmetic), Table 32(performance picture completion) and Table 34(performance coding).

Each of the remaining subtests of the WISC-R yielded significant differences for the EMR, ED, and LD groups when analyzed by one way analysis of variance procedures. Means, standard deviations and analysis of variance summary tables are presented for each subtest. The WISC-R verbal information analysis of results ($F(2, 46) = 6.36$) are presented in Table 25. Verbal similarities ($F(2, 48) = 10.84$), verbal vocabulary ($F(2, 46) = 17.00$), and verbal comprehension ($F(2, 46) = 9.19$) are presented in Tables 27, 28, and 29 respectively.

To test the degree of significance Tukey's HSD procedure was used. A critical value of 3.42 ($p > .05$) was obtained for verbal information scores. Results are summarized below in Table 30.

FIGURE 9

Summary of Mean Scaled Scores and Significant F-Ratios Among Three Groups of Exceptional Children on the WISC-R Subtests

VERBAL

	Information	Similarities	Arithmetic	Vocabulary	Comprehension
EMR	$\overline{X}$ = 4.68 *	$\overline{X}$ = 5.10 *	$\overline{X}$ = 6.05	$\overline{X}$ = 4.15 *	$\overline{X}$ = 6.00 *
ED	$\overline{X}$ = 2.75 *	$\overline{X}$ = 1.87 *	$\overline{X}$ = 6.33	$\overline{X}$ = 2.37 *	$\overline{X}$ = 3.12 *
LD	$\overline{X}$ = 7.55 *	$\overline{X}$ = 7.91 *	$\overline{X}$ = 7.45	$\overline{X}$ = 8.12 *	$\overline{X}$ = 8.79 *

PERFORMANCE

	Picture Completion	Picture Arrangement	Block Design	Object Assembly	Coding
EMR	$\overline{X}$ = 6.84	$\overline{X}$ = 6.50 *	$\overline{X}$ = 4.47 *	$\overline{X}$ = 5.63	$\overline{X}$ = 6.94 *
ED	$\overline{X}$ = 8.33	$\overline{X}$ = 3.75 *	$\overline{X}$ = 3.00 *	$\overline{X}$ = 8.00	$\overline{X}$ = 3.27 *
LD	$\overline{X}$ = 9.58	$\overline{X}$ =10.54 *	$\overline{X}$ = 7.62 *	$\overline{X}$ = 8.34	$\overline{X}$ = 7.83 *

* Significant at $p > .01$

Table 25

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Information Subtest Scaled Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	4.68	2.28
ED	2.75	2.85
LD	7.25	2.36

n = 49

Source	df	MS	F
Exceptionality	2	35.70	6.36 *
Error	46	5.60	

* $p > .01$

Table 26

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Arithmetic Scaled Score for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	6.05	2.65
ED	6.33	2.06
LD	7.45	21.65

n = 49

Source	*df*	*MS*	*F*
Exceptionality	2	11.15	2.00
Error	46	5.57	

Table 27

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Similarities Subtest Scaled Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	5.10	2.07
ED	1.87	2.88
LD	7.91	1.79

n = 49

Source	*df*	*MS*	*F*
Exceptionality	2	45.54	10.84 *
Error	46	4.20	

* *p* > .01

Table 28

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Vocabulary Scaled Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	4.15	1.42
ED	2.37	3.54
LD	8.12	2.34

n = 49

Source	df	MS	F
Exceptionality	2	83.56	17.00 *
Error	46	4.91	

* $p > .01$

Table 29

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Comprehension Scaled Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.12	1.88
ED	7.16	3.76
LD	8.79	1.79

n = 49

Source	*df*	*MS*	*F*
Exceptionality	2	41.73	9.19*
Error	46	4.53	

* $p > .01$

Table 30

Summary of Differences Among Mean Scaled Scores on WISC-R Verbal Information for EMR, ED, and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
2.75	4.68	7.25

A critical value of 3.51 ($\underline{p} > .05$) was obtained for the verbal similarities subtest Table 31 summarizes the differences among the mean scaled scores for the exceptional child groups. Duncan's procedure is used to display the differences.

Table 31

Summary of Differences Among Mean Scaled Scores on WISC-R Verbal Similarities for EMR, ED, and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
1.87	5.10	7.91

A critical value of 3.42 ($p > .05$) was obtained using Tukey's HSD procedure for the verbal comprehension comparison. Presented in Table 32, using Duncan's procedure, is a summary of the differences among those mean scaled scores.

Table 32

Differences Among Mean Scaled Scores on WISC-R Verbal Comprehension for EMR, ED, and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
3.12	6.00	8.79

WISC-R performance subtests that yielded non-significant differences in the mean scaled scores for the three groups of exceptional children were the performance picture completion subtest ($F(2, 46) = 5.01$), the performance object assembly subtest ($F(2, 26) = 2.41$), and the performance coding subtest ($F(2, 46) = 1.61$). Means, standard deviations and analysis of variance summary tables are presented. Table 32 represents the performance picture completion analysis, and Table 33 represents the object assembly analysis. Table 34 represents the performance coding results.

Each of the remaining WISC-R performance subtests yielded significant differences among the groups of EMR, ED, and LD students. The performance picture arrangement subtest ($F(2, 46) = 13.19$), and the performance block

Table 32

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Completion Scaled Score for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	6.84	2.50
ED	8.33	4.86
LD	9.58	2.51

n = 49

Source	_df_	_MS_	_F_
Exceptionality	2	39.85	5.01
Error	46	7.95	

Table 33

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Object Assembly Scaled Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	5.63	2.38
ED	8.00	3.52
LD	8.34	2.47

n = 48

Source	df	MS	F
Exceptionality	2	51.30	2.41
Error	45	21.28	

* p > .01

Table 34

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Coding Scaled Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	6.94	2.46
ED	6.16	2.13
LD	7.83	2.18

n = 49

Source	df	MS	F
Exceptionality	2	8.44	1.61
Error	46	5.24	

design subtest ($F(2, 46) = 6.01$), and comparisons are included in Tables 35 and 36 respectively.

To test the degree of significance for each subtest, Tukey's HSD multiple comparison test was applied to determine pairwise comparisons among means. For the performance picture arrangement subtest the critical value of Tukey's HSD procedure equaled 3.42 ($p > .05$). Represented in Table 37 is the summary of the differences among mean scaled scores on the WISC-R performance picture arrangement subtest.

Table 37

Summary of Differences Among Mean Scaled Scores on WISC-R Performance Picture Arrangement for EMR, ED, and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
3.75	5.68	10.54

Tukey's HSD procedure yielded a critical value of 3.42 ($p > .05$) for the performance block design subtest. Duncan's procedure is used to display the results of the pairwise comparison in Table 38.

Analysis of variance procedures were also completed comparing the three exceptional child categories and the at-risk and normal groups for WISC-R mean subtest scaled scores. Means, standard deviations, and

Table 35

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Arrangement Scaled Score for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	5.68	3.09
ED	3.75	3.63
LD	10.54	1.66

n = 48

Source	df	MS	F
Exceptionality	2	85.73	13.19 *
Error	46	6.49	

* $p > .01$

Table 36

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Block Design Scaled Score for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	4.47	2.54
ED	3.00	3.63
LD	7.62	2.82

n = 48

Source	df	MS	F
Exceptionality	2	54.21	6.01 *
Error	45	7.96	

* $p > .01$

analysis of variance summaries for the comparisons of mean verbal subtest scores are presented in Tables 39 , 40 , 41 , 42 , and 43 ; for the comparisons containing exceptional children and the at-risk groups on verbal IQ subtests. Tables 44, 45, 46, 47, and 48, present the summary data for the exceptional, at-risk and normal groups on verbal IQ subtests. In all cases analyses yielded significant differences in the mean scaled scores for the groups.

Table 38

Summary of Differences Among Mean Scaled Scores on WISC-R Performance Block Design for EMR, ED and LD Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled
3.00	4.47	7.62

For comparisons among the three exceptional child groups (e.g., ED, LD and EMR) and the at-risk group analysis of variance procedures yielded significant differences for verbal IQ measures. Specifically, verbal information ($F(3, 65) = 6.26$), verbal arithmetic ($F(3, 65) = 6.04$), verbal similarities ($F(3, 65) = 11.13$), verbal vocabulary ($F(3, 65) - 14.89$), and verbal comprehension ($F(3, 65) = 7.69$). All were significant.

Additional comparisons were completed for the exceptional child categories, the at-risk group and the non-handicapped (normal) group that yielded

Table 39

Means, Standard Deviations and Analysis of Variance
Summary Table for WISC-R Verbal Information
Scaled Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	4.68	2.28
ED	2.75	2.85
LD	7.25	2.36
At-Risk	7.65	2.23

n = 69

Source	df	MS	F
Classification	3	33.98	6.26 *
Error	65	5.42	

* p > .01

Table 40

Means, Standard Deviations and Analysis of Variance
Summary Table for WISC-R Verbal Arithmetic
Scaled Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	6.05	2.65
~~ED~~	1.87	2.06
LD	7.45	21.65
At-Risk	9.00	2.00

n = 69

Source	*df*	*MS*	*F*
Classification	3	30.85	6.04 *
Error	65	5.11	

* $p > .01$

Table 41

Means, Standard Deviations and Analysis of Variance
Summary Table for WISC-R Verbal Similarities
Scaled Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	5.10	2.07
ED	2.37	2.88
LD	7.91	1.79
At-Risk	8.70	2.45

n = 69

Source	df	MS	F
Classification	3	52.64	11.13 *
Error	65	4.73	

* $p > .01$

Table 42

Means, Standard Deviations and Analysis of Variance
Summary Table for WISC-R Verbal Vocabulary
Scaled Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	4.15	1.42
ED	2.37	3.54
LD	8.12	2.34
At-Risk	8.50	2.43

n = 69

Source	df	MS	F
Classification	3	77.65	14.89 *
Error	65	5.21	

* p > .01

Table 43

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Comprehension Scaled Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.12	1.88
ED	7.16	3.76
LD	8.79	1.79
At-Risk	8.75	2.14

n = 69

Source	*df*	*MS*	*F*
Classification	3	35.09	7.69 *
Error	65	4.56	

* $p > .01$

Table 44

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Information Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	4.68	2.28
ED	2.75	2.85
LD	7.25	2.36
At-Risk	7.65	2.23
Normal	11.85	4.69

n = 89

Source	df	MS	F
Classification	4	131.97	14.37*
Error	84	9.18	

* $p > .01$

Table 45

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Similarities Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	5.10	2.07
ED	1.87	2.88
LD	7.91	1.79
At-Risk	8.70	2.45
Normal	11.95	2.87

n = 89

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Classification	4	128.44	23.24 *
Error	84		

* p > .01

Table 46

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Arithmetic Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	6.05	2.65
ED	6.33	2.06
LD	7.45	21.65
At-Risk	9.00	2.00
Normal	11.25	1.83

n = 89

Source	*df*	*MS*	*F*
Classification	4	80.00	16.97 *
Error	84	4.71	

* $p > .01$

Table 47

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Vocabulary Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	4.15	1.42
ED	2.37	3.54
LD	8.12	2.34
At-Risk	8.50	2.43
Normal	15.55	17.68

n = 89

Source	df	MS	F
Classification	4	340.22	4.55 *
Error	84	74.64	

* $p > .01$

Table 48

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Verbal Comprehension Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.12	1.88
ED	7.16	3.76
LD	8.79	1.79
At-Risk	8.75	2.14
Normal	14.30	13.33

n = 89

Source	df	MS	F
Classification	4	186.61	4.26 *
Error	84	43.77	

* $p > .01$

significant differences for verbal IQ subtests. Verbal information ($\underline{F}(4, 84) = 14.37$), verbal arithmetic ($\underline{F}(4, 84) = 16.97$), verbal similarities ($\underline{F}(4, 84) = 23.24$), verbal vocabulary ($\underline{F}(4, 84) = 4.55$) and verbal comprehension ($\underline{F}(4, 84) = 4.26$) were all significant.

Tukey's HSD post hoc test was used to examine the degree of significance among the groups for all ten verbal IQ subtests. For the exceptional child/at-risk comparison it was consistently found that the at-risk group did indeed differ from the exceptional child categories. For the verbal information comparison a critical value of 3.73 ($\underline{p} > .05$) was obtained. Table 49 uses Duncan's procedure to summarize the results.

Table 49

Summary of Differences Among Mean Verbal Information Scaled Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.75	4.68	7.25	7.65

Tukey's HSD procedure was used to evaluate the relationship among the means for verbal arithmetic. A critical value of 3.73 ($\underline{p} > .05$) was obtained. Duncan's procedure summarized the differences in Table 50.

Table 50

Summary of Differences Among Mean Verbal Arithmetic Scaled Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.50	6.05	7.45	9.00

For verbal similarities Tukey's HSD procedure yielded a critical value of 3.73 ($p > .05$). Duncan's procedure summarizes the differences among the mean scaled scores below. (Table 51).

Table 51

Summary of Differences Among Mean Verbal Similarities Scaled Scores for ED, LD, EMR, and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
1.87	5.10	7.91	8.70

The HSD procedure was used to examine the verbal vocabulary mean scores for the groups of exceptional and at-risk children. Tukey's test yielded a critical value of 3.73 ($p > .05$). Represented in Table 52 are the differences among mean frequencies of verbal vocabulary scaled scores.

Table 52

Summary of Differences Among Mean Verbal Vocabulary Scaled Scores for ED, LD, EMR and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.37	4.15	8.12	8.50

For verbal comprehension Tukey's HSD equaled 3.73 ($p > .05$). These results are represented in Table 53 using Duncan's procedure.

The comparisons made among the groups of ED, LD, EMR, at-risk and normal students all yielded results similar to the four group comparisons. In addition, however, the normal group was most frequently significantly different than all other groups. Tukey's HSD procedure yielded critical values, 3.94 ($p > .05$) for verbal information, arithmetic, similarities, vocabulary and comprehension. Tables 54, 55, 56, 57, and 58 represent the differences among the mean scaled scores for verbal IQ subtests for all five groups (i.e., ED, LD, EMR, At-Risk and normal).

Table 53

Summary of Differences Among Mean Verbal Comprehension Scaled Scores for ED, LD, EMR and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
3.12	6.00	8.75	8.79

Table 54

Summary of Differences Among Mean Verbal Information Scaled Scores for ED, LD, EMR, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.75	4.68	7.25	7.65	11.85

Table 55

Summary of Differences Among Mean Verbal Arithmetic Scaled Scores for ED, LD, EMR, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.50	6.05	7.45	9.00	11.25

Table 56

Summary of Differences Among Mean Verbal Similarities Scaled Scores for ED, LD, EMR, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
1.87	5.10	7.91	8.70	11.95

Table 57

Summary of Differences Among Mean Verbal Comprehension Scaled Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
3.12	6.00	8.75	8.79	14.30

Table 58

Summary of Differences Among Mean Verbal Vocabulary Scaled Scores for ED, LD, EMR, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.37	4.15	8.12	8.50	15.50

Analysis of variance procedures were used to examine comparisons among (1) exceptional and at-risk categories, and (2) exceptional, at-risk and normal students. It was generally the case that the three exceptional child categories did not differ significantly from the at-risk group. However, significant differences were obtained in comparisons containing all five groups of students.

Specifically, non-significant differences were found among exceptional and at-risk students for performance IQ subtests for the performance picture completion subtest ($F(3, 65) = 3.82$), the performance object assembly subtest ($F(3, 64) = 4.01$), and the performance coding subtest, ($F(3, 65) = 3.28$). Means, standard deviations and analysis of variance summary tables are presented for picture completion, Table 59; for object assembly, Table 60; and for coding, Table 61.

Significant F-ratios were found for the performance picture arrangement subtest ($F(3, 65) = 10.36$)and the performance block design subtest ($F(3, 65) = 5.80$). Summaries are presented for these comparisons in Tables 62 and 63.

To evaluate the degree of significance among the groups performance IQ scores, Tukey's HSD procedure was used. For the performance picture arrangement comparison, a critical value of 3.73 ($p > .05$) was obtained. Table 64 represents a summary of differences among mean performance picture arrangement scores. A critical value of 3.73 ($p > .05$) was obtained for the performance block design pairwise comparison. Duncan's procedure summarizes block design differences among mean scaled scores, (Table 65).

Table 59

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Completion Scaled Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	6.84	2.50
ED	8.33	4.86
LD	9.58	2.51
At-Risk	8.55	2.16

n = 69

Source	df	MS	F
Classification	3	26.72	3.82
Error	65	6.99	

Table 60

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Object Assembly Scaled Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	5.63	2.38
ED	8.00	3.52
LD	8.34	2.47
At-Risk	8.05	3.08

n = 68

Source	df	MS	F
Classification	3	30.19	4.01
Error	64	7.51	

Table 61

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Coding Scaled Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	6.94	2.46
ED	6.16	2.13
LD	7.83	2.18
At-Risk	9.20	3.34

n = 69

Source	df	MS	F
Classification	3	22.98	3.28
Error	65	6.99	

Table 62

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Arrangement Scaled Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	5.68	3.09
ED	3.75	3.63
LD	10.54	1.66
At-Risk	10.25	2.23

n = 69

Source	df	MS	F
Classification	3	62.76	10.36 *
Error	65	6.06	

* $p > .01$

Table 63

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Block Design Scaled Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	4.47	2.54
ED	3.00	3.63
LD	7.62	2.82
At-Risk	7.20	2.69

n = 69

Source	*df*	*MS*	*F*
Classification	3	45.10	5.80 *
Error	65	7.76	

* p > .01

Table 64

Summary of Differences Among Mean Performance Picture Arrangement Scaled Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	At-Risk	Learning Disabled
3.75	5.68	10.25	10.54

Table 65

Summary of Differences Among Mean Performance Block Design Scaled Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	At-Risk	Learning Disabled
3.00	4.47	7.20	7.62

Additional performance subtest comparisons examined mean scaled scores for all five groups (EMR, ED, LD, at-risk, normal). Non-significant differences were found for the performance picture completion subtest ($\underline{F}(4, 83) = 2.77$). On this subtest, normal student's performance was not distinguished from exceptional children's performance. Means, standard deviations and analysis of variance for the performance picture completion subtest are represented in Table 66.

Significant differences among group means were found for the performance picture arrangement subtest ($\underline{F}(4, 83) = 9.44$), the performance block design subtest ($\underline{F}(4, 84) = 4.54$), the performance object assembly subtest ($\underline{F}(4, 83) = 3.65$) and the performance coding subtest ($\underline{F}(4, 84) = 4.78$). (See Tables 67, 68, 69 and 70 respectively).

Generally, pairwise comparisons suggested that the normal group and the at-risk group differed significantly from the three exceptional child groups. In two cases the LD group, the at-risk group and the normal group were all significantly different. These pairwise comparisons using Tukey's HSD are described below. For the performance picture arrangement subtest a critical value of 3.94 ($\underline{p} > .05$) was obtained. A summary of the differences among mean performance is represented in Table 71. A critical value equalled 3.94 ($\underline{p} > .05$) for the performance block design subtest. Table 72 represents the summary of differences among means for the block design subtest comparison.

Performance object assembly comparisons yielded a critical value of 3.94 ($\underline{p} > .05$). Duncan's procedure provides a summary of the differences among these means in Table 73. For the performance coding subtest the critical value obtained from the HSD procedure equalled 3.94 ($\underline{p} > .05$). Table 74 represents the summary of differences among means for the performance coding subtest.

Table 66

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Completion Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	6.84	2.50
ED	8.33	4.86
LD	9.58	2.51
At-Risk	8.55	2.16
Normal	14.65	15.75

n = 89

Source	df	MS	F
Classification	4	170.48	2.77
Error	84	61.56	

Table 67

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Picture Arrangement Subtest Scaled Scores for Exceptional At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	5.68	3.09
ED	3.75	3.63
LD	10.54	1.66
At-Risk	10.25	2.23
Normal	11.70	3.79

n = 88

Source	df	MS	F
Classification	4	74.63	9.44 *
Error	83	7.90	

* $p > .01$

Table 68

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Block Design Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	4.47	2.54
ED	3.00	3.63
LD	7.62	2.82
At-Risk	7.20	2.69
Normal	14.65	15.60

n = 89

Source	df	MS	F
Classification	4	277.28	4.54 *
Error	84	61.11	

* p > .01

Table 69

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Object Assembly Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	5.63	2.38
ED	8.00	3.52
LD	8.34	2.47
At-Risk	8.05	3.08
Normal	14.70	15.60

n = 88

Source	df	MS	F
Classification	4	224.52	3.65 *
Error	83	61.55	

* p > .01

Table 70

Means, Standard Deviations and Analysis of Variance Summary Table for WISC-R Performance Coding Subtest Scaled Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	6.94	2.46
ED	2.37	2.13
LD	7.83	2.18
At-Risk	9.20	3.34
Normal	10.35	3.81

n = 89

Source	*df*	*MS*	*F*
Classification	4	41.64	4.78 *
Error	84	8.70	

* $p > .01$

Table 74 represents the summary of the differences among mean scaled scores for exceptional, at-risk and normal children.

Table 71

Summary of Differences Among Mean Performance Picture Arrangement Scaled Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	At-Risk	Learning Disabled	Normal
3.75	5.68	10.25	10.54	11.70

Table 72

Summary of Differences Among Mean Performance Block Design Scaled Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	At-Risk	Learning Disabled	Normal
3.00	4.47	7.20	7.62	14.65

Table 73

Summary of Differences Among Mean Performance Object Assembly Scaled Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
3.75	5.63	7.62	8.05	14.70

Table 74

Summary of Differences Among Mean Performance Coding Scaled Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.37	6.94	7.83	9.20	10.35

Summary of WISC-R Subtests

Children labeled as emotionally disturbed generally showed mean scores that were significantly lower than the other exceptional child categories (EMR and LD). Educable mentally retarded scored generally higher than the emotionally handicapped sample but not as high as the LD sample. The learning disabled sample obtained mean scores higher than the other exceptional child samples, yet significantly lower than the non-handicapped samples (i.e., at-risk and normal). Of all assessment battery tests administered, the WISC-R was able to distinguish among samples of exceptional children. In addition, exceptional child samples were easily differentially distinguished from the non-handicapped groups. Figure 9 displays the mean scaled scores and notes significant F-ratios for each subtest of the WISC-R for the exceptional child groups.

Peabody Individual Achievement Test

As part of the assessment battery the Peabody Individual Achievement Test (PIAT) was administered to all subjects in all groups. For each group, raw scores were converted to mean grade equivalent scores. These scores were compared using one-way analysis of variance procedures. If significant differences were found, Tukey's HSD posteriori multiple comparison test was applied to determine pairwise comparisons among means.

For the exceptional child categories analysis of variance procedures yielded non-significant differences for all five subtests of the PIAT. That is, mean scores did not distinguish one exceptionality of child from the other. Figure 10 summarizes the mean grade equivalent scores for each of the PIAT subtests: (1) mathematics, (2) reading recognition, (3) reading comprehension, (4) spelling, (5) general information, and (6) the total test grade equivalent. In addition, Figure 10 shows that all analysis of variance procedures yielded non-significant differences among mean grade equivalent scores.

FIGURE 10

Summary of Mean Grade Equivalent Scores and Non-significant
F-Ratios Among Three Groups of Exceptional Children
On the Peabody Individual Achievement Test

	Mathematics	Reading Recognition	Reading Comprehension	Spelling	General Information	Total Test
Educable Mentally Retarded	$\bar{x} = 3.6$ *	$\bar{x} = 3.01$ *	$\bar{x} = 3.09$ *	$\bar{x} = 3.82$ *	$\bar{x} = 2.96$ *	$\bar{x} = 4.36$ *
Emotionally Disturbed	$\bar{x} = 4.0$ *	$\bar{x} = 2.00$ *	$\bar{x} = 2.00$ *	$\bar{x} = 4.07$ *	$\bar{x} = 4.3$ *	$\bar{x} = 2.92$ *
Learning Disabled	$\bar{x} = 4.8$ *	$\bar{x} = 3.4$ *	$\bar{x} = 3.57$ *	$\bar{x} = 3.84$ *	$\bar{x} = 4.7$ *	$\bar{x} = 5.79$ *

* Non-significant F-Ratios

Means, standard deviations and analysis of variance summary tables for each of the subtests represent the non-significant differences found among mean grade equivalent scores for EMR, ED and LD samples. The mathematics subtest comparison ($\underline{F}(2, 47) = 2.71$), along with reading recognition ($\underline{F}(2, 47) = 1.03$), reading comprehension ($\underline{F}(2, 47) = 1.69$), spelling ($\underline{F}(2, 47) = 0.06$), general information ($\underline{F}(2, 28) = 3.30$) and total test ($\underline{F}(2, 28) = 4.16$) resulted in no differences among special needs children. These comparisons are shown in Tables 75, 76, 77, 78, 79, and 80.

When the at-risk sample was included in the one way analysis of variance procedure non-significant $\underline{F}$-ratios were found for the mathematics subtest ($\underline{F}(3, 66) = 1.48$), the spelling subtest ($\underline{F}(3, 66) = 1.34$), the general information subtest ($\underline{F}(3, 42) = 2.76$), and the total test grade equivalent ($\underline{F}(3, 66) = 2.24$). Means, standard deviations and analysis of variance summary tables for these comparisons are presented in Table 81 for mathematics, Table 82 for spelling, Table 83 for general information and Table 84 for total test grade scores.

Significant differences were found among the mean grade equivalent scores for the PIAT reading recognition subtest ($\underline{F}(3, 66) = 7.39$) and the reading comprehension subtest ($\underline{F}(3, 66) = 5.98$). Means, standard deviations and analysis of variance summary tables are included. Table 85 represents reading recognition and Table 86 represents reading comprehension analyses.

To test the significant difference Tukey's HSD post hoc test was applied. For reading recognition, a critical value equalled 3.73 ($\underline{p} > .05$). The multiple comparison results are represented in Table 87. It was

Table 75

Means, Standard Deviations, and Analysis of Variance Summary Table for PIAT Reading Recognition Achievement Subtest Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.01	0.94
ED	3.57	1.04
LD	3.45	1.26

n = 51

Source	df	MS	F
Exceptionality	2	1.31	1.03
Error	47	1.26	

Table 76

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Reading Comprehension Achievement Subtest Grade Scores for EMR, LD, and ED Students

Exceptionality	Mean	Standard Deviation
EMR	3.09	.70
ED	3.61	.80
LD	3.57	1.06

n = 50

Source	df	MS	F
Exceptionality	2	1.41	1.69
Error	47	0.83	

Table 77

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Spelling Achievement Subtest Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.82	1.80
ED	4.07	1.22
LD	3.84	1.76

n = 50

Source	df	MS	F
Exceptionality	2	0.17	0.06
Error	47	2.67	

Table 78

Means, Standard Deviations, and Analysis of Variance
Summary Table for PIAT Math Achievement
Subtest Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.61	1.18
ED	4.00	2.40
LD	4.80	1.74

n = 51

Source	*df*	*MS*	*F*
Exceptionality	2	7.66	2.71
Error	47	2.82	

Table 79

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT General Information Achievement Subtest Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	2.96	1.38
ED	4.31	2.99
LD	4.70	1.01

n = 31

Source	df	MS	F
Exceptionality	2	10.26	3.30
Error	28	3.10	

Table 80

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Total Test Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.18	0.85
ED	3.88	1.39
LD	4.37	0.98

n = 31

Source	df	MS	F
Exceptionality	2	4.27	4.16
Error	28	1.02	

Table 81

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Mathematics Subtest Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.61	1.74
ED	4.00	2.40
LD	4.80	1.74
At-Risk	7.55	11.29

n = 70

Source	*df*	*MS*	*F*
Classification	3	57.35	1.48
Error	66	38.74	

Table 82

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Spelling Subtest Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.82	1.80
ED	4.07	1.22
LD	3.84	1.76
At-Risk	9.56	19.89

n = 70

Source	df	MS	F
Classification	3	154.78	1.34
Error	66	115.83	

Table 83

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT General Information Subtest Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	2.96	1.38
ED	4.31	2.99
LD	4.70	1.01
At-Risk	4.77	2.17

n = 46

Source	df	MS	F
Classification	3	9.95	2.76
Error	42	3.60	

Table 84

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Total Test Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.18	0.85
ED	3.88	1.39
LD	4.37	0.98
At-Risk	4.77	1.22

n = 45

Source	*df*	*MS*	*F*
Classification	3	87.24	2.24
Error	67	38.86	

Table 85

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Reading Recognition Subtest Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.01	0.94
ED	2.00	1.04
LD	3.45	1.26
At-Risk	4.74	1.37

n = 70

Source	df	MS	F
Classification	3	10.69	7.39*
Error	66	1.44	

*p > .01

Table 86

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Reading Comprehension Subtest Grade Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.09	0.70
ED	2.03	0.80
LD	3.57	1.06
At-Risk	4.65	1.87

n = 70

Source	*df*	*MS*	*F*
Classification	3	8.40	5.98*
Error	66	1.40	

*p > .01

found that the LD group and the at-risk group differed significantly from the EMR and ED groups. For reading comprehension grade equivalent mean scores, Tukey's HSD procedure showed that the at-risk group differed significantly from all other groups. (See Table 88). For these samples the PIAT subtests were able to discriminate among samples of exceptional children and a non-handicapped/at-risk sample of children.

Table 87

Summary of Differences Among PIAT Reading Recognition Grade Equivalent Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.00	3.01	3.45	4.74

Table 88

Summary of Differences Among PIAT Reading Comprehension Grade Equivalent Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.03	3.09	3.57	4.65

The normal sample of students, when included in the one-way analysis of variance procedure produced non-significant $\underline{F}$-ratios for four subtests. The mathematics ($\underline{F}(4, 84) = 2.20$) and the spelling ($\underline{F}(4, 84) = 1.29$ subtests yielded non-significant differences among the groups of EMR, ED, LD, at-risk and normal students. The general information ($\underline{F}(4, 53) = 1.89$ and the total test grade equivalent ($\underline{F}(4, 54) = 2.11$) also yielded non-significant differences. Table 89 shows the means, standard deviations and analysis of variance summary for mathematics and Table 90 represents the results of the spelling comparison. Tables 91 and 92 represent the summaries for general information and total test grade equivalents.

Significant differences were found among the mean grade equivalent scores of exceptional, at-risk and normal students in the PIAT subtests of reading recognition ($\underline{F}(4, 84) = 14.81$), and reading comprehension ($F(4, 84) = 21.31$). Means, standard deviations and analysis of variance summaries are included. Table 93 represents the reading recognition summary and Table 94 represents the reading comprehension summary.

To test the significant differences in mean grade equivalent scores, Tukey's HSD multiple comparison procedure was used. Tukey's analysis yielded critical values of 3.94 ($\underline{p} > .05$) for each range of means for each significant test. Duncan's procedure represents the pairs of groups that are significantly different. Table 95 represents Duncan's procedure for reading recognition and Table 96 represents the reading comprehension comparison.

Comparing all five samples of students, it was also found that the normal sample differed significantly on reading recognition and reading comprehension from all groups of exceptional children. The at-risk group

Table 89

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Mathematics Subtest Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.61	1.18
ED	4.00	2.40
LD	4.80	1.74
At-Risk	7.55	11.29
Normal	7.85	2.36

n = 89

Source	_df_	_MS_	_F_
Classification	4	69.71	2.20
Error	84	31.64	

Table 90

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Spelling Subtest Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.82	1.80
ED	4.07	1.22
LD	3.84	1.76
At-Risk	9.56	19.89
Normal	6.34	1.80

n = 89

Source	df	MS	F
Classification	4	118.80	1.29
Error	84	91.71	

Table 91

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT General Information Subtest Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	2.96	1.38
ED	4.31	2.99
LD	4.70	1.01
At-Risk	4.77	2.17
Normal	7.46	1.86

n = 59

Source	df	MS	F
Classification	4	96.49	2.11
Error	54	45.54	

Table 92

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Total Test Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.18	0.85
ED	3.88	1.39
LD	4.37	0.98
At-Risk	4.77	1.22
Normal	7.05	1.65

Source	df	MS	F
Classification	4	84.10	1.89
Error	53	44.36	

Table 93

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Reading Recognition Subtest Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.01	0.94
ED	2.00	1.04
LD	3.45	1.26
At-Risk	4.74	1.37
Normal	6.85	2.97

n = 89

Source	df	MS	F
Classification	4	44.94	14.81 *
Error	84	3.03	

* p > .01

Table 94

Means, Standard Deviations and Analysis of Variance Summary Table for PIAT Reading Comprehension Subtest Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.09	0.70
ED	2.03	0.80
LD	3.57	1.06
At-Risk	4.65	1.87
Normal	6.15	2.14

n = 89

Source	df	MS	F
Classification	4	44.49	21.31 *
Error	84	2.08	

* $p > .01$

also differed from the special education sample on these subtests.

Table 95

Summary of Differences Among PIAT Reading Recognition Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.00	3.01	3.45	4.74	6.06

Table 96

Summary of Differences Among PIAT Reading Comprehension Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.03	3.09	3.57	4.65	6.15

Summary of PIAT Analysis

Results of data analysis yielded no significant differences among the categories of exceptional children on the subtests of the PIAT. This achievement test did not distinguish among the samples of EMR, ED, and LD children in the present study.

Closer examination of the mean grade equivalent scores for the exceptional child samples suggests that the range of scores and the overlap of those scores makes differential diagnosis difficult based on grade equivalent achievement scores. Figure 11 illustrates the range and overlap of PIAT mathematics grade equivalent scores for EMR, ED, and LD children. Overall there is an 88% mathematics grade equivalent overlap. That is, of the 51 children in the three groups, 45 of them scored within the same range of scores. Specifically, for the mathematics subtest, most EMR, ED and LD students scored between the 2.0 grade equivalent level and the 5.0 grade level. For reading recognition, 88% of the children also scored in an area of overlap; between the grade equivalents of 2.0 to 5.0 as shown in Figure 12. Figure 13 represents the range and percent of overlap of the PIAT reading comprehension subtest. Ninety-two percent of the special education samples scored in similar ranges. The range and percent of overlap for PIAT spelling grade equivalent scores is represented in Figure 14. Eighty-six percent of all students scored between the grade equivalents of 2.0 and 6.0. The grade equivalent range for the PIAT general information subtest is much narrower than the other (3.0 to 4.0) subtests. Fifty-six percent of all exceptional child samples scored in that range (see Figure 15). Figure 16 represents the range and percent of overlap of PIAT total test grade equivalent scores. Sixty-four percent of EMR, ED and LD students scored in the range of grade equivalents between 3.0 and 5.0.

FIGURE 11

Range and Percent of Overlap of PIAT Mathematics Grade Equivalent Scores for Three Groups of Exceptional Children

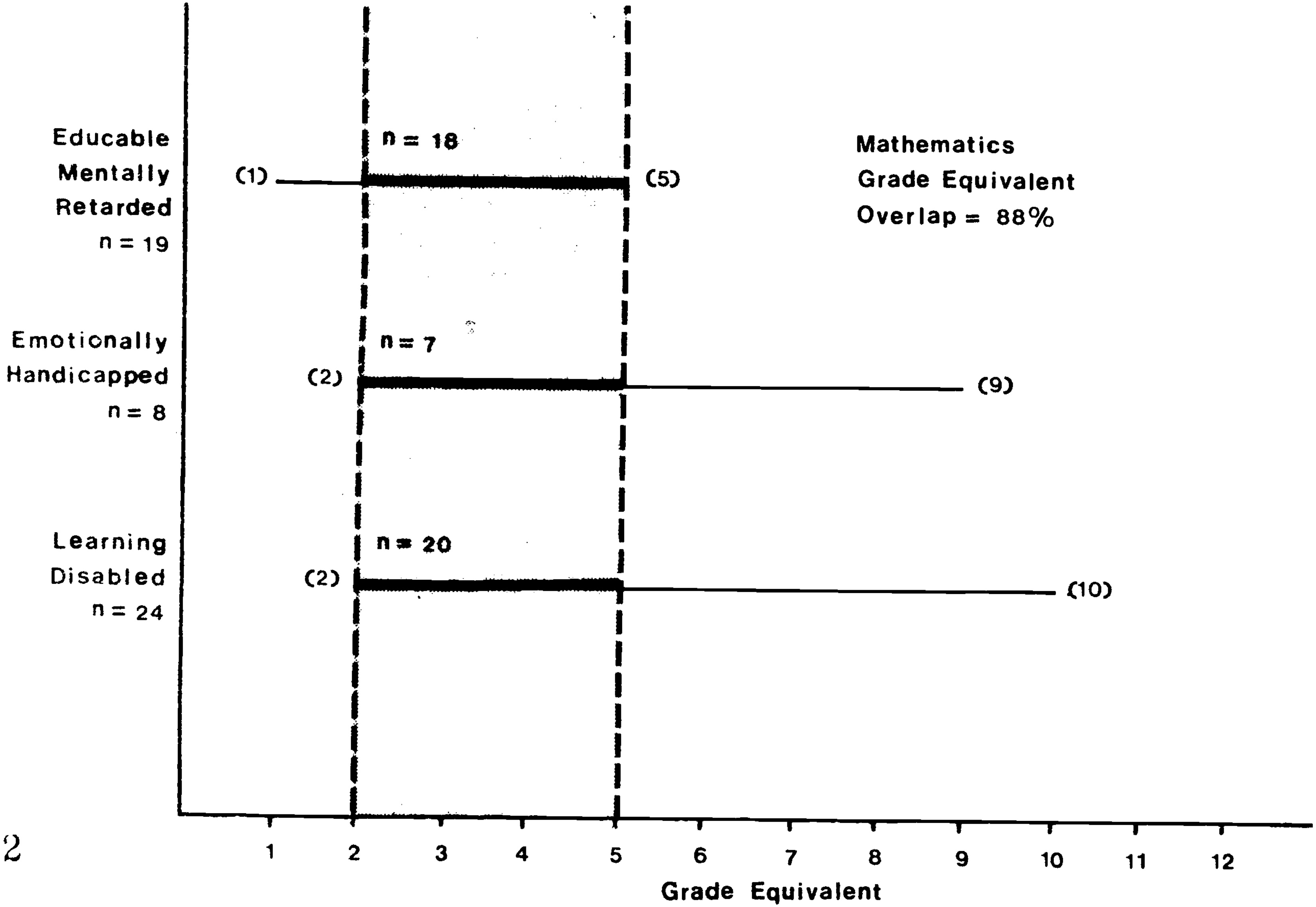


FIGURE 12

Range and Percent of Overlap of PIAT Reading Recognition Grade Equivalent Scores for Three Groups of Exceptional Children

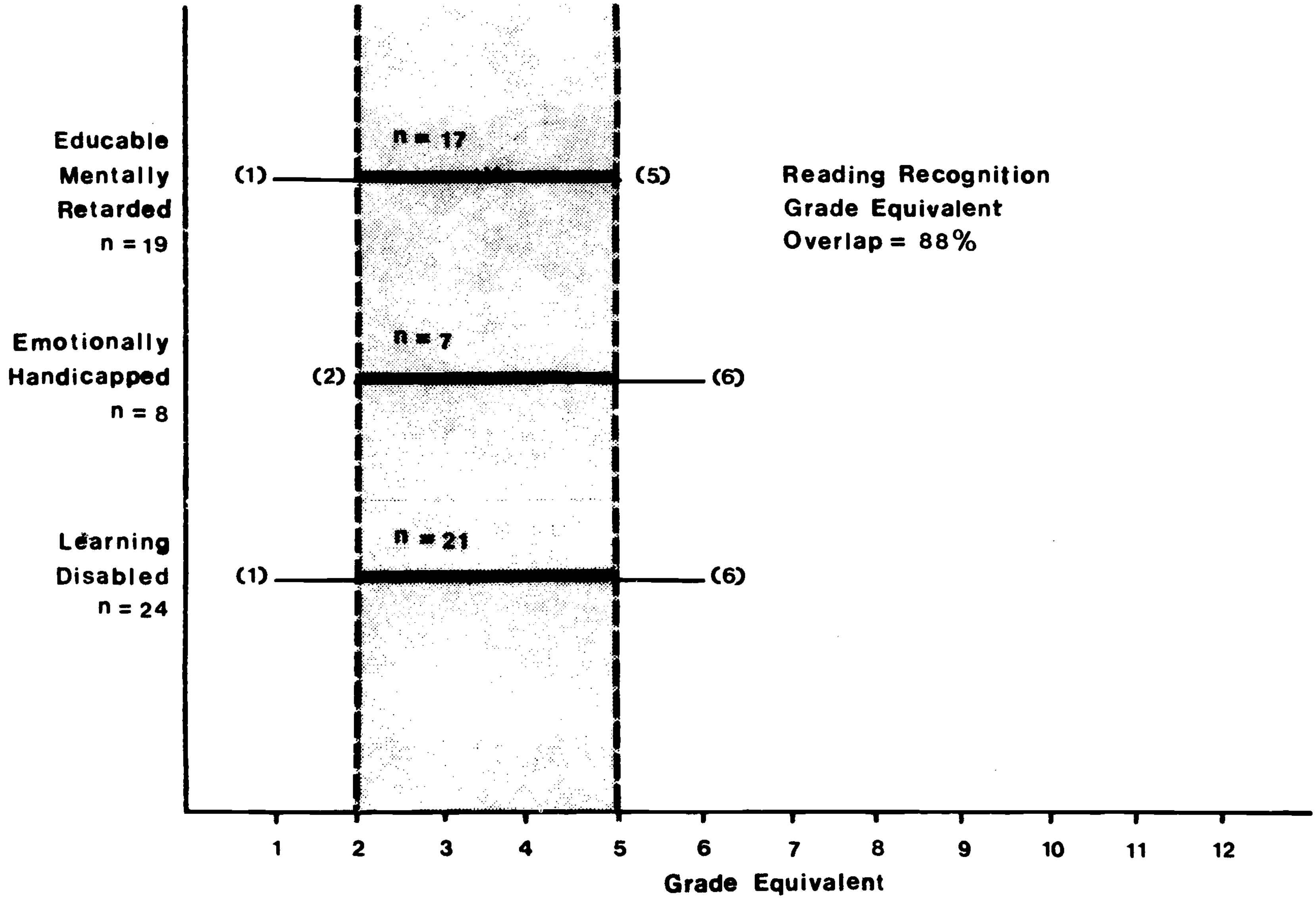


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FIGURE 13

Range and Percent of Overlap of PIAT Reading Comprehension Grade Equivalent Scores for Three Groups of Exceptional Children

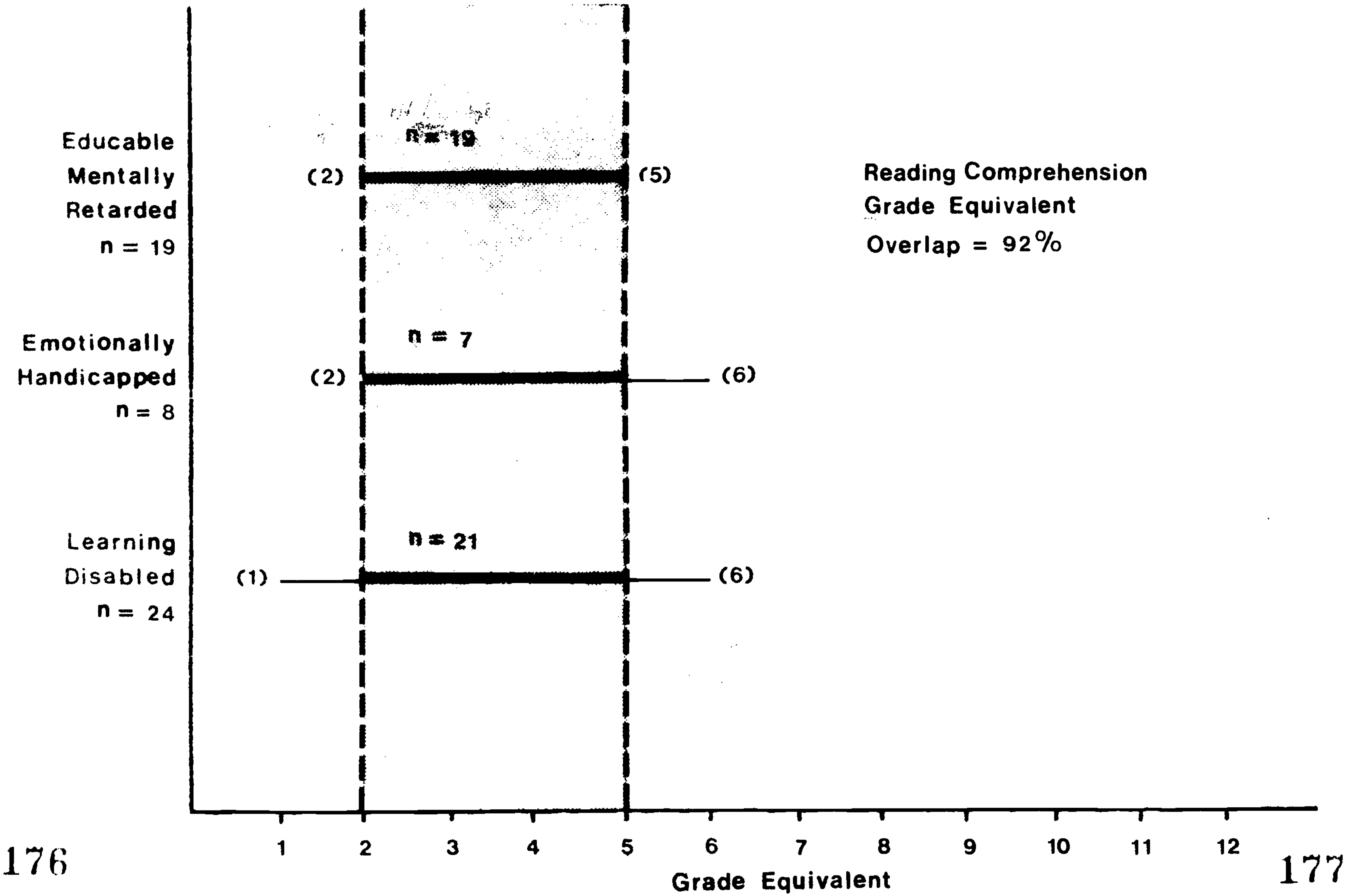


FIGURE 13

Range and Percent of Overlap of PIAT Reading Comprehension Grade Equivalent Scores for Three Groups of Exceptional Children

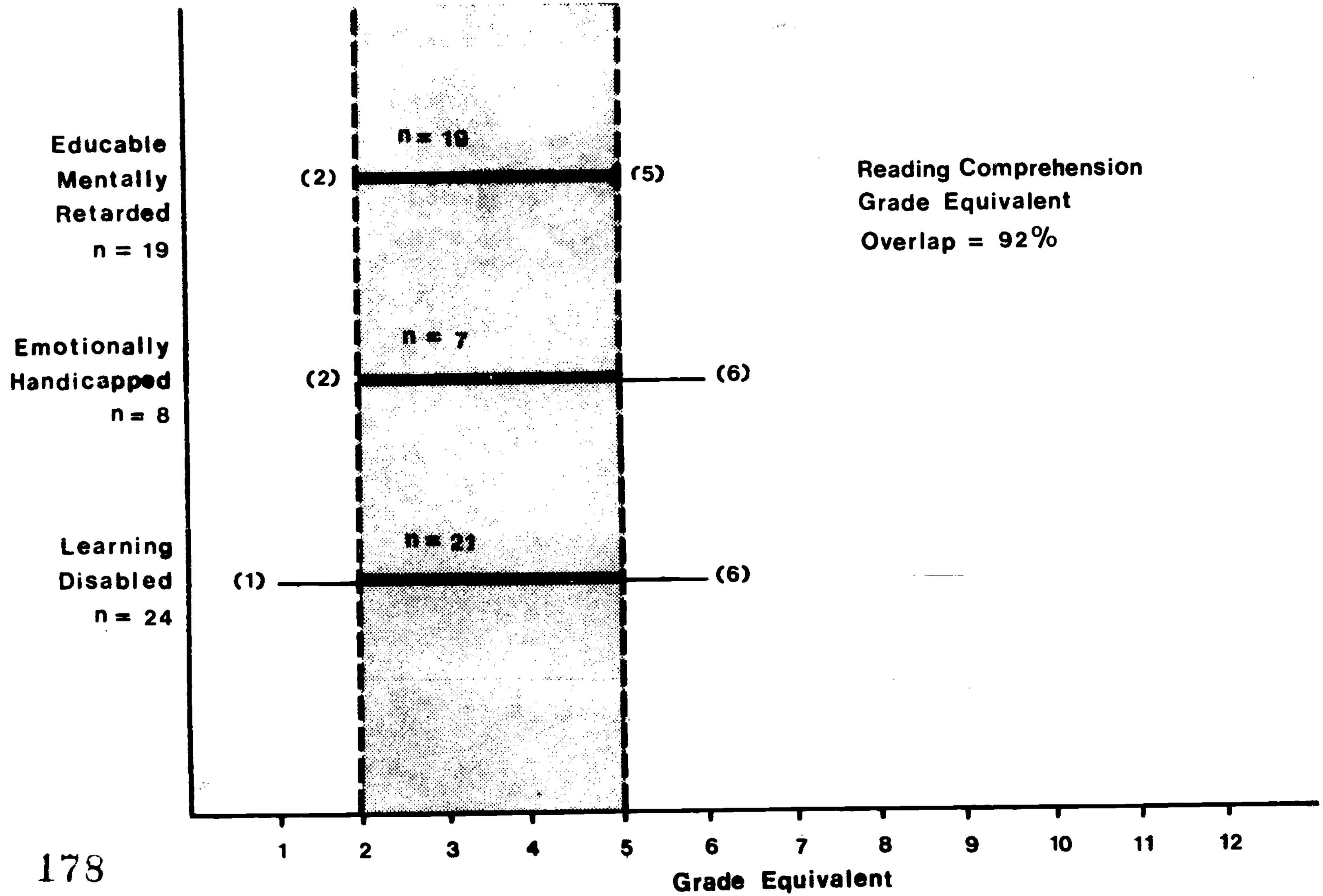


FIGURE 14

Range and Percent of Overlap of PIAT Spelling Grade Equivalent Scores for Three Groups of Exceptional Children

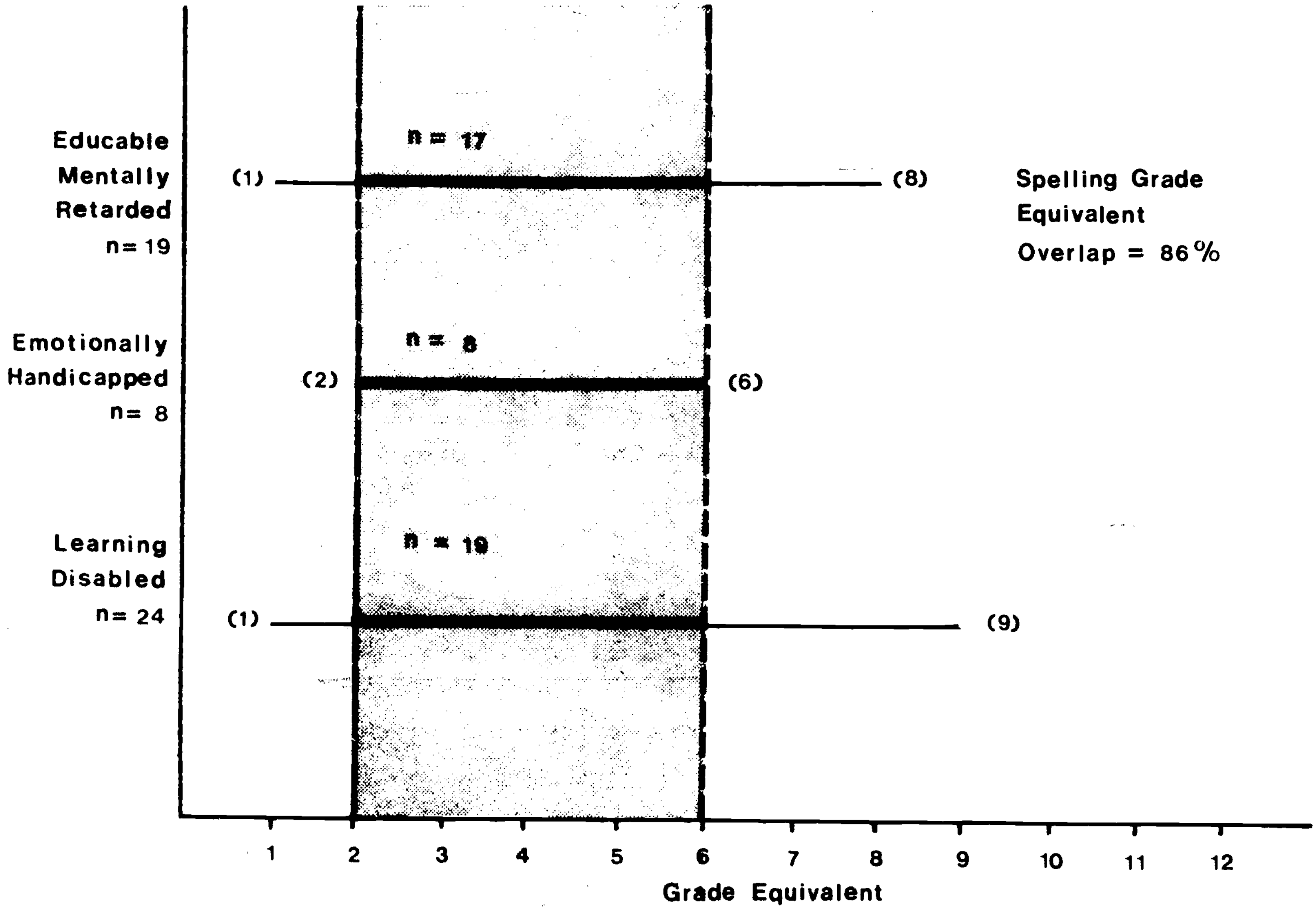


FIGURE 15

Range and Percent of Overlap of PIAT General Information Grade Equivalent Scores for Three Groups of Exceptional Children

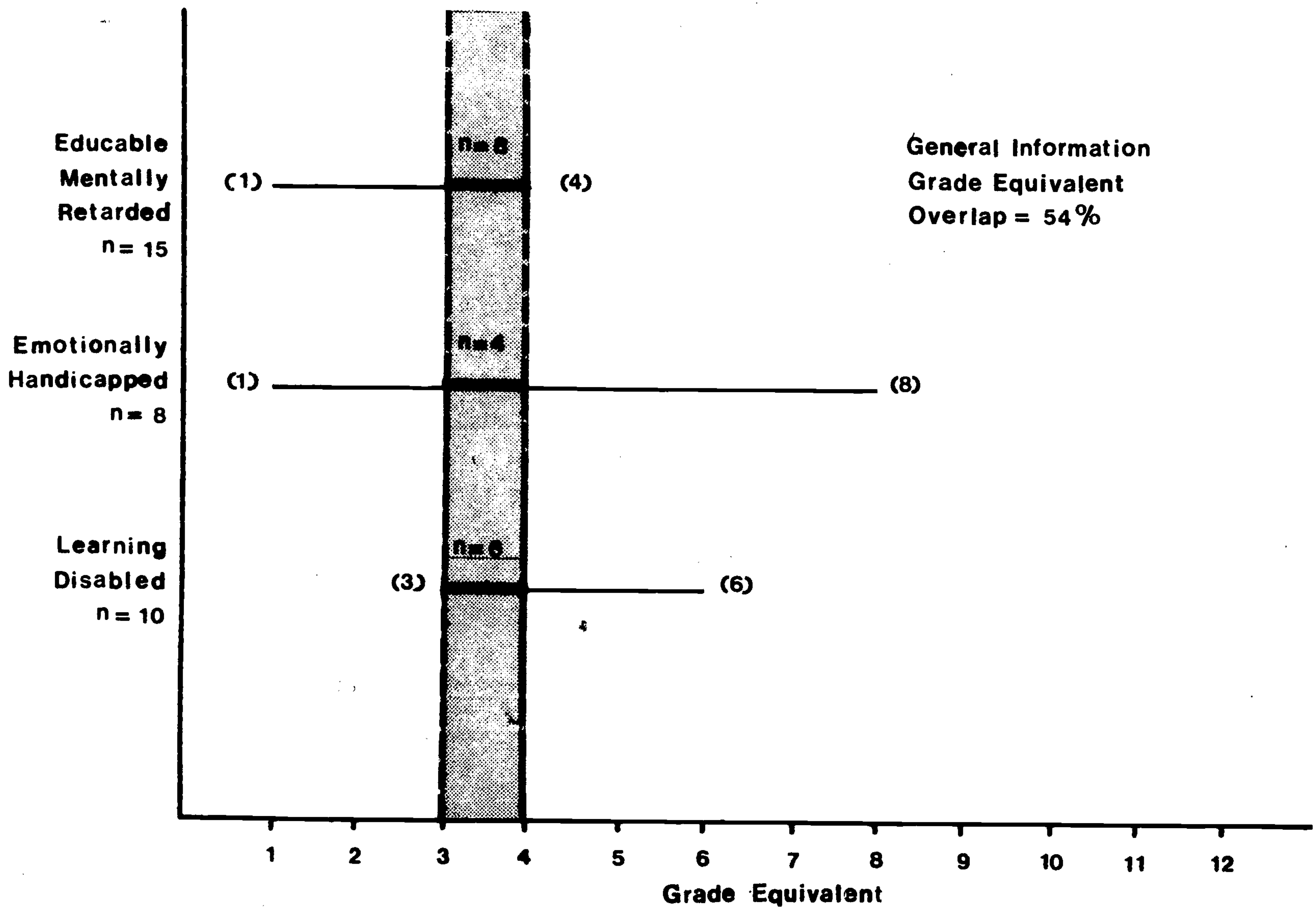
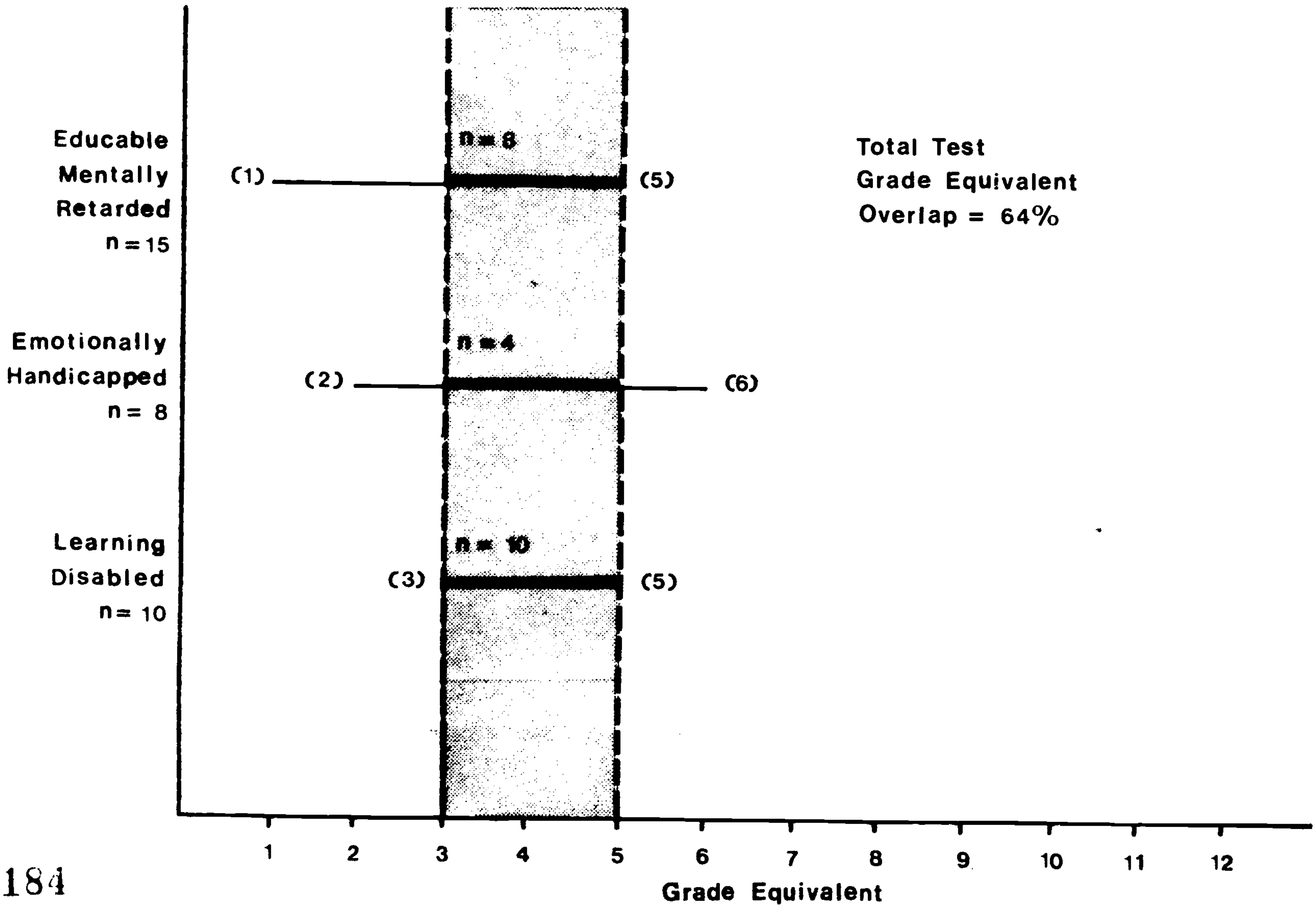


FIGURE 16

Range and Percent of Overlap of PIAT Total Test Grade Equivalent Scores for Three Groups of Exceptional Children



Examination of comparisons including the at-risk and normal samples of children suggests that the mathematics and spelling subtests of the PIAT are not predictors of special needs in children. Academic discrepancy appears to be common in at-risk as well as in normal subjects. Suggested by non-significant differences in the mean grade equivalent scores for both comparisons, these results indicate that in this sample, normal children do not differ in their spelling and mathematics abilities from at-risk and exceptional students on the PIAT.

Significant differences on the remaining PIAT subtests suggest, indeed, that at-risk and normal students do differ from exceptional children based on reading recognition and reading comprehension grade equivalent scores. Normal students differed significantly from EMR, ED, and LD students across the board on PIAT subtests. At-risk students also differed from the exceptional groups on reading recognition and reading comprehension. Specifically, at-risk children scored significantly higher than ED and EMR students in reading recognition and they scored significantly higher than ED children on the reading comprehension PIAT subtest.

Woodcock-Johnson Psychoeducational Test Battery (W-J)

Analysis of Woodcock-Johnson Test Battery scores were completed using a one-way analysis of variance procedure. Grade equivalent mean scores were analyzed for the reading cluster, mathematics cluster and written language cluster academic achievement sections of the battery. For the subtests of each of these achievement clusters mean raw scores were analyzed.

Data analysis was completed in three stages. Comparisons were made (1) among EMR, ED and LD categories, (2) among the three exceptional child categories and the at-risk sample, and (3) among the exceptional, at-risk and normal samples. Where significant results of analysis of variance procedures were obtained, Tukey's HSD posteriori multiple comparison procedure was used.

Woodcock-Johnson Achievement Clusters

Analysis of variance procedures comparing the EMR, ED and LD groups yielded non-significant differences for all three W-J academic cluster mean grade equivalent scores. Figure 16 presents a summary of the results of the analysis of variance procedure. Mean grade equivalent scores are shown for each category of exceptional child for the reading cluster, mathematics cluster and written language cluster. Non-significant differences were found for each comparison. Means, standard deviations and analysis of variance summary tables are presented. Table 97 represents the summary for the mean reading cluster grade equivalent ($F(2, 41) = 0.97$), Table 98 represents the mathematics cluster ($F(2, 47) = 3.20$) comparison and Table 99 summarizes the comparison for the written language cluster ($F(2, 47) = 0.44$).

Analysis of variance procedures comparing the exceptional child categories to the at-risk sample produced significant differences among all three mean achievement cluster scores. The W-J reading cluster mean grade equivalent score comparison ($F(3, 66) = 5.17$) produced significant differences among the groups. The mathematics cluster ($F(3, 66) = 5.71$) and the written language cluster ($F(3, 66) = 6.53$) also yielded significant differences among mean grade equivalent scores. Means, standard

FIGURE 17

Summary of Mean Grade Equivalent Scores and Non-Significant F-Ratios Among Three Groups of Exceptional Children On the Woodcock-Johnson Psychoeducational Test Battery (Achievement Clusters)

	Reading Cluster	Mathematics Cluster	Language Cluster
Educable Mentally Retarded	$\bar{x} = 2.37$ *	$\bar{x} = 3.75$ *	$\bar{x} = 2.93$ *
Emotionally Disturbed	$\bar{x} = 1.30$ *	$\bar{x} = 2.46$ *	$\bar{x} = 1.33$ *
Learning Disabled	$\bar{x} = 2.77$ *	$\bar{x} = 4.65$ *	$\bar{x} = 3.26$ *

* Non-significant F-Ratios

Table 97

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Reading Cluster Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	2.37	0.88
ED	1.30	0.84
LD	2.77	1.07

n = 50

Source	df	MS	F
Exceptionality	2	0.93	0.97
Error	47	0.95	

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Table 98

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Mathematics Cluster Grade Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	3.75	1.28
ED	3.75	1.21
LD	4.65	1.07

n = 50

Source	df	MS	F
Exceptionality	2	4.42	3.20
Error	47	1.38	

Table 99

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Written Language Cluster Grade Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	2.93	1.33
ED	1.33	0.84
LD	3.26	1.54

n = 50

Source	df	MS	F
Exceptionality	2	0.85	0.44
Error	47	1.94	

deviations and analysis of variance summary tables are provided. (See Table 100 for the reading cluster summary, Table 101 for the mathematics cluster summary and Table 102 for the written language summary).

To determine the effects of the significant difference on mean grade equivalent scores on the W-J achievement clusters, Tukey's HSD procedure was used. A critical value of 3.73 ($p > .05$) was obtained for the reading cluster, mathematics cluster and written language comparisons. Duncan's procedure was used to indicate differences among means for the four groups of children on the three achievement clusters. Table 103 represents the differences among mean grade equivalent scores for the reading cluster, Table 104 represents the comparison for the mathematics cluster, and Table 105 the written language cluster.

Table 103

Summary of Differences Among Mean W-J Reading Cluster Grade Equivalent Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
1.30	2.37	2.77	3.81

In all three cases, the at-risk group differed significantly from the exceptional child categories. In addition, on the written language cluster, both the LD and the at-risk group differed significantly from

Table 100

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Reading Cluster Grade Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	2.37	0.88
ED	1.30	0.84
LD	2.77	1.07
At-Risk	3.81	1.60

n = 70

Source	*df*	*MS*	*F*
Classification	3	7.36	5.17 *
Error	66	1.42	

* $p > .01$

Table 101

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Mathematics Cluster Grade Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	3.75	1.28
ED	2.46	1.21
LD	4.65	1.07
At-Risk	5.13	0.84

n = 70

Source	df	MS	F
Classification	3	6.80	5.71 *
Error	66	1.19	

* p > .01

Table 102

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Written Language Cluster Grade Score for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	2.93	1.33
ED	1.33	0.84
LD	3.26	1.54
At-Risk	4.73	1.56

n = 70

Source	df	MS	F
Classification	3	13.30	6.53 *
Error	66	2.08	

* p > .01

Table 104

Summary of Differences Among Mean W-J Mathematics Cluster Grade Equivalent Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.46	3.75	4.65	5.13

Table 105

Summary of Differences Among Mean W-J Written Language Cluster Grade Equivalent Scores for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
1.33	2.93	3.26	4.73

the EMR and ED groups.

Significant differences were found for all three achievement clusters when the normal sample was included in the analysis of variance procedure. The comparison of mean grade equivalent scores on the reading cluster ($F(4, 85) = 19.05$, the mathematics cluster ($F(4, 85) = 15.57$), and the written language cluster ($F(4, 84) = 15.96$. All were statistically significant. Means, standard deviations and analysis of variance summary tables are presented in Table 106, for the reading cluster; Table 107 for the mathematics cluster; and Table 108 , for the written language cluster.

To test the significant differences, Tukey's HSD multiple comparison test was applied to determine pairwise comparisons among means. A critical value equalled 3.94 ($p > .05$) for each comparison. Below are presented Table 109 for reading, Table 110 , for mathematics and Table 111 for written language. These tables represent summaries of the differences among mean grade equivalent scores using Duncan's procedure.

Table 109

Summary of Differences Among Mean W-J
Reading Cluster Grade Equivalent Scores for
Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
1.30	2.37	2.77	3.81	6.22

Table 107

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Mathematics Cluster Grade Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.75	1.28
ED	3.75	1.21
LD	4.65	1.07
At-Risk	5.13	0.84
Normal	6.69	1.84

n = 90

Source	df	MS	F
Classification	4	23.87	15.57 *
Error	85	1.53	

* $p > .01$

Table 107

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Mathematics Cluster Grade Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	3.75	1.28
ED	3.75	1.21
LD	4.65	1.07
At-Risk	5.13	0.84
Normal	6.69	1.84

n = 90

Source	df	MS	F
Classification	4	23.87	15.57 *
Error	85	1.53	

* $p > .01$

Table 108

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Written Language Cluster Grade Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	2.93	1.33
ED	1.33	0.84
LD	3.26	1.54
At-Risk	4.73	1.56
Normal	6.36	2.00

n = 89

Source	df	MS	F
Classification	4	39.96	15.96 *
Error	84	2.50	

* $p > .01$

Table 110

Summary of Differences Among Mean W-J Mathematics Cluster Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.46	3.75	4.65	5.13	6.69

Table 111

Summary of Differences Among Mean W-J Written Language Cluster Grade Equivalent Scores for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
1.33	2.93	3.26	4.73	5.60

Summary of Mean Achievement Cluster Scores

Analysis of variance procedures and post hoc pairwise comparisons of the mean achievement cluster scores on the W-J Psychoeducational Test Battery indicate that exceptional children are not clearly distinguished. Performance on the W-J clusters does not differentially distinguish among the categories of EMR, ED, and LD students. Non-significant differences yielded by the analysis of variance procedures suggest that academic achievement is not a viable method for use in the diagnostic and placement process for special education students. (Although, the category of LD is defined by failure to achieve in academic tasks).

To illustrate further the difficulty in using academic assessment as a method for identification of exceptional children, Figures 18, 19, and 20 represent the range of achievement scores obtained by those students and the percent of overlap of those scores. Specifically, Figure 18 represents the range and percent of overlap of W-J mean reading cluster scores for EMR, ED and LD children. A total of 71% of the children tested in the present study scored between the grade equivalent scores of 2.0 and 4.0. Categorical labels did not seem to provide any meaningful description of student achievement.

Ninety-six percent of the students in the exceptional child samples scored in the 'area of overlap' in the mathematics cluster (see Figure 19). There were only two children who scored outside the overlap grade equivalent range of 2.0 and 6.0. This also points out the great variability that exists in and among the categorical classification of these students.

An examination of Figure 20 shows that a total of 74% of all excep-

FIGURE 18

Range and Percent of Overlap of Woodcock-Johnson Psychoeducational Test Battery Reading Cluster Grade Equivalent Scores for Three Groups of Exceptional Children

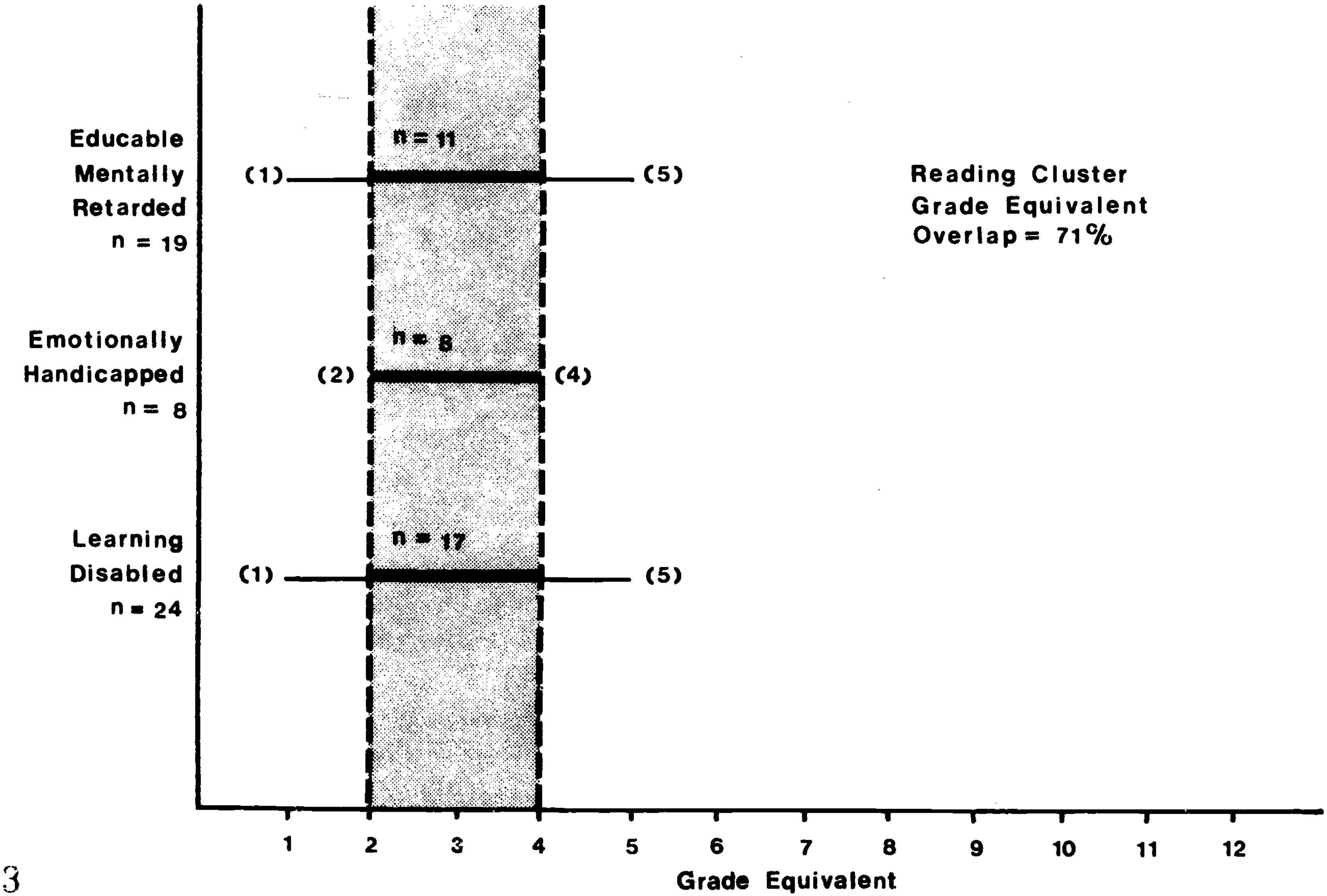


FIGURE 19

Range and Percent of Overlap of Woodcock-Johnson Psychoeducational Test Battery Mathematics Cluster Grade Equivalent Scores for Three Groups of Exceptional Children

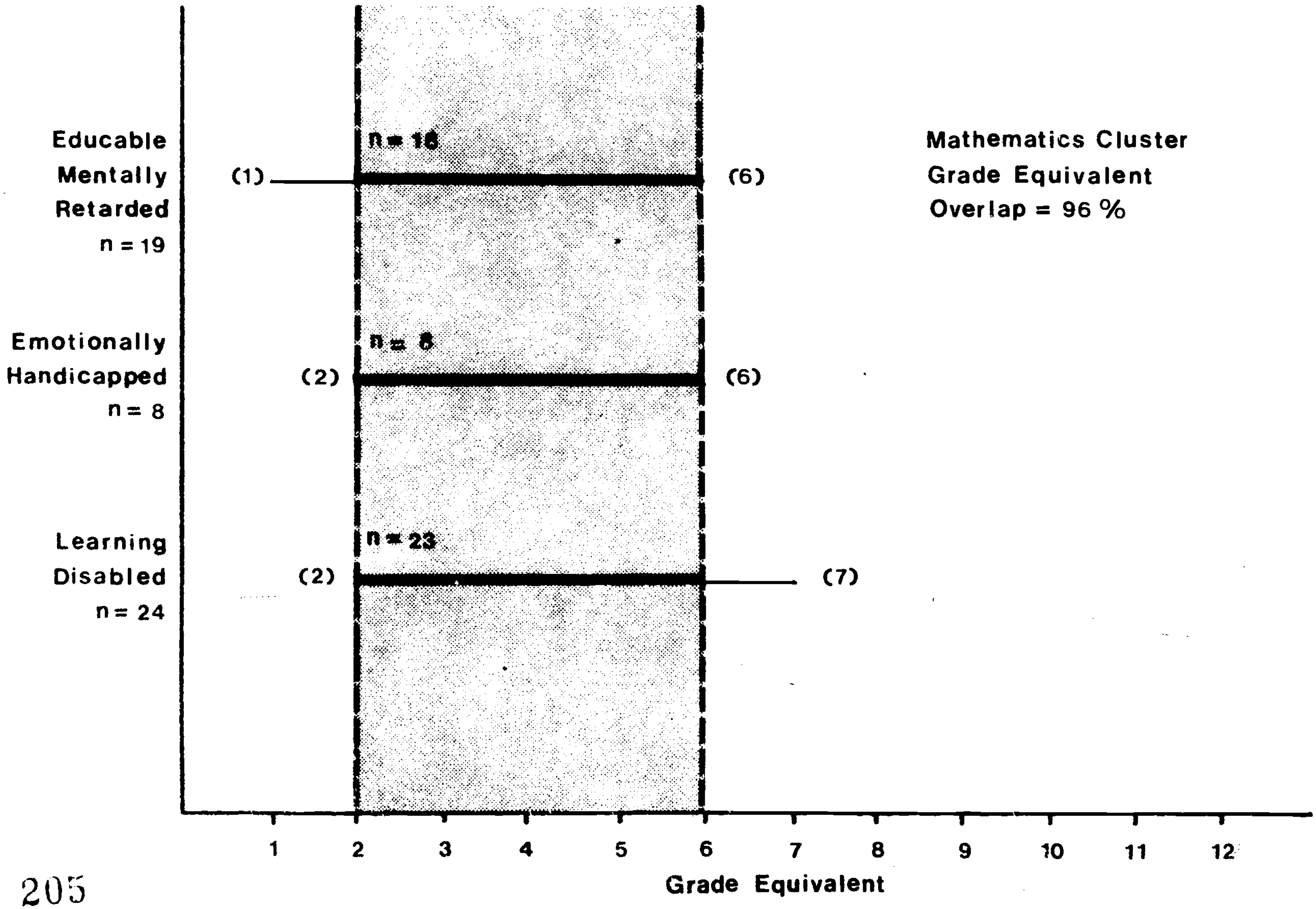
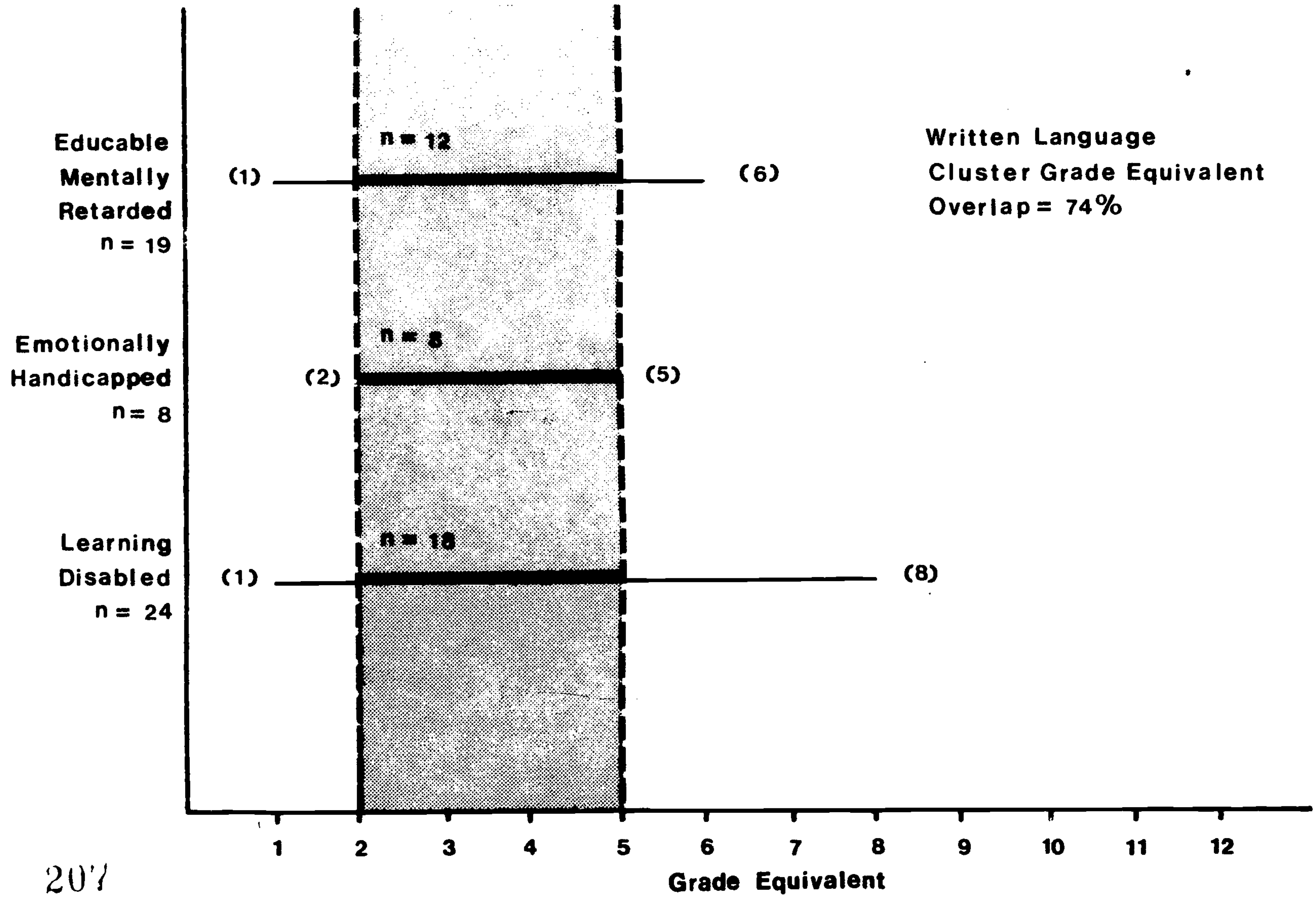


FIGURE 20

Range and Percent of Overlap of Woodcock-Johnson Written Language Cluster Grade Equivalent Scores for Three Groups of Exceptional Children



tional children tested received scores between 2.0 and 5.0 grade equivalent. The figures presented illustrate the non-significant analysis of variance procedures and the difficulty of identifying special needs children based on school achievement.

At-risk and normal children were generally distinguished from the exceptional child samples. To attempt to establish a clearer analysis of these results each subtest of the W-J Battery were examined.

Woodcock-Johnson Psychoeducational Test Battery Achievement Cluster Subtests

The W-J achievement clusters consist of seven subtests. The word attack subtest, the letter-word identification subtest and the passage comprehension subtest make up the reading cluster. The mathematics cluster consists of two subtests; the calculation and applied problems subtests. Finally, the written-language cluster is made up of the dictation subtest and the proofing subtest. For the purposes of the present study, the mean raw scores achieved by each group of students was subjected to analysis of variance and post hoc comparison procedures.

Analysis of variance procedures were completed on the mean raw scores for EMR, ED, and LD categories. In all cases, for all subtests, no significant differences were found among the groups. Analyses yielded the following for each subtest: (1) word attack subtest ($F(2, 47) = 0.61$); (2) letter-word identification subtest ($F(2, 47) = 0.71$); (3) passage comprehension subtest ($F(2, 47) = 3.52$); (4) calculation subtest ($F(2, 47) = 1.74$); (5) applied problems subtest ($F(2, 47) = 5.09$); (6) dictation subtest ($F(2, 47) = 0.22$); and (6) proofing subtest ($F(2, 47) = 0.70$).

Means, standard deviations and analysis of variance summary tables are presented. (See Tables 112 through 118 for these summaries).

When the at-risk group was included in the analysis of variance procedures, two subtests, the word attack subtest ($\underline{F}(3, 66) = 3.63$), and the applied problems subtest ($\underline{F}(3, 67) = 3.71$), yielded non-significant differences among the mean raw scores for the groups. Means, standard deviations, and analysis of variance summaries are provided in Tables 119 and 120. Each of the other W-J achievement subtests yielded significant differences among the mean raw scores.

Analysis of variance procedures produced significant differences in the following W-J subtests when the mean raw scores of EMR, ED, LD and at-risk students were compared: (1) letter-word identification subtest ($\underline{F}(3, 66) = 4.62$); (2) passage comprehension subtest ($\underline{F}(3, 66) = 6.60$); (3) calculation subtest ($\underline{F}(3, 66) = 5.68$); (4) dictation subtest ($\underline{F}(3, 66) = 7.32$); and (5) proofing subtest ($\underline{F}(3, 66) = 5.87$). Means, standard deviations and analysis of variance summaries are provided in Tables 121, 122, 123, 124, and 125 respectively for each analysis.

To test the significance of the analysis of variance results, Tukey's HSD procedure was used. A critical value of 3.73 ($\underline{p} > .05$) was obtained for each pairwise comparison. Table 126 represents a summary of differences among mean raw scores of the letter-word identification subtest. Table 127 represents the pairwise comparisons for passage comprehension; Table 128, calculation; Table 129, dictation; and Table 130, the proofing subtest results.

Table 112

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Word Attack Subtest Raw Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	2.62	4.82
ED	4.28	2.92
LD	5.79	4.77

n = 50

Source	df	MS	F
Exceptionality	2	13.05	0.61
Error	47	21.14	

Table 113

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Letter-Word Identification Subtest Raw Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	25.36	5.70
ED	23.75	4.27
LD	26.50	6.31

n = 50

Source	df	MS	F
Exceptionality	2	24.54	0.71
Error	47	34.34	

Table 114

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Passage Comprehension Subtest Raw Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	9.15	3.70
ED	9.62	3.45
LD	11.87	3.66

n = 50

Source	df	MS	F
Exceptionality	2	46.96	3.52
Error	47	13.33	

Table 115

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Calculation Subtest Raw Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	14.68	4.53
ED	11.37	2.69
LD	16.62	3.62

n = 50

Source	df	MS	F
Exceptionality	2	26.58	1.74
Error	47	15.21	

Table 116

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Applied Problems Subtest Raw Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	24.21	3.66
ED	22.37	4.67
LD	27.50	2.76

n = 50

Source	*df*	*MS*	*F*
Exceptionality	2	59.35	5.09
Error	47	11.66	

Table 117

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Dictation Subtest Raw Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	13.36	5.02
ED	11.25	2.47
LD	14.29	4.59

n = 50

Source	*df*	*MS*	*F*
Exceptionality	2	4.72	0.22
Error	47	20.77	

Table 118

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Proofing Subtest Raw Scores for EMR, ED, and LD Students

Exceptionality	Mean	Standard Deviation
EMR	4.73	3.92
ED	2.50	3.18
LD	5.83	4.03

n = 50

Source	df	MS	F
Exceptionality	2	10.75	0.70
Error	47	15.18	

Table 119

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Word Attack Subtest Raw Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	2.62	4.82
ED	4.28	2.92
LD	5.79	4.77
At-Risk	9.30	6.21

n = 70

Source	*df*	*MS*	*F*
Classification	3	96.12	3.63
Error	66	26.18	

Table 120

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Applied Problems Subtest Raw Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	24.21	3.66
ED	22.37	4.67
LD	27.50	2.76
At-Risk	27.60	3.53

n = 70

Source	*df*	*MS*	*F*
Classification	3	101.66	3.71
Error	66	27.35	

Table 121

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Letter-Word Identification Subtest Raw Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	25.36	5.71
ED	23.75	4.28
LD	26.50	6.31
At-Risk	31.45	4.57

n = 70

Source	*df*	*MS*	*F*
Classification	3	140.70	4.62*
Error	66	30.47	

*p > .01

Table 122

Means, Standard Deviations and Analysis of Variance Summary Table for Woordock-Johnson Psychoeducational Test Battery Passage Comprehension Subtest Raw Scores for Exceptional and At-Risk Students

Classificatior	Mean	Standard Deviation
EMR	9.15	3.70
ED	9.62	3.45
LD	11.87	3.66
At-Risk	14.15	3.15

n = 70

Source	df	MS	F
Classification	3	81.60	6.60 *
Error	66	12.35	

* $p > .01$

Table 123

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Calculation Subtest Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	14.68	4.53
ED	11.37	2.69
LD	16.62	3.62
At-Risk	18.90	2.38

n = 70

Source	df	MS	F
Classification	3	70.84	5.68 *
Error	66	12.47	

* $p > .01$

Table 124

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Dictation Subtest Raw Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	13.36	5.02
ED	11.25	2.47
LD	14.29	4.59
At-Risk	19.50	4.52

n =

Source	df	MS	F
Classification	3	151.41	7.32 *
Error	66	20.68	

* $p > .01$

Table 125

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery Proofing Subtest Raw Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	4.73	3.92
ED	2.50	3.18
LD	5.83	4.03
At-Risk	9.20	3.48

n = 70

Source	df	MS	F
Classification	3	84.12	5.87 *
Error	66	14.32	

* $p > .01$

Table 126

Summary of Differences Among Mean Raw Scores for the W-J Letter-Word Identification Subtest for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
23.75	25.36	26.50	31.45

Table 127

Summary of Differences Among Mean Raw Scores for the W-J Passage Comprehension Subtest for Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
9.15	9.62	11.87	14.15

Table 128

Summary of Differences Among Mean Raw Scores
for the W-J Calculation Subtest for
Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
11.37	14.68	16.62	18.90

Table 129

Summary of Differences Among Mean Raw Scores
for the W-J Dictation Subtest for
Exceptional and At-Risk Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
11.25	13.36	14.29	19.50

Table 130

Summary of Differences Among Mean Raw Scores for the W-J Proofing Subtest for Exceptional and At-Risk Children

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk
2.50	4.73	5.83	9.20

Data analysis was also completed that compared the three groups of exceptional children, the at-risk group and the normal group. Analysis of variance procedures produced significant results for all seven of the W-J achievement subtests. Comparison of mean raw scores for each group yielded significant results for the W-J word attack ($F(4, 85) = 15.70$), letter-word identification ($F(4, 85) = 14.20$), passage comprehension ($F(4, 85) = 18.21$), calculation ($F(4, 85) = 13.91$), applied problems ($F(4, 85) = 13.54$), dictation ($F(4, 85) = 13.55$) and proofing ($F(4, 84) = 16.76$) subtests. Means, standard deviations and analysis of variance summaries for each comparison are presented in Tables 131 through 137.

Tukey's HSD procedure yielded a critical value of 3.94 ($p > .05$) for each analysis. Duncan's procedure is used in Tables 138 through 144 to summarize the differences among mean raw scores for each of the comparisons.

Table 131

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Word Attack Subtest Raw Score for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	2.62	4.82
ED	4.28	2.92
LD	5.79	4.77
At-Risk	9.30	6.21
Normal	15.95	5.79

n = 90

Source	_df_	_MS_	_F_
Classification	4	436.71	15.70 *
Error	85	27.82	

* $p > .01$

Table 132

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Letter-Word Identification Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	25.36	5.71
ED	23.75	4.28
LD	26.50	6.32
At-Risk	31.45	4.57
Normal	36.20	3.72

n = 90

Source	df	MS	F
Classification	4	379.93	14.20 *
Error	85	26.76	

* p .01

Table 133

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Passage Comprehension Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	9.16	3.70
ED	9.62	3.45
LD	11.87	3.66
At-Risk	14.15	3.15
Normal	18.00	2.92

n = 90

Source	df	MS	F
Classification	4	209.32	18.21 *
Error	85	11.50	

* $p > .01$

Table 134

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Calculation Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	14.68	4.53
ED	11.37	2.69
LD	16.62	3.62
At-Risk	18.90	2.38
Normal	22.15	3.67

n = 90

Source	df	MS	F
Classification	4	176.65	13.91 *
Error	85	12.70	

* $p > .01$

Table 135

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Applied Problems Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	24.21	3.66
ED	22.37	4.67
LD	27.50	2.76
At-Risk	27.60	3.53
Normal	31.80	2.46

n = 90

Source	df	MS	F
Classification	4	143.40	13.54 *
Error	85	10.59	

* p > .01

Table 136

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Dictation Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	13.36	5.02
ED	14.14	2.47
LD	14.29	4.59
At-Risk	19.50	4.52
Normal	21.57	3.25

n = 89

Source	df	MS	F
Classification	4	250.97	13.55 *
Error	84	18.22	

* $p > .01$

Table 137

Means, Standard Deviations and Analysis of Variance Summary Table for Woodcock-Johnson Psychoeducational Test Battery, Proofing Subtest Raw Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	4.73	3.92
ED	2.50	3.18
LD	5.83	4.03
At-Risk	9.20	3.48
Normal	13.47	4.26

n = 89

Source	df	MS	F
Classification	4	253.82	16.76 *
Error	84	15.14	

* $p > .01$

Table 138

Summary of Differences Among Mean Raw Scores for the W-J Word Attack Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.62	4.36	5.79	9.30	15.95

Table 139

Summary of Differences Among Mean Raw Scores for the W-J Letter-Word Identification Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
23.75	25.36	26.50	31.45	36.20

Table 140

Summary of Differences Among Mean Raw Scores for the W-J Passage Comprehension Subtest for Exceptional, At-Risk and Normal Students

Educable Mentally Retarded	Emotionally Disturbed	Learning Disabled	At-Risk	Normal
9.15	9.62	11.87	14.15	18.00

Table 141

Summary of Differences Among Mean Raw Scores for the W-J Calculation Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
11.37	14.68	16.62	18.90	22.15

Table 142

Summary of Differences Among Mean Raw Scores for the W-J Applied Problems Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
22.37	24.21	27.50	28.10	31.80

Table 143

Summary of Differences Among Mean Raw Scores for the W-J Dictation Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
11.25	13.36	14.29	19.50	20.05

Table 144

Summary of Differences Among Mean Raw Scores for the W-J Proofing Subtest for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
2.50	4.73	5.83	9.20	13.47

Summary of W-J Achievement Subtests

Categories of exceptional children were not differentially distinguished from one another by analysis of variance procedures. Achievement scores did not differ significantly to assign specific academic achievement traits to one category of child. The Woodcock-Johnson Psychoeducational Test Battery did however yield significant differences between handicapped and non-handicapped samples of students. The at-risk group and the normal group received consistently higher scores than did the three exceptional child samples.

Based on these results it may be stated that children labeled and placed in special services for exceptional children do indeed require the special services. Generally, they score lower on achievement test batteries. Their mean grade equivalent and raw scores show they are behind their non-handicapped peers in academic areas. Those children identified as exceptional show areas of weakness that require remedial strategies.

At-Risk students appear to be behind their normal peers, yet they are able to succeed better than exceptional children. Normal students were consistently discriminated from special needs learners. Therefore, it may be said that those children identified as exceptional are identified appropriately. The label that the exceptional child carries appears to be extraneous.

Piers-Harris Self-Concept Scale

The Piers-Harris Self-Concept Scale was administered to all five samples of children. Raw scores were converted to percentile scores. In turn, individual scores were summed to find the mean self-concept percentile score for each group of children. Analysis of variance procedures were completed comparing the mean scores.

Analyses were completed to obtain three comparisons: (1) the EMR, ED and LD students, (2) the exceptional groups and the at-risk group, and (3) the exceptional, at-risk and normal groups. For each comparison non-significant results were obtained. Means, standard deviations and analysis of variance summary tables are presented for the EMR, ED and LD comparison, ($F(2, 47) = 1.96$) in Table 145, the exceptional and at-risk comparison ($F(3, 66) = 1.72$) in Table 146 and the comparison of all five samples ($F(4, 85) = 1.35$) in Table 147.

Results suggested that EMR, ED, LD, at-risk and normal students did not differ significantly. All mean self-concept percentile scores fell in the range of 41.14% to 62.63%. Normal or adequate self-concept is represented by a percentile score of 50. As self-concept becomes maladjusted or inadequate the self-concept score ranges farther from the

Table 145

Means, Standard Deviations and Analysis of Variance Summary Table for Piers-Harris Self Concept Scale Percentile Scores for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	62.63	22.01
ED	41.14	21.90
LD	50.66	31.01

n = 50

Source	df	MS	F
Exceptionality	2	1419.33	1.96
Error	47	722.10	

$p > .01$

Table 147

Means, Standard Deviations and Analysis of Variance Summary Table for Piers-Harris Self Concept Scale Percentile Scores for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	62.63	22.01
ED	41.14	13.85
LD	50.66	31.01
At-Risk	62.35	28.62
Normal	59.10	26.42

n = 90

Source	df	MS	F
Classification	4	996.37	1.35
Error	85	738.46	

average of 50. A score too high or too low is an indicator of self-concept problems in children. (See Figure 21 for a comparison of mean scores for the exceptional groups).

Developmental Test of Visual Motor Integration (VMI)

Analysis of VMI developmental age equivalent mean scores were completed using a one-way analysis of variance procedure. Significant differences in the mean scores designed to represent visual perception and motor coordination were then examined by Tukey's HSD posteriori multiple comparison test.

Non-significant differences were obtained in two of the analyses. The analysis of variance procedure comparing EMR, ED and LD children showed no differences among the categories ($F(2, 47) = 3.12$). (See Figure 21 for comparison of mean developmental age equivalents for these three groups). Comparisons including the exceptional groups and the at-risk sample also yielded non-significant differences ($F(3, 66) = 1.89$). Means, standard deviations and analysis of variance summary tables are presented; Table 147a for EMR, ED and LD students and Table 148 for the exceptional and at-risk groups.

Significant differences were obtained for the analysis of variance procedure that compared exceptional, at-risk and normal students ($F(4, 85) = 4.78$). A summary of means, standard deviations and analysis of variance are presented in Table 151. To determine pairwise comparisons among the means, Tukey's HSD multiple comparison test was used. For the analysis, Tukey's HSD procedure yielded a critical value of 3.94 ($p > .05$). A summary of the differences among mean developmental age equivalents is represented in Table 149.

FIGURE 21

Summary of Mean Scores and Non-Significant F-Ratios Among Three Groups of Exceptional Children On The Piers-Harris Self-Concept Scale and the Developmental Test of Visual Motor-Integration

	Piers-Harris Self-Concept Scale Percentile Scores	Developmental Test of Visual-Motor Integration Age Equivalents
Educable Mentally Retarded	$\bar{x}$ = 62.63 *	$\bar{x}$ = 7.26 *
Emotionally Disturbed	$\bar{x}$ = 41.14 *	$\bar{x}$ = 7.33 *
Learning Disabled	$\bar{x}$ = 50.66 *	$\bar{x}$ = 8.87 *

* Non-significant F-Ratios

Table 147a

Means, Standard Deviations and Analysis of Variance Summary Table for Developmental Test of Visual-Motor Integration Age Equivalents for EMR, ED and LD Students

Exceptionality	Mean	Standard Deviation
EMR	7.26	1.82
ED	5.29	1.14
LD	8.87	2.72

n = 50

Source	df	MS	F
Exceptionality	2	15.83	3.12
Error	47	5.07	

244

Table 148

Means, Standard Deviations and Analysis of Variance Summary Table for Developmental Test of Visual-Motor Integration Age Equivalent Scores for Exceptional and At-Risk Students

Classification	Mean	Standard Deviation
EMR	7.26	1.82
ED	5.29	1.14
LD	8.87	2.72
At-Risk	8.82	5.85

n = 70

Source	*df*	*MS*	*F*
Classification	3	25.56	1.89
Error	66	13.49	

Table 149

Means, Standard Deviations and Analysis of Variance Summary Table for Developmental Test of Visual-Motor Integration Age Equivalents for Exceptional, At-Risk and Normal Students

Classification	Mean	Standard Deviation
EMR	7.26	1.82
ED	5.29	1.14
LD	8.87	2.72
At-Risk	8.82	5.85
Normal	11.53	1.88

n = 90

Source	df	MS	F
Classification	4	53.81	4.78 *
Error	85	11.26	

* $p > .01$

Table 150

Summary of Differences Among Mean Age Equivalent Scores for the VMI for Exceptional, At-Risk and Normal Students

Emotionally Disturbed	Educable Mentally Retarded	Learning Disabled	At-Risk	Normal
5.29	7.26	8.82	8.87	11.53

Major Findings

The purpose of this investigation was to systematically determine the behavioral and psychometric characteristics of emotionally disturbed, educable mentally retarded, learning disabled, at-risk and normal students in the classroom. Three trained observers rated 51 special education students in 22 public elementary schools for a total of two hours each; one hour in the regular class and one hour in the resource room. At-risk and normal students were observed in the regular classroom only for a period of one hour. Behaviors were tallied along ten dimensions of operationally defined categories of classroom behavior. These dimensions were grouped into eight non-task oriented categories and two task oriented categories. It was hypothesized that no differences would be observed in the behavioral characteristics of the three groups of exceptional students. The at-risk and normal children served two purposes for the study: (1) as control groups, and (2) as comparison groups for the behavioral and psychometric analyses.

Results of the behavioral observation procedure indicated, no significant differences among the categories of EMR, ED, LD, at-risk and normal students. These finds as they relate to mildly handicapped children have direct importance to educators who are involved in evaluation and placement activities for mildly handicapped students. Questions arise that relate to the process of labeling a child along categorical lines. Is it possible to appropriately assign labels to a child based on behavioral characteristics as is often done in the initial referral process? Also, when a child is placed in a special education program, is it necessary to program for that child in a categorically labeled classroom (i.e., EMR, EH, LD)?

Results also indicated that the mean frequency of task oriented behaviors increased while the student was in attendance in a special education resource room. Because of the descriptive nature of the investigation it is not possible to establish causal relationships for behavioral patterns of the mildly handicapped students observed. It is possible, however, to suggest that placement in special education classes may foster more appropriate task oriented behavior for exceptional students.

Observational reliabilities calculated showed variation among observers. This variation may have caused error variances to be greater than had the coefficients of observer agreement been higher. Individual differences in observers is desirable and helps to normally distribute their responses (Medley & Mitzel, 1963). The averaging of the mean frequencies helped to minimize these observer effects. The coefficients of reliability are sufficiently high to determine with some degree of accuracy the reliability of the measures of frequency of behavior.

Psychometric characteristics were evaluated along four dimensions: (1) cognitive functioning, (2) achievement levels, (3) self-concept, and (4) perceptual-motor functioning. Cognitive functioning assessed by the WISC-R yielded several significant F-ratios among the comparisons of mean scores. Verbal and full-scale IQ scores, for example, were significantly different for the LD group. For both verbal and performance IQs, the EMR and ED groups scored significantly lower than did the LD group. It was expected that the EMR group would score lower, but the fact that ED children scored lower was unanticipated. EMR children are identified for special class placement based on lower IQ scores. ED children, traditionally do not have below average IQ levels. Non-significant differences among the EMR, ED and LD groups on performance IQ measures supports the hypothesis of no significant differences among the categories of mildly handicapped groups of children.

At-risk students were significantly different from EMR, ED and LD students when compared on verbal and performance IQ measures. Significant differences were also found for full scale IQ. However, at-risk students did not differ significantly from the LD group. There were significant F-ratios found among the at-risk group and the EMR and ED groups.

Normal students were differentially distinguished from exceptional child groups on all IQ measures. However, there were no significant differences found between the at-risk and normal group comparisons on verbal, performance and full scale IQ measures.

Figure 9 represents significant differences found among the exceptional child categories on the WISC-R verbal and performance IQ measures. Non-significant differences were found for the verbal arithmetic subtest and the performance picture completion subtest. Generally, results indicated that the learning disabled category of children scored higher on verbal and performance subtests. Significant differences among the groups suggests that LD students' cognitive functioning is superior to that of EMR and ED groups. In every case, EMR and ED groups were not significantly different when mean scaled scores were compared on the WISC-R verbal and performance subtests.

The at-risk samples of children were significantly different on most verbal and performance IQ measures. Verbal information, similarities, vocabulary and comprehension results suggest that these students do indeed perform better than mildly handicapped children. Distinctions between the LD group and the at-risk group are not clear in the verbal information, similarities vocabulary and comprehension subtests. No significant differences were found for those comparisons.

Performance IQ measured comparing exceptional and at-risk children yielded non-significant differences for performance picture completion, object assembly and coding. Significant differences were found for the picture arrangement and block design subtests. However, for both of these subtests LD children scored higher than at-risk children. Both groups scored significantly higher than the EMR and ED groups.

Children from the normal sample were consistently significantly different from EMR and ED samples on verbal and performance IQ measures. For the verbal similarities, the performance object assembly and performance block design subtests normal children were different from all other groups. For verbal comprehension, information and arithmetic, normal and at-risk students did not statistically differ from each other. However, they were different from all exceptional child groups. For verbal comprehension and vocabulary and performance picture arrangement and coding, normal, at-risk and LD students did not show significant differences among mean scaled subtest scores, i.e., those groups all scored in a range of scores that were too similar to distinguish as separate groups.

On the Peabody Individual Achievement Test as well as on the achievement clusters of the Woodcock-Johnson Psychoeducational Test Battery. The three exceptional child groups did not show significant differences among mean grade equivalent scores for reading, arithmetic and language assessment measures. In other words, academic functioning for these three groups, EMR, ED and LD children, was so similar, they were not distinguishable as separate groups.

On the PIAT, at-risk students differed significantly only on the reading recognition and reading comprehension subtests. This finding suggests that at-risk students (those students identified to receive remedial educational services in ESEA, Title I Programs) are placed because of reading skill deficits. Also, results of the analysis of PIAT mean grade equivalent scores suggests that normal students also differ from exceptional students by their ability to read. This is shown by significant differences found for the PIAT reading recognition and reading comprehension subtests. All other subtests yielded non-significant differences for all five groups of students.

Analysis of data from the W-J yielded significant differences for each achievement cluster for at-risk and normal students. For at-risk students, significant differences were found that discriminated the at-risk group from the exceptional child categories for all three achievement clusters: reading, mathematics and written language. For the mathematics cluster and the written language cluster, the at-risk group and the LD group were not significantly different. Both groups were significantly different from the EMR and ED groups.

For the normal student, sample comparisons yielded significant differences for all three achievement clusters. The normal students and at-risk students were consistently significantly different for the exceptional child samples. Results of Tukey's HSD posteriori multiple comparison for the mathematics cluster showed that the LD group, in addition to the at-risk and normal group was also significantly different from the ED group.

Analysis of variance procedures yielded non-significant results for the comparisons of data for the Piers-Harris Self-Concept Scale for Children and the Developmental Test of Visual Motor Integration. These non-significant results were for all categories of exceptional children, the at-risk children and the normal children. These tests did not discriminate among any of the groups, yet they are frequently used to assist special educators in identifying students for placement in exceptional child programs.

In summary, tests frequently used as diagnostic measures for the differential diagnosis of special education categories of children did not discriminate among the categories of exceptional children. In the areas of achievement, self-concept and visual-motor functioning the assessment measures failed to provide significant guidelines for placement specialists. Placement specialists' primary task is the labeling of exceptional child populations. From results of the present study, it is suggested that other factors besides test data and behavioral data form the basis for placement decisions.

A positive note may be made as a result of the data included here. Special educators are identifying (for the most part) children with special needs who require remediate special educational services. Data analysis of mean scores for at-risk and normal students suggests that exceptional child groups have been appropriately differentiated from the non-exceptional groups.

Limitations

The major limitations of this investigation are apparent when attempting to attrubite a causal direction to the obtained results. Because no experimental manipulation was attempted, this study represents primarily descriptive data about exceptional students, at-risk and normal students.

Behavioral Observations

The 22 elementary schools were randomly selected. From these schools the samples of exceptional children were randomly chosen. Final arrangements to conduct the research were made only after the principal granted permission. Fortunately, every principal contacted after random selection agreed to the observational procedure. But, at each school site, the principals chose teachers and classrooms for the observers to make final scheduling for observation.

Subtle differences in teacher behavior were not examined. Teacher management strategies may have affected the task oriented and non-task oriented responses of the exceptional students in their classrooms. The child's physical location in each classroom may also have affected the behavioral responses of others and the child under observation.

Finally, the extent to which the presence of an observer influences a child's interaction in the classroom is undetermined. However, the resemblance between a classroom with a single observer present and a classroom with no observer present is closer to real life situations than either a test situation or a laboratory setting (Medley & Mitzel, 1963). Each observer was introduced to the students in the classroom he/she entered. Students were told that the observer would make several visits to the class. After the introduction the observer remained as unobtrusive as possible at the side or rear of the classroom.

Psychometric Assessment

Special education professionals who assess students to make decisions about placement and interventions use technically inadequate data-collection procedures (Ysseldyke and Algozzine, 1982). Three characteristics determine the technical adequacy of tests: norms, reliability, and validity. If tests have inappropriate norm groups inappropriate educational decisions are likely to be made regarding a child assessed by those tests. If reliability, the consistency in measurement, is inadequate, (i.e., coefficients less than .90), they are inappropriate for making decisions concerning individual students (Salvia and Ysseldyke, 1981). If tests measure what they purport to measure, i.e., are valid, then they are appropriate for decision-making purposes. Many tests today report inadequate or no evidence of attempts to determine validity.

Of the tests used in the present study, Salvia and Ysseldyke (1981) report that the Developmental Test of Visual-Motor integration has (1) norms that are inadequately constructed or described, (2) inadequate reliability data, and (3) questionable reliability. Yet, this test is frequently used to assist in the decision-making process.

Reliability coefficients reported for the tests used in the present sutyd range from .42 to .96. Specifically, the VMI has a reported reliability of .83 with .87 reported as a test-retest reliability. The PIAT has reliability coefficients reported at .42 with .92 as a test-retest coefficient. The WISC-R has a .91 reliability coefficient with a .96 split half reliability. The verbal measures of the WISC-R report a coefficient of .93; the performance, .97; the full scale, .97; and the subtests, .60. The Woodcock-Johnson Psychoeducational Test Battery reports a reliability of .46 with .97 as a test-retest coefficient for its subtests and a .67 coefficient with .98 test-retest coefficient for its clusters.

Caution then should be exercised whenever using standardized tests for decision-making purposes for individual students. Especially when placement in special education classrooms may be the result of the decision-making process.

A final limitation regarding the sample of students in the emotionally disturbed category should be noted. In the State of North Carolina, children receiving services who are given the label 'emotionally handicapped' are considered to be 'severely emotionally handicapped'. Local education agencies do not generally provide services for mildly emotionally handicapped children in resource room settings. When sample selection procedures were undertaken for the present study only thirteen emotionally handicapped children were identified in fifth grade classes in the Charlotte-Mecklenburg Schools. The school system, with a total school population of approximately 75,000 has identified very few emotionally disturbed youngsters. They are not encouraged to do so because state rules and regulations emphasize 'severe emotional handicaps'.

Consent agreements were signed by only eight parents/guardians of the LD population. These eight students were those included in the study sample.

In general, these limitations seem tolerable in light of the descriptive nature of the project. The results may be generalizable within restrictions.

Conclusions

The results obtained in this investigation suggest that no differences in the frequencies of defined behavior of EMR, ED, and LD students existed when they were observed in the regular classroom setting and rated on non-task oriented behaviors. But, more importantly, these same children when observed in the special education resource room did not differ significantly in mean frequency of non-task oriented behavioral characteristics.

The hypothesis of no differences in behavioral characteristics among the three groups is supported in part by the evidence that resource room non-task oriented behaviors are lower than in the regular class and show no statistically significant difference in mean frequencies. When rated on frequency of task oriented behaviors, there were non-significant differences among the three groups of students. However, in the special education resource room the overall mean frequency of task oriented behaviors increased over those observed in the regular class.

Behavioral characteristics, as defined in this investigation, for the exceptional children were distinguishable from non-handicapped students. All analyses yielded non-significant differences between the non-handicapped child and the exceptional child in the regular classroom.

Analysis of psychometric data provide equivocal results. On cognitive measures the EMR, ED and LD categories showed significant differences, especially on WISC-R verbal and full scale IQ measures. Evaluation of achievement, self-concept, and visual-motor areas yielded no significant differences among the mildly handicapped categories.

At-risk students differed generally in cognitive and achievement measured, especially in reading skills. But, overlap of scores made differentiation of learning disabled and at-risk students difficult. Self-concept and visual-motor comparisons yielded non-significant results.

Normal students were significantly different from handicapped children on most cognitive and achievement measures. They were easily distinguishable from exceptional children. Some measures suggested overlap of scores with at-risk and LD students. Self-concept and visual-motor comparisons yielded non-significant results among mean scores on assessment devices.

Implications

Because of the descriptive nature of this investigation and because no intervention procedures were employed, no causal relationships can be forwarded. However, the behavioral observation results favored resource room placement for exceptional students. More specifically, the lower mean frequencies of non-task oriented behavior and the higher mean frequencies of task oriented behavior in the resource room permit several additional hypotheses to be forwarded. Also, psychometric assessment data yielded results that may raise additional questions regarding special class placement for mildly handicapped children. These hypotheses are centered around the issue of labeling exceptional children and may be examined as four separate issues: (1) efficacy of resource room placement, (2) non-categorical placement, (3) differential diagnosis, and (4) teacher preparation procedures.

Efficacy of Resource Room Placement

The special education resource room may provide the necessary structure that permits the mildly handicapped student to more adequately focus his/her attention on appropriate task oriented activities. The definition of resource room programs presented by Hammill and Bartel (1978) states that each pupil can receive instruction individually or in small groups. Emphasis is placed on specific skills that the child needs. These skills may be instructional, emotional, or behavioral.

In the resource room special education teachers can provide instructional and behavioral intervention that the regular classroom teacher may not have time to provide because of the number of children he or she may serve per day. Special education training also equips the resource room teacher with specific skills that foster academic, social, and emotional growth in exceptional children. Therefore, considering the training of the special class teacher, the number of students served in the resource room, and the structure provided, the resource room may provide the exceptional child with the atmosphere needed to increase task oriented activities and reduce non-task oriented behaviors.

Non-Categorical Placement

In an effort to reduce the negative effects of labeling students as 'educable mentally retarded', 'emotionally disturbed', and 'learning disabled', educators have turned to generic labels, categories, and programs (Becker, 1978). The present investigation may provide support for non-categorical programs because of the non-significant differences in the non-task oriented behavioral characteristics of the mildly handicapped students in the resource room programs. Psychometric results also support a closer look at the service delivery model educators provide for learners with special needs. A non-categorical approach may be best suited for mildly handicapped children in the public schools.

Before generic programs can be accepted as the most appropriate programming procedure for these children, however, further descriptive studies remain to be undertaken. This study does provide additional data to support non-categorical placement on the basis of similar behavioral and psychometric characteristics of exceptional children in the special education resource room.

Differential Diagnosis

In order to group children in a functional way, a child's performance on a specified educational task must be measured precisely and continuously. Hallahan and Kauffman (1977) suggest that children be considered candidates for special education on the basis of specific social or academic performance deficits, and not solely on the basis of standardized test scores or clinical impressions. Educable mentally retarded, emotionally disturbed, and learning disabled children have a great deal in common. It is nearly impossible to separate them into the traditional categorical groupings based on performance in the classroom (Hallahan & Kauffman, 1976, 1977; Kauffman, 1977).

Common behavioral characteristics among traditional groupings of exceptional students may or may not be the result of common etiologies (Gardner, 1977). O'Grady (1974) found that children labeled as learning disabled and others labeled as emotionally handicapped exhibited similar patterns of language difficulties. Bryan and Bryan (1975) described the emotional disturbance features of learning disabled children. Neisworth and Greer (1975) described the functional similarities of learning disability and educable mental retardation. No exceptional learning or behavior characteristic is categorically or inherently inappropriate or inadequate (Gardner, 1977).

Results of this study offer further support for the notion that an adequate differentiation among the groups of EMR, ED, and LD children is an extremely difficult task. The results suggest that the use of behavioral and psychometric data as a diagnostic measure may not differentiate among the three groups of exceptional students. Placement of students in special classes based on diagnostic categories may be unnecessary when considering the aspects of non-task oriented and task oriented classroom behaviors as well as cognitive, achievement, self-concept and visual-motor characteristics.

It may also be that the particular type of classroom structure offered in the resource room may permit differences in behavioral characteristics among the three groups to disappear. The regular classroom setting may enhance the ability of observing differences in behavioral characteristics. Observations in the special education resource room setting may show that non-significant differences found among the three categories of exceptional children may be due to the setting and structure found there.

Teacher Preparation

Institutions of higher education have traditionally trained special education teachers to program for a single exceptionality of child. Teacher preparation practices are based on the assumption that each category of exceptional child is a distinct and separate unit. This traditional categorical system required specific differential diagnosis where emphasis was placed on etiology that resulted in unique characteristics for each group of exceptional child.

No suggestion is made here that personnel preparation undertaken by departments of special education in American colleges and universities abandon their categorical methods. What is suggested is that the issue of categorical programming is clouded by results of empirically based research.

There is a myriad of differences which can occur in exceptional children. The application or removal of labels will not diminish these differences. Each child requires an individually prescribed program for him/her to make the most progress possible.

Recommendations for Future Research

Since data obtained in this descriptive study represents only a limited facet of behavioral and psychometric functioning of exceptional children in the public schools, there is a need to empirically evaluate additional variables that may effect the data obtained. Also, there is a need to examine alternate methods of data collection in future attempts to replicate the findings presented here. Suggestions are offered for future research based on these two notions: (1) additional variables that may impinge upon exceptional child behaviors and (2) research methods that may provide additional support for the behavioral and psychometric data collected and presented in this research.

Variables in Future Research

Becker (1978) examined the learning characteristics of educationally handicapped and educably mentally retarded children. He hypothesized that there were differences in the way that these two groups of children approach problem solving situations. These results may be intuitively predicted. It may be expected that the retarded group would differ on tasks related to intelligence and mental age. The present study collected data on intelligence, achievement, self-concept and visual-motor skills. An attempt was made to examine differences that these variables may present among the groups of exceptional children. Future research needs to further clarify not only approaches to problem solving activities but also cognitive styles for the mildly handicapped.

Directly related to the variable of cognitive style is the rate of skill acquisition. Academic, social, and behavioral progress rates need to be considered. Longitudinal research with follow-up data would provide evidence for any differences or similarities among groups of handicapped students.

Differences in factors such as IQ, sex distributions, socioeconomic status, length of placement in special educational programs and teacher-pupil interaction are a few of the additional variables requiring investigation. Hallahan and Kauffman's (1976, 1977) contention that there may be no behavioral differences among groups of mildly handicapped children must be examined considering these variables. Proposed research should incorporate these variables in an attempt to firmly estalbish differences or similarities of classroom functioning for these children.

An additional variable not included in the research reported here is the teacher component. Teaching styles, length of service, professional preparation, and teacher expectancies will also influence behavioral and psychometric characteristics of special needs students. Random selection procedures attempt to eliminate the variable of differences in teacher behaviors but further research concentrating on this component may provide additional data regarding characteristics of exceptional children.

Research Methods

Observational studies attempt to document teacher behaviors and student behaviors in the classroom. Studies have been undertaken to provide methods for educators to determine the effectiveness of curriculum methods, teacher attitudes, interaction styles, and student responses. The area of exceptional child education has not been the subject of large scale observational studies. The studies that are available do provide program planning information to practitioners in the field. But there is still a need to determine as many of the most effective educational methods possible to enable special needs students to reach their maximum potential.

Improvement of the observational process is desirable to understand the behavioral information occuring in the classroom. Improvement in standardized tests and assessment procedures will assist in broadening the data base to enable educators to make appropriate educational decisions.

The behavioral interpretations of results of this study are based on ten operationally defined behavior categories. These categories were intended to be mutually exclusive of the types of classroom behaviors exhibited by exceptional child subjects. With additional experience in using the observational behavior checklist, future research will help refine the operational definitions. Potential alterations in the definitions of the categories of behavior by the addition of categories, or perhaps the deletion of presently used categories, may enhance the ability of the behavior observation procedure to discriminate key behavioral factors. In other words, a fine tuning of the behavioral categories may provide an increased degree of experimental reliability.

Alteration of the process that observers use may also provide for more finely tuned data. Procedures could be used that rotated each observer from observation site to observation site. This would enable each observer to observe every child in the study. The present study used an alternate method of observer assignment to observation sites. Because of high travel costs among schools in Mecklenburg County each observer was assigned schools in close geographic proximity to each other. Future research may use an alternative approach to the observation process.

To completely develop the observational instrument different sample sizes and different age groups of subjects should be used. Different age groups most likely will give different frequency levels of observable classroom behavior. Larger sample sizes will increase the power of the checklist to discriminate among the characteristic behaviors of educable mentally retarded, emotionally disturbed, and learning disabled children and youth.

In summary, future research must attempt to clarify the characteristics of exceptional children. There is a tremendous need to identify those characteristics that will enable each teacher to foster maximum success for children with special needs. The type of research that quantifies classroom behaviors coupled with critical interpretations of cognitive functioning, achievement levels, and cognitive styles will enable meaningful statements to be made about the nature and dimensions of importance of the successful programming of exceptional children.

APPENDICES

APPENDIX A

OPERATIONAL DEFINITIONS OF OBSERVED CLASSROOM BEHAVIORS

A behavior counting procedure directs observers to count maladaptive behaviors or adaptive classroom behaviors. The maladaptive behaviors are incompatible with learning and may be defined operationally as follows:

1. Gross motor behaviors: Getting out of seat, standing up, running, hopping, skipping, jumping, walking around, rocking in chair, disruptive movement without noise, moving chair to neighbor.

2. Disruptive noises with objects: Tapping pencil or other objects, clapping, tapping feet, rattling or tearing paper. (This will be counted only if the observer can hear noise with eyes closed. Accidental dropping of objects is not included or noise made while performing gross motor behaviors above.)

3. Disturbing others directly and aggression: Grabbing objects or work, knocking neighbors' book off desk, destroying another's property, hitting, kicking, shoving, pinching, slapping, sticking with an object, throwing an object at another person, poking with object, attempting to strike, biting, pulling hair.

4. Orienting responses: Turning head and body to look at another person, showing objects to another child, attending to another child. (Must be four seconds to be counted; not rated unless seated.)

5. Blurting out, commenting, and vocal noise: Answering teacher without raising hand or without being called on, making comments or calling out remarks when no question has been asked, calling teacher's name to get his/her attention, crying, screaming, singing, whistling, laughing loudly, coughing loudly. (Must be undirected to another particular child, but may be directed to teacher.)

7. Other: Ignoring teacher's question or command, doing something different from that directed to do. (To be counted only when other behavior counts are not appropriate.)

8. Improper position: Not sitting with body and head oriented toward the front, e.g., standing at desk rather than sitting, sitting with body sideways but head facing front (Becker, Madsen, Arnold, & Thomas, 1967).

Maladaptive behaviors are the dependent measures. To clarify the range of behaviors exhibited in the classroom, adaptive behaviors are defined for the observer. These behaviors are divided into two groups:

1. Task oriented independent: Student completely involved in task independently of the teacher and is working on the task assigned to him/her.

2. Task oriented dependent: Teacher or teacher aide is directly assisting the student with the assigned task. It may include repeating or further explaining of directions (Walker, Mattson, & Buckley, 1971).

The total maladaptive behavior score consists of eight types of maladaptive behavior as defined above. Adaptive behavior is the absence of maladaptive classroom behaviors as defined.

APPENDIX B

SUMMARY TABLES FOR EMR, ED
AND LD BEHAVIOR FREQUENCIES

Table 151

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Gross Motor Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	16.25	8.11
LD	9.12	11.89
EMR	11.47	11.57

n = 51

Source	*df*	*MS*	*F*
Student	2	154.21	1.21
Error	48	127.64	

*p > .01

Table 152

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Disruptive Noise with Objects Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	2.75	3.57
LD	2.83	4.55
EMR	1.73	2.25

n = 51

Source	df	MS	F
Student	2	6.91	0.50
Error	48	13.71	

*p > .01

Table 153

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Aggressive Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	0.94	2.11
LD	0.95	1.98
EMR	0.78	1.84

n = 51

Source	df	MS	F
Student	2	0.60	0.13
Error	48	1.05	

*p > .01

Table 154

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Orienting Response Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	25.37	20.42
LD	20.20	17.15
EMR	26.47	19.95

n = 51

Source	df	MS	F
Student	2	227.54	0.64
Error	48	351.09	

*p > .01

Table 155

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Vocal Noise Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	5.25	6.20
LD	5.42	11.19
EMR	4.68	6.29

n = 51

Source	*df*	*MS*	*F*
Student	2	2.73	0.04
Error	48	80.53	

*$p > .01$

Table 156

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Talking Behavior for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	7.25	8.61
LD	8.75	14.45
EMR	10.79	9.09

n = 51

Source	df	MS	F
Student	2	41.50	0.29
Error	48	141.86	

*p > .01

Table 157

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of 'Other' Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	33.87	22.28
LD	39.91	26.47
EMR	22.31	18.93

n = 51

Source	df	MS	F
Student	2	1652.77	3.04
Error	48	542.77	

*p > .01

Table 158

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Improper Position Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	10.87	11.01
LD	15.20	22.03
EMR	9.05	14.28

n = 51

Source	df	MS	F
Student	2	209.70	0.64
Error	48	326.70	

$^*p > .01$

Table 159

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task-Oriented Independent Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	78.12	45.68
LD	88.20	49.06
EMR	94.37	53.30

n = 51

Source	df	MS	F
Student	2	754.21	0.30
Error	48	2523.23	

*p > .01

Table 160

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task-Oriented Dependent Behaviors for ED, LD, and EMR Students in the Regular Class

Exceptionality	Mean	Standard Deviation
ED	58.62	34.25
LD	49.87	38.29
EMR	58.79	50.25

n = 51

Source	*df*	*MS*	*F*
Student	2	499.43	0.27
Error	48	1820.58	

*$p > .01$

Table 161

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Gross Motor Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	13.12	9.92
LD	14.87	13.01
EMR	14.84	15.68

n = 51

Source	*df*	*MS*	*F*
Student	2	10.63	0.05
Error	48	187.67	

*p > .01

Table 162

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Disruptive Noise With Objects Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	0.62	1.40
LD	5.83	10.81
EMR	1.47	3.70

n = 51

Source	*df*	*MS*	*F*
Student	2	137.10	2.48
Error	48	55.17	

*p > .01

Table 163

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Aggressive Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	0.12	0.35
LD	0.7	1.52
EMR	0.05	0.22

n = 51

Source	df	MS	F
Student	2	2.57	2.25
Error	48	1.14	

*$p > .01$

Table 164

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Orienting Response Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	7.87	4.52
LD	12.00	11.61
EMR	12.10	12.21

n = 51

Source	df	MS	F
Student	2	58.77	0.47
Error	48	123.56	

$^{*}p > .01$

Table 165

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Vocal Noise Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	18.25	18.42
LD	11.71	13.46
EMR	10.37	11.98

n = 51

Source	df	MS	F
Student	2	181.15	0.95
Error	48	190.10	

*p > .01

Table 166

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Talking Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	10.50	11.77
LD	2.96	5.53
EMR	4.05	4.88

n = 51

Source	df	MS	F
Student	2	174.36	3.98
Error	48	43.79	

*p > .01

Table 167

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of 'Other' Behaviors for ED, LD, and EMR Students

Exceptionality	Mean	Standard Deviation
ED	10.00	7.19
LD	18.87	14.30
EMR	12.95	10.78

n = 51

Source	df	MS	F
Student	2	318.29	2.14
Error	48	149.11	

$^{*}p > .01$

Table 168

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Improper Position Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	16.12	20.25
LD	23.96	23.35
EMR	13.37	14.02

n = 51

Source	df	MS	F
Student	2	628.19	1.59
Error	48	394.80	

*p > .01

Table 169

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Independent Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	108.25	54.35
LD	72.13	47.24
EMR	88.16	54.10

n = 51

Source	df	MS	F
Student	2	4207.26	1.62
Error	48	2597.68	

*$p > .01$

Table 170

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Dependent Behaviors for ED, LD, and EMR Students in the Resource Room Class

Exceptionality	Mean	Standard Deviation
ED	112.25	125.62
LD	81.92	45.71
EMR	82.68	68.48

n = 51

Source	df	MS	F
Student	2	3037.24	0.61
Error	48	4959.91	

*p > .01

APPENDIX C

SUMMARY TABLES FOR EMR, ED, LD AND AT-RISK BEHAVIOR FREQUENCIES

Table 171

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Gross Motor Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	16.25	8.11
LD	9.12	11.89
EMR	11.47	11.57
At-Risk	9.11	8.83

n = 71

Source	df	MS	F
Student	3	122.30	1.08
Error	67	113.56	

*p > .01

Table 172

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Disruptive Noise With Objects Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	2.75	3.57
LD	2.83	4.56
EMR	1.73	2.25
At-Risk	0.95	1.82

n = 71

Source	df	MS	F
Student	3	14.84	1.38
Error	67	10.78	

*$p > .01$

Table 173

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Aggressive Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	1.25	3.15
LD	0.95	1.98
EMR	0.78	1.84
At-Risk	0.45	1.05

n = 71

Source	df	MS	F
Student	3	1.55	0.43
Error	67	3.62	

*p > .01

Table 174

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Orienting Response Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	25.37	20.42
LD	20.20	17.15
EMR	26.47	19.95
At-Risk	21.55	15.58

n = 71

Source	df	MS	F
Student	3	167.26	0.52
Error	67	320.41	

*p > .01

Table 175

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Vocal Noise Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	5.25	6.20
LD	5.42	11.19
EMR	4.68	6.28
At-Risk	1.80	3.66

n = 71

Source	df	MS	F
Student	3	54.66	0.89
Error	67	61.50	

*p > .01

Table 176

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Talking Behavior for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	7.25	8.61
LD	8.75	14.45
EMR	10.79	9.08
At-Risk	8.85	20.23

n = 71

Source	df	MS	F
Student	3	28.53	0.13
Error	67	217.69	

*p > .01

Table 177

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of 'Other' Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	33.87	22.28
LD	39.91	26.47
EMR	22.31	18.92
At-Risk	24.20	16.40

n = 71

Source	df	MS	F
Student	3	1424.76	3.06
Error	67	465.16	

$*p > .01$

Table 178

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Improper Position Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	10.87	11.01
LD	15.20	22.03
EMR	9.05	14.28
At-Risk	9.95	15.37

n = 71

Source	df	MS	F
Student	3	164.80	0.54
Error	67	301.11	

*p > .01

Table 179

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Independent Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	78.12	45.68
LD	88.20	49.06
EMR	94.36	53.30
At-Risk	90.50	54.16

n = 71

Source	df	MS	F
Student	3	514.74	0.19
Error	67	2639.67	

*p > .01

Table 180

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Dependent Behaviors for ED, LD, EMR and At-Risk Students

Exceptionality	Mean	Standard Deviation
ED	58.62	34.25
LD	49.87	38.29
EMR	58.78	50.25
At-Risk	70.05	56.41

n = 71

Source	df	MS	F
Student	3	1480.68	0.67
Error	67	2206.69	

*p > .01

APPENDIX D

SUMMARY TABLES FOR EMR, ED, LD,
AT-RISK AND NORMAL BEHAVIOR
FREQUENCIES

Table 181

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Gross Motor Behaviors for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	16.25	8.11
LD	9.12	11.89
EMR	11.47	11.57
At-Risk	9.10	8.83
Normal	7.75	8.46

n = 91

Source	*df*	*MS*	*F*
Student	4	122.29	1.72
Error	86	104.31	

*p > .01

Table 182

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Disruptive Noise with Objects Behaviors for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	2.75	3.57
LD	2.83	4.55
EMR	1.73	2.25
At-Risk	0.95	1.82
Normal	1.55	2.78

n = 91

Source	df	MS	F
Student	4	11.92	1.18
Error	86	10.10	

$*p > .01$

Table 183

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Aggressive Behaviors for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	1.25	3.15
LD	0.95	1.98
EMR	0.78	1.84
At-Risk	0.45	1.05
Normal	0.55	1.14

n = 91

Source	*df*	*MS*	*F*
Student	4	1.42	0.45
Error	86	3.11	

*p > .01

Table 184

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Orienting Response Behaviors for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	25.37	20.42
LD	20.20	17.15
EMR	26.47	19.95
At-Risk	21.55	15.58
Normal	17.40	14.73

n = 91

Source	df	MS	F
Student	4	241.11	0.81
Error	86	297.54	

*p >.01

Table 185

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Vocal Noise Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	5.25	6.20
LD	5.42	11.19
EMR	4.68	6.29
At-Risk	1.80	3.66
Normal	1.15	1.34

n = 91

Source	df	MS	F
Student	4	76.88	1.59
Error	86	48.31	

*p >.01

Table 186

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Talking Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	7.25	8.61
LD	8.75	14.45
EMR	10.78	9.08
At-Risk	8.85	20.23
Normal	8.30	14.16

$n = 91$

Source	*df*	*MS*	*F*
Student	4	24.24	0.11
Error	86	213.95	

*p > .01

Table 187

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of 'Other' Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	33.87	22.28
LD	39.91	26.47
EMR	22.31	18.93
At-Risk	24.20	16.40
Normal	20.35	18.20

n = 91

Source	df	MS	F
Student	4	1439.31	3.30
Error	86	435.63	

*p >.01

Table 188

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Improper Position Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	10.87	11.01
LD	15.20	22.03
EMR	9.05	14.28
At-Risk	9.95	15.37
Normal	14.70	25.38

n = 91

Source	df	MS	F
Student	4	161.30	0.42
Error	86	376.99	

*p >.01

Table 189

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Independent Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	78.12	45.68
LD	88.20	49.06
EMR	94.36	53.30
At-Risk	90.50	54.16
Normal	123.95	60.28

n = 91

Source	*df*	*MS*	*F*
Student	4	5051.92	1.76
Error	86	2859.41	

*p >.01

Table 190

Means, Standard Deviations and Analysis of Variance Summary Table for Frequencies of Task Oriented Dependent Behavior for ED, LD, EMR, At-Risk and Normal Students

Category	Mean	Standard Deviation
ED	58.62	34.25
LD	49.87	38.29
EMR	58.79	50.25
At-Risk	70.05	56.41
Normal	43.50	48.22

n = 91

Source	df	MS	F
Student	4	2039.25	0.91
Error	86	2232.97	

*p > .01

APPENDIX E

RESEARCH DESIGN FOR DATA ANALYSIS OF FREQUENCIES OF BEHAVIORS EXHIBITED BY THE THREE GROUPS OF EXCEPTIONAL CHILDREN IN TWO CLASSROOM SETTINGS

		Non-Task Oriented	Task Oriented
EMR	Regular		
	Resource		
EH	Regular		
	Resource		
LD	Regular		
	Resource		

APPENDIX F

BEHAVIOR COUNTING CHECKLIST

		Total
Gross Motor Behaviors		
Disruptive Noise With Objects		
Disturbing Others Directly/Aggression		
Orienting Responses		
Blurting Out, Commenting, Vocal Noise		
Talking		
Other		
Improper Position		
Task Oriented Independent		
Task Oriented Dependent		

BEHAVIOR OBSERVATION FORMAT

School ______________________________

Time ______________________________

Student ID # ______________________________

Regular Class ______________ Resource Room ______________

Each student is to be observed for a total of 20 minutes. Make sure that there are no transitional periods within the 20 minute time block (i.e., class changes, waiting for class to begin, etc.).

Mark occurrences of observed behavior under the appropriate headings by using a (✓) checkmark. (One checkmark for <u>each</u> occurrence of the behavior.) Record <u>all</u> non-task oriented behaviors for each 20 minute period as well as task-oriented behaviors.

NON-TASK ORIENTED BEHAVIOR is defined as non-productive behavior and/or activity not assigned by the teacher at the time of observation. Use operational definitions, provided by the videotaped instructional set to classify the behaviors observed (eight categories of behavior).

TASK ORIENTED BEHAVIOR is defined as appropriate responses to teacher directed activities at the time of observation. Use operational definitions provided by the videotaped instructional set to classify the behaviors observed (two categories of behavior).

APPENDIX G

TRANSCRIPT OF VIDEO-TAPED INSTRUCTIONAL SET

Behavioral and Psychometric Characteristics of Exceptional Children

Recent literature has raised some controversy regarding the differences in behavioral characteristics of exceptional children in public schools. The present study hopes to clarify some of that controversy by directly observing exceptional children in the classroom setting. Four observers will take part in this study. Each observer will be counting frequencies of behaviors--frequencies of specifically defined behaviors as exhibited by educable mentally retarded, learning disabled, and emotionally handicapped children in the schools. The purpose, then of this videotape is to standardize this process. I will be discussing four areas. The first area is observation setting; the second area is subjects and subject selection; the third area is instrumentation, i.e., the behavioral observation format for data collection; and the fourth area is the operational definitions for each area of behavior to be observed in the classroom.

Observational Setting

Observation of subjects for this study will take place in two educational settings in public schools. Each subject will be observed six times in the regular classroom and three times in the resource room class. The regular class for purposes of this study is defined as any academic class that the subject has attended for at least six weeks prior to the observation procedure. Included in this setting are classes in language arts, English, social studies, science, and math. The resource room is defined as a special education classroom to which students are assigned for one or more 45-minute periods per day. For our study this will not exceed three 45-minute periods per day. In the resource room the special education students, that is the emotionally handicapped, the learning disabled, and the educable mentally retarded student receive special remedial or tutorial instructions in specific academic skills and/or social interaction.

Subjects and Subject Selection

In this study, 100 subjects are required. All subjects have been randomly selected from the population of 11 and 12 year old exceptional children in the Charlotte-Mecklenburg Schools. Specifically, 20 students from the educable mentally retarded, 20 students from the emotionally disturbed, and 20 students from the learning disabled diagnostic categories have been selected for observation. To control for experimental mortality, a pool of subjects has been developed so that in the event of a subjects' being unable to complete this study, a replacement subject may be randomly selected from that pool. The range of the sample has been restricted in an attempt to minimize the variability of observed behavior often characterized by children of different ages. Equally, it is likely that 11 and 12 year olds will be in the same grade in school, that is in the fifth grade. Therefore, it is anticipated that these procedures will yield a more homogeneous sample than selecting subjects from the whole elementary school population. Each subject that has been selected has been certified by a school psychologist or psychiatrist as being educable mentally retarded, learning disabled, or emotionally handicapped according to district and state guidelines for categorical placement in exceptional child programs in the schools. Also, subjects will not be identified for the purposes of this study, they will receive identification numbers and will remain anonymous.

Instrumentation/Behavioral Format

The behavioral observation format is provided. It requires that the observers mark occurrences of behavior in appropriate spaces provided for each designated classroom behavior. Non-task oriented behaviors are defined as nonproductive behavior and activity not assigned by the teacher at the time of observation. There are eight classifications of maladaptive behavior and we will look at each one of those as we look at the behavioral format. Task oriented behaviors, however, are defined as appropriate responses to teacher directed behavior at the time of observation. Behavioral observation format shows that there are two classifications of task oriented behavior and we will be looking at those specific task oriented behaviors and their definitions shortly.

The observers will count non-task oriented behaviors displayed by the subject in six 20 minute periods--three periods in regular classroom and three periods in the resource classroom. The observers will count non-task oriented and task oriented behaviors at 15 second intervals for each observation period. A total of 60 minutes observation time in each classroom setting will reveal frequencies of non-task oriented and task oriented behavior.

Let's take a look at the behavioral observation format and we will get an idea of the kind of charting that we will be doing and the kind of definitions that we will be using in looking at the exceptional children in each classroom setting. Here we see the first four categories of non-task oriented behavior. These are non-task oriented behaviors that are incompatible with learning and may be defined operationally as follows:

1. Gross motor behavior: This operational definition states that we should see behavior such as getting out of the seat, standing up, running, hopping, skipping, jumping, walking around, disruptive movement without noise, or moving a chair to a neighbor.

2. Disruptive noises with objects: The operational definition includes tapping a pencil or other object, clapping, tapping feet, rattling or tearing paper.

3. Disturbing others directly and aggression: This includes behavior such as grabbing objects or work, knocking neighbors' book off the desk, destroying another's property, hitting, kicking, shoving, pinching, slapping, sticking others with an object.

throwing an object at another person, poking with an object, attempting to strike, biting, and pulling hair.

4. Orienting responses: This is operationally defined as turning the head and body to look at another person, showing objects to another child, attending to another child. This must be four seconds to be counted and it is not rated unless the child is seated.

We see here the final categories on different non-task oriented behavior classification.

5. Blurting out, commenting and vocal noise: answering the teacher without raising the hand or without being called on, making comments or calling out remarks when no question has been asked, calling a teacher's name to get his or her attention, crying, screaming, singing, whistling, laughing loudly, and coughing loudly are included in the operational definition for this category.

6. Talking: This is merely defined as carrying on a conversation with other children when it is not permitted.

7. Other: This includes behavior such as ignoring the teacher's question or command, doing something different that what the child is directed. It is to be counted only when behavior counts are not appropriate.

8. Improper position: This is operationally defined as not sitting with body and head oriented towards the front. That is, standing at the desk rather than sitting, sitting with the body sideways with head facing front.

The final two categories are those categories of task oriented behavior and they are divided into two groups. The first one is:

1. Task-oriented independent: This is operationally defined as the student is completely involved in a task independently of the teacher and is working on a task assigned to him or her.

2. Task-oriented dependent: This is operationally defined as the teacher or teacher aid is directly assisting a student with the assigned task. They may include repeating or further explanation of the directions.

The checklist for frequencies of designed behaviors observed in the classroom is, therefore, made up of eight categories of non-task oriented behavior and two categories of task oriented behavior. When you are recording a frequency of behaviors occurring in the classroom, place checkmarks in the center column under the appropriate categorical heading, under the appropriate behavior for the appropriate operational definition. At the end of the 20 minute observation period, total each category of behavior in the final column under the word "Total."

Summary

In summary, the data will be recorded in terms of frequency of occurrence of non-task oriented behavior defined by this behavior counting procedure. The frequency of behavior for observation will be represented as a total score for each component of non-task oriented and task oriented behavior for each classification of exceptionality for each classroom setting. That completes our description of the observation procedure for the study "Behavioral and Psychometric Characteristics of Exceptional Children." Good luck to you all in your observational process. Good luck to you in your scheduling of students and scheduling of schools. Thank you.

APPENDIX H

INFORMED CONSENT PROCEDURES

1. Investigators:

   Stanley Sherry, Ph.D.
   Assistant Professor
   College of Human Development and Learning

2. Brief Title:

   Behavioral and Psychometric Characteristics of Educable Mentally Retarded, Learning Disabled, Emotionally Disturbed, At-Risk and Normal Students

3. Proposed Subject Population:

   In the study, one hundred subjects are required. All subjects will be randomly selected from specific populations of handicapped and non-handicapped students in the Charlotte-Mecklenburg Schools. Only those exceptional students who received special education services in the resource room class will be selected. Twenty subjects from each category of mildly handicapped students (i.e., educable mentally retarded, emotionally handicapped, and learning disabled) will be randomly selected. Twenty subjects from the at-risk group will be randomly selected as well as twenty subjects from the general education program will be randomly selected. A total of five groups of students will serve as subjects.

4. Method of Obtaining Subjects' Participation:

   One hundred subjects from the fifth-grade age population of students in the Charlotte-Mecklenburg Public Schools will be randomly selected. Twenty subjects from each of three categories of mildly handicapped students and twenty subjects from the normal school population are included in the random selection. Also, twenty subjects from an "at-risk" group will also be randomly selected from the normal school population. All subjects will be fifth-grade age. Each handicapped child selected will have been certified by a school psychologist as educable mentally retarded, emotionally handicapped or learning disabled according to school district and State of North Carolina guidelines for placement in special education programs.

This study represents a replication and extension of dissertation research that was performed in the Hillsborough County Schools, Tampa, Florida, in the spring of 1979. Procedures followed for random selection, and protection of subjects as approved by the Hillsborough County Schools will be followed. The names of students will not be used. All data will be evaluated without knowledge of the student or of the school from which the data was collected. Strict confidentiality is guaranteed.

5. Brief Description of Methodology:

In the proposed study mildly handicapped students who have been placed by the Charlotte-Mecklenburg Schools (following Federal mandate and North Carolina statutes) in resource room classes will serve as subjects in an observational field study. In addition, psychometric test data will be collected on each subject.

An attempt will be made to clarify the issue of placing handicapped students in special classrooms based on diagnostic category (i.e., educable mentally retarded, emotionally handicapped, or learning disabled) by examining the behavioral and psychometric characteristics of handicapped students in two classroom settings.

More specifically, three groups of handicapped (the educable mentally retarded, the emotionally handicapped and the learning disabled) will be observed in the classrooms that they have been assigned to by the Charlotte-Mecklenburg Schools--the regular classroom and the special education resource room. In addition, two groups of non-handicapped students will be observed in the classroom and assessed on the psychometric test battery. The non-handicapped groups of children will consist of one group of "at-risk" students and one group of normal students in the general education program. The "at-risk" student is defined as the student who has experienced academic difficulty in school but has not been placed in an exceptional child program. Scores in the below twenty-fifth percentile on the Metropolitan Achievement Test will identify at-risk students. Normal students are randomly selected from the total general education population of fifth grade age students.

Therefore, the purpose of the proposed study is (1) to observe handicapped and non-handicapped children in their natural classroom environments and (2) to assess psychometric functioning of handicapped and non-handicapped children to provide empirical data about the behavioral and psychometric characteristics for educable mentally retarded, emotionally handicapped, learning disabled, at-risk and normal students.

Each handicapped student will be observed in the special education resource room class and the regular classroom. (All students have been placed in these classroom settings by the Charlotte-Mecklenburg Schools.

following established procedures for handicapped children.) The frequency task-oriented and non-task oriented behaviors observed per observation period will produce means for each classification of exceptionality for each classroom designation. The data will be examined using an analysis of variance procedure to yield information concerning (a) frequencies of non-task-oriented behaviors and their relationship to educable mentally retarded, learning disabled, emotionally handicapped and at-risk groups, (b) whether there is a difference in behaviors dependent upon special class or regular placements, and (c) whether there is an interaction between class placement and category of exceptional student.

Each non-handicapped student will be observed in the regular education classroom. The two non-handicapped groups will serve as control groups for the handicapped sample selected. Observational data will also be analyzed using an analysis of variance procedure to compare handicapped student classroom behavioral performance to non-handicapped students.

In addition to the observational procedure, each subject will receive a psychometric assessment battery. This battery will individually be administered by a certified psychometrician.

The assessment battery will include the Wechsler Intelligence Scale for Children - Revised, the Peabody Individual Achievement Test, the Metropolitan Achievement Test, the Bender Visual-Motor-Integration, the Piers-Harris Self-Concept Scale, the Peterson-Quay Behavior Problem Checklist, and the Woodcock-Johnson Psychoeducational Battery.

Psychometric assessments will be completed on an individual basis. It is anticipated that each battery will take six hours to complete. Students participating in the study will be asked to take the psychometric battery in a separate room, away from classroom distraction.

The Charlotte-Mecklenburg Schools have tentatively approved the proposed research. It is standard procedure for the Staff Development Division to approve any research proposal to be implemented within the school district. The district will assume any responsibility and liability for children in the special classroom and regular classroom settings. Because of the design of the study, the individual subjects will not accrue benefits from the procedure. Only descriptive data is to be obtained--no treatment or intervention procedure is proposed.

6. Deception Involved:

The subjects in the present study will not be exposed to the possibility of injury, including physical, psychological, or social injury as a consequence of participation in the project. Classroom observer will not participate in any classroom activity. There will be no subject-observer interaction. The observational process directs each observer to record frequencies of operationally defined behaviors. A checklist format is provided for ease of data collection for each observer.

Since the observation phase of the proposed research is descriptive in nature, and there is no direct interaction between observer and subjects, no risk is involved. The psychometric assessment consists of standardized test materials that are in wide use on a national scale. Tests will be administered by trained professional, certified psychometricians. No risk is involved for subjects participating in the assessment phase of the study. For the purposes of the study, all subjects remain anonymous and will never be identified by name.

7. Permission From Parents or Guardian and School Personnel:

Teachers whose classrooms are entered by observers will be requested to introduce the observer and explain that the 'visitor' is there to observe for a short period of time and will make several visits to several classrooms in the building. All teachers will explain to the handicapped and normal students the brief procedures as specified on the attached Teacher Introduction Form.

Parental permission will be obtained for those students participating as subjects in the study. (See attached Parental Permission Form). Each subject will have the opportunity to withdraw from the study at any time. In addition, each teacher will be requested to sign the form stating that information has been read to the class.

**NOTE: The observational procedure employed in the present research was approved by the University of Florida, Committee for the Protection of Human Subjects on May 10, 1979, for a previously funded HEW/BEH project.

TEACHER INTRODUCTION OF OBSERVERS IN THE CLASSROOM

University of North Carolina at Charlotte

Directions to Participating Teachers:

On the initial visit of the observer in your classroom, please introduce him/her to your students by using the following script:

"I would like you all to meet (Name of observer). He/she will be visiting our class today for a short time. He/she is here to see how we do things in our class. (Name of observer) will sit in the back of our class while we do our work. He/she will visit us several times during the next two weeks and will also visit other classes in our school. Let's make him/her welcome."

Signature: ______________________________

(classroom teacher)

I have read the above information to my class and they understand that there will be an observer in the classroom.

Signature: ______________________________

(principal investigator)

College of Human Development and Learning
University of North Carolina at Charlotte
Charlotte, North Carolina 28223
(704) 597-2531

Parental Permission Form

University of North Carolina at Charlotte

Dear Parents:

The Charlotte-Mecklenburg Schools in cooperation with the College of Human Development and Learning, UNCC is undertaking a research project that will require 100 students from around the county to participate. Your child has been selected to take part in the study.

The research requires that your child (name of child) receive several standardized tests. They are:

(1) Wechsler Intelligence Scale for Children
(2) Peabody Individual Achievement Test
(3) Metropolitan Achievement Test
(4) Bender Visual-Motor Gestalt Test
(5) Developmental Test of Motor-Integration
(6) Piers-Harris Self-Concept Scale
(7) Peterson-Quay Behavior Checklist
(8) Woodcock-Johnson Psychoeducational Battery

Information obtained from the testing procedure will remain confidential. Your child's name will never be used for the evaluation of results of testing.

It is requested that you approve the participation of your child in the study by signing the attached permission form.

(Name of child) ________does ______does not have my permission to participate in the testing program sponsored by the UNCC and the Charlotte-Mecklenburg Schools.

Signature ____________________
parent/guardian

Signature ____________________
principal investigator

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APPENDIX I

GENERIC SERVICES FOR EXCEPTIONAL CHILDREN

In the 1960's special educators debated whether or not brain damaged and emotionally handicapped children should be combined into one category (Bower, 1965; Messinger, 1965). Today the same debate continues but on a broader scale. Some special educators (Forness, 1976; Hallahan & Kauffman, 1976, 1977; Lilly, 1977; Taylor, Artuso, Soloway, Hewett, Quay, & Stillwell, 1972) advocate serving all mildly handicapped children (EMR, EH, LD) in one generic category. This section will describe three special projects using generic categories for the traditional classifications of exceptional students. The three programs to be described include (a) the California Master Plan for Special Education, (b) UCLA Neuropsychiatric Institute School, and (c) the Madison School Plan.

<u>California Master Plan</u>

The California Master Plan for Special Education (1974) seeks to equalize educational opportunities for all children in need of special education services. Instead of labeling children by categories, the Master Plan designates "individuals with exceptional needs" for all children receiving special services. The Master Plan states that this change corrects two longstanding problems: (1) stigmatization by label and (2) rigid categorical programming and funding which imply that children must be grouped by handicap rather than educational need.

The most important goal of special education stated in the Master Plan (1974) is to reduce the impact of disabilities. Individually tailored programs are provided to reduce or eliminate the handicapping effects of various disabilities on some exceptional children. Individuals are educated in terms of their abilities, not their disabilities.

The classification system in California uses a generic categorical system. Only four subclassifications of "individuals with exceptional needs" are described. The classifications are only used for data collection and reporting purposes. They are (1) communicatively handicapped, (2) physically handicapped, (3) learning handicapped, and (4) severely handicapped. The objectives for the classification system are to (1) relate pupils to educationally relevant groupings, (2) relate pupils to appropriate programs and services, and (3) be simple and efficient--yet sufficient for data analysis, program administration, and public support.

The previously existing categories of exceptional students are grouped under the four new program subclassifications as follows:

1. Programs for the communicatively handicapped

   Deaf

   Deaf-Blind

   Severely hard of hearing

   Severely language handicapped

   Language and speech

2. Programs for the physically handicapped

   Blind

   Partially seeing

   Orthopedically handicapped

   Other health impaired (including drug dependent and pregnant minors)

3. Programs for the learning handicapped

   Learning disabilities

   Behavior disorders

   Educationally retarded (EMR)

4. Programs for the severely handicapped

   Developmentally handicapped

   Trainable mentally retarded

   Autistic

   Seriously emotionally disturbed

The generic classification system using learning handicapped for the traditional categories of EMR, EH, and LD attempts to make appropriate services available to all exceptional individuals and eliminates the negative effects of labeling a student who needs specialized services.

The Third Annual Evaluation Report 1976-1977 (1978) for the California Master Plan showed a trend toward placement of pupils in less restrictive environments. The number of students who were served in resource room programs increased, and the number of students in special classes and special centers decreased. An increase was noted in the number of students who received special education services and who spent some portion of the day integrated into regular classes.

The implementation of the Master Plan has provided improved services for California's exceptional individuals. This has been attributed to the effective planning and efficient implementation procedures.

UCLA Neuropsychiatric Institute School

Another setting which used a non-categorical approach to the education of exceptional children was the UCLA Neuropsychiatric Institute School (Forness, 1976; Forness & Langdon, 1974). The school served children from inpatient wards of a child psychiatry and mental retardation center. Types of children included in the school were autistic, severely to mildly retarded, emotionally handicapped, and learning disabled children.

The goal of the school was to prepare each child for functioning in a regular or special classroom setting in the public schools. The school is organized without traditional educational labels or medical and psychiatric descriptions.

At the most basic level there is a preschool in which the child is placed and behaviors are recorded under various reinforcement schedules. The results are used to determine the child's level, initial placement is based on past school performance and on standardized achievement tests. Then the child may be placed in a pre-academic or academic class. In the pre-academic class emphasis is placed on individual instruction in skills he/she will need for classroom learning. The second, the academic classroom, emphasizes skill subjects such as reading and math. The high school level is composed of two sections, one for students who may return to regular high school programs and another for remedial students.

In all classrooms children are thought ready for classroom functioning when they have moved through a hierarchy of incentives, that is, at each level specific reinforcers arranged in a hierarchy provide incentives until the child engages in school work solely for the satisfaction of acquiring skills or competence. Not every child attains the highest level before being discharged from the school. But, each child has received individualized programming based on his/her performance regardless of his/her diagnostic category.

Madison School Plan

In the Santa Monica, California, Public Schools a comprehensive model for noncategorical special education provides educational services for mildly retarded, emotionally handicapped, learning disabled, hearing handicapped, and speech handicapped. It is often referred to as the Madison School Plan (Taylor et al., 1972). It is a learning center located in a regular elementary school. Placement in the learning center is based on the child's readiness for regular classroom functioning. Each child is assigned to spend as much time as possible in the regular classroom. The learning center is made up of four classroom levels based on the child's pre-academic and academic skills, his/her ability to learn, and on his/her response to regular classroom rewards and reinforcers.

The Pre-academic I level places emphasis on learning to pay attention and following directions. There is no group instruction and children receive checkmarks as reinforcement at regular intervals. Pre-academic II consists of children who can handle more formal demands of the regular classroom. The program emphasizes remedial-academic work in group participation. Rewards are still provided for appropriate on-task behaviors. The third level, Academic I provides a simulated regular classroom. Students work as a large group and receive grades at hourly intervals. Academic II is the regular classroom in which all Pre-academic II and Academic I children spend as much time as they are able. Teachers in the regular classes who have children assigned part-time to the learning center give them daily ratings similar to the grades received by Academic I students.

Summary

In the programs described it has been demonstrated that several categories of handicapped children can be grouped together for instructional purposes. Forness (1976) cautions that whether such educational programs will be any less detrimental than those more widely used today remains to be seen.

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