

THE RELATIONSHIP BETWEEN READING READINESS  
AND LEVEL OF ADJUSTMENT IN THE  
INTERMEDIATE GRADES

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INTERMEDIATE GRADES

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## CHAPTER I

### THE RELATIONSHIP BETWEEN LEVEL OF ADJUSTMENT IN THE INTERMEDIATE GRADES AND READING READINESS

This study was concerned with adjustment problems of intermediate age school children, a dilemma which poses one of the most urgent, continuing problems confronting educators and the field of education today. Although research long ago revealed a high incidence of emotional disturbance among school children and emphasized the need for correction and prevention, the maladies were found to exist today, without much relief or promise (7, 9, 12).

Inherent in this problem was a need for a systematized and creative research that would extend the horizon of theory, related to the problem, beyond the mere, primitive frontier of the present time. In the past, too much effort in coping with the problem of adjustment in children has been educated guesswork, dependent on an infant and circumscribed science.

The present study was an effort to contribute information to help meet this research need. The results will provide knowledge about aspects of the adjustment of school children that will be pertinent and potentially valuable in education, in personal, educational and vocational

guidance, in the handling of special problems, and in the better understanding of all children.

More specifically, this investigation emphasized relationships between adjustment level in the intermediate grades and measures that differentiated it, or were related to it. Special attention was devoted to sex differences that might help account for the higher incidence of disturbance and school difficulty encountered by boys (1, 2, 9, 10). Strong emphasis was given to investigating the postulation that physical inability to meet early school demands will be a frequent cause of failure and frustration, which might, in turn, precipitate a cycle of reading retardation and general underachievement.

The problem of this study was not to prove the need for prevention, nor was it to categorize and describe syndromes that seemed most salient and observable. The need has been established and the behavior patterns well depicted. Rather, the problem concentrated on the question of "when did it all begin?"

#### Statement of the Problem

The problem of the study was to investigate the relationship between readiness for first grade and levels of adjustment and achievement in the intermediate grades.

The problem presupposed the following sub-problems:

1. The first sub-problem was to test the postulation that girls will

have significantly higher levels of adjustment and achievement in the intermediate grades than will boys.

2. The second sub-problem was to test the postulation that boys of "average or below" intelligence, who entered first grade at 6 years 6 months, or younger, will have lower levels of adjustment and achievement in the intermediate grades than will those who entered at 6 years 7 months, or older.

3. The third sub-problem was to test the postulation that boys of "above average" intelligence, who entered first grade at 6 years 6 months, or younger, will not have lower levels of adjustment and achievement in the intermediate grades than those who entered when 6 years 7 months, or older.

4. The fourth sub-problem was to test the postulation that girls, regardless of intelligence classification, who entered first grade when 6 years 6 months, or younger, will not have significantly different adjustment levels in the intermediate grades than will those who entered when 6 years 7 months, or older.

5. The fifth sub-problem was to test the postulation that there will be a positive relationship at the intermediate level between level of adjustment and measures of school grades and achievement.

6. The sixth sub-problem was to test the postulation that there will be a significant, positive relationship between intelligence and reading readiness.

### Significance of the Study

Emotional disturbance, underachievement and school failure were considered crucial problems by educators in our society today, according to increasing numbers and kinds of surveys, experiments, projects and observations (4, 8, 9, 12). Educators and psychologists agreed that early identification, diagnosis and prevention of emotional problems were among the most critical needs of our time (2, 10, 12, 13). There was concern regarding the extent to which existing policies and practices in schools might be operating to induce or negate disturbance (1, 9). Most existing literature concerning the identification and prediction of emotional problems was based on clinicians' judgments, as was most existing literature dealing with school entrance age (12, 13).

A review of the literature revealed a conspicuous dearth of research relevant to the genesis of adjustment difficulties of children in the school milieu. The literature acknowledged, however, the need for such studies, and authors recommended that research be conducted (2, 3, 12).

Results of the present study will help fill the research gap concerning the origin of adjustment problems. Results will also demonstrate that significant differences will be observable when subjects are separated for study according to sex, chronological age at first grade entry and intelligence. An examination of the relationship between measures of readiness and level of adjustment in the intermediate grades

will be important to existing theory and will be of significance in defining and predicting.

In addition, the findings will be significant in suggesting that many boys might be physically unable to meet early school demands, and that because of this lack of physiological maturation, will experience failure and frustration, precipitating a cycle of reading retardation and subsequent adjustment problems. The discovery and description of the boys and girls who will be apt to experience early school difficulties and subsequent maladjustment will add valuable background data to existing research. This background data will serve as a theoretical basis for conducting experimental research designed for causal inference. For only when causes have been determined will results be appreciably altered and the dilemma of prevention be resolved.

The established hypotheses will also be of significance in indicating the need to emphasize factors of perceptual maturity in the evaluation and determination of "readiness." Finally, results of this study will suggest that educators review the question that Carl Rogers asked in research a number of years ago (9). "Are schools inadvertently assisting the general culture in initiating, abetting, and perpetuating disturbance, especially in the education of boys"?

#### Hypotheses

The following working hypotheses were formulated:

1. There will be significant differences between the mean scores of

boys and girls in the intermediate grades on measures of reading readiness, reading achievement, school grade average and level of adjustment, with girls having the higher means.

2. There will be no significant difference between the mean intelligence test scores of boys and girls.

3. There will be a significant difference between the mean level of adjustment scores of boys (classified "average or below" I. Q. ) who entered first grade when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older, with the "older" having the higher mean.

4. There will be no significant differences between the mean level of adjustment scores of boys (classified "above average" I. Q. ) and girls (regardless of I. Q. ) who entered first grade when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older.

5. There will be no significant differences between the mean scores of boys (classified "above average" I. Q. ) and girls (regardless of I. Q. ) who were 6 years 6 months, or younger, at first grade entry and those who were 6 years 7 months, or older, on measures of reading readiness, reading achievement and school grade average.

6. There will be a significant difference between the mean scores of boys (classified "average or below" I. Q. ) who were 6 years 6 months, or younger, at first grade entry and those who were 6 years 7 months, or older, on measures of reading readiness, reading achievement and

school grade average, with the "older" having the higher scores.

7. Boys who have level of adjustment scores that are in the "top" quarter will have significantly higher means than will boys who have scores in the "bottom" quarter, on measures of reading readiness, reading achievement, school grade average and intelligence.

8. Girls who have level of adjustment scores that are in the "top" quarter will have significantly higher means than will girls who have scores in the "bottom" quarter, on measures of reading readiness, reading achievement, school grade average and intelligence.

9. There will be a significant, positive relationship between level of adjustment and measures of reading achievement and school grades.

10. There will be a significant, positive relationship between measures of intelligence and reading readiness for both boys and girls.

#### Definition of Terms

1. Level of Adjustment: refers to a measure of adjustment obtained by Ullmann's "Forced Choice Test," which was designed and standardized for rating children.

2. Intermediate Level School Children: refers to students who were enrolled in one of the intermediate grades, four, five or six, at the time of the study.

3. Chronological Age at Entry and/or C. A. at Entry: the actual age in months of the subjects in the study sample at the time they entered the first grade.

4. School Grade Average: refers to a numerical average obtained from letter grades that were recorded in permanent records at the end of the spring term of the year prior to the study. A numerical measure was converted from letter grades that were recorded in three subject areas: language arts, reading and arithmetic.

5. Above Average Intelligence: refers to a total score, obtained from averaging the "Language" and "Non-Language" parts, of 115 or above on the California Test of Mental Maturity, S Form, 1957.

6. Average or Below Intelligence: refers to a total score, obtained from averaging the "Language" and "Non-Language" parts, of 114 or below on the California Test of Mental Maturity, S Form, 1957.

7. Maturation: refers essentially to physical development and change in the human organism. The process is basically the result of physiological factors.

#### Limitations of the Study

The study was limited to a sample of 825 subjects in grades 4, 5 and 6, who were selected from one North Central Texas city, with a population of approximately 60,000. The city was located in a large metropolitan complex with a total population of over 2,000,000 people.

#### Basic Assumptions

It was assumed that the subjects were representative of intermediate level school children in the system from which they were selected.

It was assumed that the subjects were representative of intermediate school children in systems of comparable size in the North Central Texas area.

It was assumed that the teachers who participated in rating level of adjustment of students were representative of the total population of intermediate level teachers in the school system that was studied.

It was assumed that the Harrison-Stroud Reading Readiness Profiles was a valid, standardized reading readiness test.

It was assumed that the SRAS Achievement Series, Form A, was a representative and valid test of educational achievement.

It was assumed that the California Test of Mental Maturity, S Form, 1957, was a valid, standardized intelligence test.

#### Sources of the Data

In order to examine the hypotheses, four dichotomous and twelve continuous variables were obtained from list reports of standardized test scores, permanent record folders and school personnel. From the list reports, scores were obtained for reading readiness, reading achievement and intelligence. The permanent record folder was the source of chronological age at entry, sex and school grades. The level of adjustment rating was obtained from each subject's current teacher, and his attendance status was obtained from his school principal.

The dichotomous variables were sex, school grade level, chronological age at first grade entry, and intelligence. More specifically, the 825 subjects in the sample were dichotomized into grades 4, 5 and 6; into 2 sex categories; as "younger" and "older" C. A. at entry; and into 2 I. Q. classifications, "Above Average" and "Average or Below."

Continuous variables were school grade averages, level of adjustment scores, two reading achievement sub-test scores, seven reading readiness sub-test scores, and total I. Q. test scores.

The first step in obtaining the data was selection of the sample by a systematized method. From a starting point determined by a table of random numbers, every third name was selected from List Reports of reading readiness test scores. This procedure yielded about 400 names for each intermediate grade, a total of approximately 1,200.

Next, it was necessary to discard names of subjects for whom either achievement or intelligence scores were not available. They were, for the most part, students who had withdrawn from school between the time that the readiness measure was administered and the time that tests of the other two measures were administered.

A check of the lists resulted in a loss of approximately 100 names from each grade. The names that remained, provided the students were currently enrolled at the time of the study, constituted the final sample. School principals furnished information concerning enrollment status and provided the names of the current teachers of each subject whose

attendance they confirmed. About 25 or 30 names per grade were dropped in this process, and these names that survived constituted the total sample of 275 subjects for each of the 3 grades.

Intelligence scores were employed as both dichotomous and continuous variables. The group intelligence test was administered to all subjects by the investigator during the last week in September of the fourth grade. From the resultant list reports of scores, the total I. Q. 's were obtained, as well as sex, present school grade and chronological age at time of entry.

The reading readiness test was administered by individual classroom teachers during the first two weeks of the first grade year. The teachers also scored and recorded the results of these tests, which were kept on record from the time the subjects took them until the time the study was conducted.

Subjects were administered the SRA. Achievement Series battery during the first two weeks in October, during the year the study was in progress. The achievement tests were administered by classroom teachers when the subjects were in the intermediate grades. However, unlike the readiness tests, the achievement tests were machine scored and processed.

Measures of school grades and level of adjustment were obtained next. A blank rating form, Form Number Three, was prepared for each

student and sent to his current classroom teacher for completion. This procedure yielded the last measure essential to the study.

#### Description of the Instruments

Three of the instruments used in this investigation were well-known, widely used, standardized tests. The instrument employed to obtain measures of reading readiness was the Harrison-Stroud Reading Readiness Profiles battery. According to the technical manual, the test was a "group test of specific skills that children used in beginning to learn to read." The manual also indicated that the tests were designed to measure specific readiness skills. The total battery was composed of five group tests and one individual test, which were administered during the first two weeks of grade one by individual classroom teachers, who also scored and recorded the results.

The California Test of Mental Maturity, Form S., was used to obtain measures of intelligence. The test was designed to appraise mental ability or mental maturity, and it was rated as a well constructed and standardized instrument, yielding scores that were valid and reliable (13). According to the manual, "the test is for appraising mental processes separately in two different areas and yielding two different scores, verbal and non-verbal." These two scores were averaged to obtain the total I. Q., which was employed in this study.

The Science Research Associates Achievement Series battery, Form A, was a power test for measuring educational achievement in several different areas including work-study skills; reading vocabulary and reading comprehension, spelling, capitalization and punctuation, grammatical usage, arithmetic concepts, and arithmetic computation. In addition to yielding a separate score for each of these subject areas, the battery also yielded a composite score, which was obtained by averaging the area scores.

According to the technical manual that accompanied the Science Research Associates Achievement Series, "the battery is considered to be valid, comprehensive and reliable for measuring achievement in school subject areas." The battery used in this study was constructed and designed especially for the intermediate level.

Ullmann's "Forced Choice Test" was employed to measure level of adjustment, and was developed by Charles Ullmann (12) during research efforts dealing with adjustment in school children. Extensive information relevant to the development, standardization and use of the technique was published in a Public Health Monograph in 1952. The "Forced Choice Test" was composed of eighteen groups of descriptive statements about behavior. Each item was assigned a weight, and the combined item weights constituted the raw score.

Previous research showed that teacher's ratings of adjustment level could be used at the present time with some validity. Therefore,

teachers were employed in this study to rate level of adjustment. Each teacher completed a three page rating form for each subject in the sample who was in her room (Appendix, p.103). Directions to the raters were added to the instrument in this investigation to facilitate consistency and usability.

#### Procedures for Analyzing the Data

Tenability of the hypotheses was determined by statistical treatment of the data. The hypotheses were treated statistically as Null Hypotheses, with the .05 level of significance necessary for rejection.

Hypothesis 1 was tested by calculating the significance of the difference between the level of adjustment means of boys and girls.

Hypothesis 2 was tested by calculating the significance of the difference between the intelligence test scores of boys and girls.

Hypothesis 3 was tested by calculating the significance of the difference between the adjustment scores of boys (classified "average or below" I. Q. ) who entered first grade "younger" C. A. and those who entered first grade "older. "

Hypothesis 4 was tested by calculating the significance of the difference between the level of adjustment means of boys (classified "above average" I. Q. ) and girls (regardless of intelligence) who entered first grade "younger" C. A. and those who entered "older. "

Hypothesis 5 was tested by calculating the significance of the difference between the means of boys (classified "above average" I. Q.) and girls (regardless of intelligence) who entered first grade "younger" C. A. and those who entered "older" on measures of reading readiness, reading achievement, and school grade average.

Hypothesis 6 was tested by calculating the significance of the difference between the means of boys (classified "average or below" I. Q.) who entered first grade "younger" C. A. and those who entered "older" on measures of reading readiness, reading achievement, and school grade average.

Hypothesis 7 was tested by calculating the significance of the difference between the means of boys whose level of adjustment scores were in the "top" quarter and those whose scores were in the "bottom" quarter for measures of reading readiness, reading achievement, school grade averages and intelligence.

Hypothesis 8 was tested by calculating the significance of the difference between the means of girls whose level of adjustment scores were in the "top" quarter and those whose scores were in the "bottom" quarter on measures of reading readiness, reading achievement, school grade average and intelligence.

Hypothesis 9 was tested by calculating the Pearson's product-moment coefficient of correlation between level of adjustment scores

and measures of reading achievement and school grades. The significance of correlation was tested by Fisher's z test.

Hypothesis 10 was tested by calculating the Pearson's product-moment coefficient of correlation between intelligence scores and reading readiness sub-test scores. The significance of correlation was tested by Fisher's z test.

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## CHAPTER II

### REVIEW OF RELATED RESEARCH

This chapter is devoted to a review of related research, for the purpose of structuring and clarifying the background and theoretical framework of the study. Selected, representative studies will be discussed, with consideration given to purpose, method and conclusions. The findings will be presented in three parts: (1) Studies Concerned with the Need, Design and Format of the Study; (2) Studies Concerned with the Implications of Sex, Perceptual Maturity and I. Q. in Assessing Readiness; and (3) Studies Concerned with the Relationship of Achievement to Measures of School Readiness and Problem Tendency.

The outcomes presented in the first part will be relevant to the method and procedures of the study, while those included in the second and third parts will be relevant to the predictions of the hypotheses stated in Chapter I. It should be noted that these sub-groups will be neither mutually exclusive nor all-inclusive.

#### Studies Concerned with the Need, Design and Format of the Study

The need for the study was supported by three kinds of evidence revealed in the literature. The first of this evidence was in the form of

a general agreement among educators that maladjustment in the schools was properly and appropriately of concern to educators and the field of education (1, 8, 19). A second evidence of need was the conspicuous research gap that was found to exist in the area of maladjustment in the schools (9, 16). The last kind of evidence for the present study was provided by earlier studies which found a high incidence of maladjustment among school children (8, 12, 19).

Rogers (24) investigated maladjustment in the school setting in order to determine as objectively as possible what proportion of children evidenced poor mental health or unsatisfactory adjustment. He selected ten indexes of maladjustment and employed the case study method in what was one of the pioneer efforts dealing with the nature and extent of maladjustment.

The study sample included 1,524 children from 3 schools in Columbus, Ohio. For purposes of his study, Rogers stated the following working definition of maladjustment: "When a child is maladjusted, he is an individual with a long and often tragic history of unhappiness and unfortunate experience."

Rogers found that 12 per cent of his study group evinced poor mental health. He also found that about three times as many boys as girls evinced maladjustment. While only 7 per cent of the girls in his study evinced serious problems, 18 per cent of the boys fell into that category. Rogers also found that significantly larger numbers of boys

experienced reading difficulty, reading retardation and school failure than did girls. He asked the question many years ago that educators might do well to ask again today: "Are our schools set up more in accord with the mental hygiene needs of girls than of boys"?

Some indication of the relative demands for service from psychiatric clinics was obtained by the California Department of Mental Health (27), which reported first admissions to clinics during 1948. It appeared from these reports that clinical services were sought more frequently for boys than for girls. It was revealed that significantly higher percentages of males than females were designated "unimproved" at the time of discharge. On the other hand, a higher percentage of females were designated "improved." These findings from the California clinics supported Rogers' findings that the incidence of maladjustment was about 10 per cent, and that more boys than girls were maladjusted.

In a study published by the United States Public Health Service, Ullmann (30) attempted to survey the mental health problems evinced by public school children and to develop an objective method for the identification of those who needed care. His sample included 97.5 per cent of the student population in the system studied. The experimental group used in the project consisted of 404 boys and 406 girls. The first phase of the study dealt with identification of mental health problems, and the second phase dealt with the development of the "Forced Choice Test" of adjustment.

Teachers in Ullmann's study estimated that 8 per cent of the students had serious problems. Apparently, teachers recognized a high incidence of maladjustment and saw a need for mental health assistance. In the process of his study, Ullmann obtained teachers' judgments and compared them with self-ratings and peer ratings in order to determine the consistency of results that were obtained by different techniques. Items were then compared with the ratings of clinicians in order to establish which items were most discriminating. Those items that discriminated best were eventually used in constructing the "Forced Choice Test," which was employed in this study.

The investigations of Rogers (24), Ullmann (30) and the California Department of Mental Health (27) were in agreement that the incidence of emotional disturbance among children was approximately 10 per cent, and that more boys than girls were disturbed.

The nomothetic design was employed in the present study as a result of certain assumptions that were made. It was assumed that individuals differed quantitatively rather than qualitatively; in degree rather than in kind. It was also assumed that the study of groups was of value, because all individuals followed the same maturation sequence and pattern. It was assumed, as well, that research findings obtained quantitatively and universally were valuable in making predictions about individuals. There is currently a controversy between certain experimental and clinical psychologists, as well as between the factor

analysts and the "Self" or "Purposive" psychologists, with respect to whether or not the scientific approach is precluded by the factor of "uniqueness" (1, 8). The present investigation recognized that no proof of either position has been submitted, and assumed that "uniqueness" would not automatically rule out the scientific method.

Three general kinds of support for the nomothetic method were found in the literature. Most earlier studies were of the idiographic type (30), which was felt to be a deficiency in the research, and which indicated a need that other types be conducted. The nomothetic method was also supported by such noted behavioral scientists as Eysenck (7), who stated that this method was the more scientific and valid, and by Allport (1), who acknowledged the value of the nomothetic design in providing the content of general, comparative and social psychology. The final support for this research technique was endorsed by the nature of the variables examined in the study. Many of these variables were factors of the maturation process, and were therefore amenable to the nomothetic design.

The maturation process was investigated by Gessel (10), whose findings supported several of the principles of growth. He found that maturation was cephalocaudal and proximodistal, progressing upward in a spiral-like fashion. He defined cephalocaudal as differentiation beginning first in the head and proceeding outward to the extremities; and proximodistal as differentiation in development beginning first in

the central areas, such as the viscera, and proceeding outward to the peripheral areas. Gessel concluded that individual differences were definite and extensive, but that the maturation process was, nevertheless, a patterned sequence peculiar to the species and adhered to by all members of the species.

Allport (1) agreed with the conclusions of Gessel in a recent statement that "in order to account for the development and behavior of individuals, it was necessary to devote attention to both group norms and individual differences." He took up his traditional cudgels for man's uniqueness, defending the position that "psychology should seek an equilibrium by taking into account the individual as both a group member and an individual." He concluded that the true goal of psychology was not to predict the aggregate, but to foretell what any one man might do." He concluded that in reaching this ideal goal, "emphasis must be given to inquiry about the individual, as well as to inquiry about the group norms."

Eysenck (7) was more zealous about nomothetic inquiry. He maintained that "to the scientist, the unique individual was simply a point of intersection of a number of quantitative variables." His concern was for common dimensions that were examined in "the true tradition of science." He maintained that "only those variables that were operationally defined and could be quantitatively measured were suitable for scientific investigation, and the only valid investigations were those

that dealt with common dimensions, employing the nomothetic approach. To Eysenck, the idiographic method was "pure quackery," having no place in science.

The results of earlier studies provided evidence supporting the validity of teachers' ratings of adjustment for use in the present study. Wickman (32) conducted a classic study of the ability of teachers to assess pupil personality. He investigated the reactions of teachers to the behavior of their pupils in the public elementary school setting.

In Wickman's study, teachers classified total behavior of the children in their classes and indicated that they considered about 7 per cent to be seriously disturbed. The teachers regarded approximately 52 per cent of the children as having one or more behavior traits "which would cause considerable or serious difficulty." Wickman therefore concluded that the teachers in his study expected perfection in their pupils. However, he speculated that teachers might have discounted some behavior traits out of a sense of fatigue or habituation. He observed that teachers showed a tendency to discount behavior which was the most frequently observed.

The teachers in Wickman's study identified the problem child in school as one who was antagonistic toward authority, who did not conform to classroom order and routine, and who violated the teachers' standards of integrity. Wickman then asked thirty clinicians to rate fifty problems of behavior according to seriousness, and he correlated

their item ratings with the ratings obtained from teachers. Items were correlated by the rank-order method to determine relationships of the ratings of teachers and clinicians. Wickman found no significant agreement between their ratings of problem behavior.

Mitchell (17) repeated the Wickman study thirteen years later and found that mental hygienists and teachers had moved much closer together in their judgments of what constituted behavior problems. The coefficients of correlation between the ratings of teachers and hygienists changed from  $-.80$  in 1927 to  $+.70$  in 1940. Teachers in 1940 considered non-aggressiveness to be far more serious than did teachers in 1927. In the interval, mental hygienists had become more conservative in their assessments of significant behavioral traits. In 1927, hygienists rated such traits as "anti-social," "withdrawn," "suspicious," "unhappy," "subjective" and "depressed" as being very serious, while in 1940 they did not rate one single trait as being very serious.

Related to the studies of Wickman and Mitchell was the investigation of Thompson (29), which was concerned with the relationships between rankings of items of behavior by teachers and the rankings of items of behavior by child psychologists. Thompson calculated a separate rank for twenty-four items, for each group of respondents. These were considered indexes of the groups' estimates of the significance of the items. The investigator found that the rank order of many of the items in his study was significantly different from the rank order in

Wickman's study. He also found a correlation of  $+ .85$  between the item ranks of child psychologists in the Wickman study and child psychologists in his own study, although he found many discrepancies, as well.

Thompson further found that the item ranks of teachers in his study were significantly, positively related to the item ranks of child psychologists in his study. He concluded that there was a significant similarity between the ratings of teachers and clinicians in his study; but that there was a discrepancy between the ratings of beginning teachers and experienced teachers, and between whites and Negroes. He also concluded that child psychologists evaluated behavior in terms of its effects on the individual, while teachers evaluated behavior in terms of its social consequences. These findings provided additional evidence of the relative validity of teachers' ratings of adjustment.

Fleege (8) also studied self-ratings and concluded that they were not valid techniques for assessing adjustment status, especially when used with children. He also concluded that self-awareness was frequently cloudy and unrealistic, and that insight into the nature of the self was poor when problems of adjustment were present. This finding supported the use of teachers' ratings by virtue of presenting evidence against other forms, particularly self-ratings. However, this evidence was indirect, and provided support only by inference.

Fleege based his conclusions on the findings obtained from a questionnaire which was administered to unselected groups of boys in

twenty high schools. Seven per cent of the boys questioned stated that "the adjustments in getting along with others seemed to be just too much." One boy out of every ten stated that he was infrequently lonely. Fleege found a much higher degree of self-awareness among upper-classmen and among the less severely disturbed. The self-awareness of subjects, as shown in the questionnaire, was checked against a criterion rating by teachers and other professional personnel in the schools.

The study of maladjustment conducted by Ullmann (30) provided additional support for the validity of teachers' ratings. He found that teachers' ratings resembled those of mental health experts, provided the teachers were not functioning under pressure. Ullmann concluded that adjustment was defined according to the type of instrument used to measure it. He also concluded that teachers usually noted maladjustment as behavior that was observable on the surface, and that different techniques of assessment were generally necessary, depending on the particular purpose of the assessment. In addition, Ullmann concluded that a focus on items of objective behavior tended to increase imbalance against boys, but that such a focus still tended to raise predictive validity substantially. Finally, he concluded that a pupil's feelings about himself were unrelated to the estimates of him by peers and teachers.

These earlier findings of Wickman (32), Mitchell (17), Thompson (29), Fleege (8) and Ullmann (30) provided a consensus that teachers' ratings could be used with relative validity in the assessment of adjustment.

**Studies Concerned with the Implications of Sex,  
Perceptual Maturity and I. Q. in  
Assessing Readiness**

In order to investigate the problem of the study it was necessary to clarify any implications and effects of sex, perceptual maturity and I. Q. with respect to assessing readiness. The following studies were concerned with the nature and extent of the implications of these variables.

A review of the literature revealed sex differences in the maturation process, which implied that girls would generally attain readiness for school earlier than boys (2, 10).

Gessel (10) concluded that girls were developmentally accelerated in the maturation process from the time of conception to maturity. He found that a shorter gestation period was required for the female prior to birth, that girls reached puberty about two years sooner than boys, and that girls were accelerated throughout childhood. This finding indicated that the advantages enjoyed by girls were primarily physiological.

Anastasi (2) synthesized research findings with respect to sex differences, and her conclusions were in agreement with those of Gessel (10). Like Gessel, she found that girls were developmentally accelerated throughout the maturation process. However, she found no evidence that girls were intellectually accelerated, although their performance in school was better than that of boys.

Related to the developmental acceleration of girls was the conclusion of Olson and Hughes (20) that the individual child of either sex developed not only according to a basic sequence that was characteristic of his species, but that he developed and grew as an organismic whole, with a special cultural setting. This conclusion indicated that each individual was unique, and that this should be taken into account when studying the processes of maturation and learning. The literature concerned with child development also contained a consensus that the physiological, intellectual, social and emotional processes of development interacted and were inseparable.

The term "readiness" was found to be far from definitive, although it was extremely popular and widely accepted among educators (5). While there were no generally accepted criteria for what constituted "readiness," there was widespread agreement as to its importance. It was concluded that the concept of "readiness" needed to be better defined.

The review of literature raised a number of questions other than those regarding "readiness." In a recent text, Mussen (19) concluded that one possesses only limited and spotty knowledge of the complex perceptual changes that occurred between infancy and adulthood, and of the processes underlying them. It was found that one knows nothing of the processes involved in the organization and integration of early sense impressions. It was not known whether or not there were specific experiences that accentuated or retarded perceptual development.

There was a question as to whether the ability to make one type of perceptual discrimination facilitated the learning of others, or if so, to what degree. Still another question which remained to be answered was how far and how fast the abilities of youngsters could be pushed into forming concepts, and the particular neural mechanisms that accounted for improvement in perception.

Research findings indicated that young children ordinarily did not differentiate the parts of what they perceived, especially if the stimulus was unfamiliar or contained no meaning for them. Mussen (19) stated that this ability to extract or differentiate parts from an original undifferentiated whole global perception developed gradually with increasing age.

Compared with adults, children found it difficult to locate imbedded figures. Mussen, Conger and Kagan (19) reported a study in which children between five and one half and six and one half years of age were presented with two familiar geometric figures embedded in more complex figures. The subjects were asked to find the familiar figure in the new configuration, and it was found that only the highly intelligent children were able to do this, and then only with relatively simple new configurations; while children of lesser intelligence were completely unable to detect the figures.

Mussen and his associates concluded that children between eight and ten years of age might have difficulty extracting known figures from

unfamiliar context, but that the ability to differentiate the part from the whole would generally continue to improve throughout the adolescent period.

Several investigations indicated that perceptual development and abilities were essentially functions of physical maturation. Evidence also indicated that reading achievement was positively related to perceptual development, and that perceptual maturation or retardation were significant factors in reading disability (12). The proposition seemed tenable that chronological age at first grade entry was a significant factor in readiness for learning to read. It also seemed tenable that boys would have attained lower levels of perceptual maturation than girls, since girls had been found to be developmentally accelerated, and that boys would therefore have been less "ready" than girls to begin school at a given chronological age.

The literature provided evidence that intelligence was a major factor affecting the assessment of school readiness. Earlier studies also confirmed that a positive relationship existed between superior physiological maturity and superior measured intelligence (2, 8).

Terman (28) discovered the positive relationship between superior levels of intelligence and physical development in his historic studies of the gifted in California. Gessel (10) drew this same conclusion from his studies of the maturation process.

Therefore, it was implied that the higher the intelligence level, the higher the level of readiness for school. Evidence was found in the literature that perceptual maturation was an extremely important factor to consider in the assessment of readiness, and that sex and I. Q. were extremely important factors to consider in the measurement of perceptual maturity.

#### Studies Concerned with the Relationship of Achievement to Measures of Readiness and Adjustment

A review of the literature revealed no previous findings concerning the relationship between school readiness and level of adjustment in the intermediate grades, which was predicted by the present study to be positive. However, the results of earlier investigations revealed that the measures of first grade readiness and intermediate adjustment level were significantly related to school achievement.

It was concluded, by inference, that readiness and adjustment were positively related, since both measures were significantly related to achievement.

Carrol (5) obtained results which suggested that a few months of educational growth and development were an advantage for the child just beginning his formal education. In a study of academic achievement and adjustment status, Carrol examined differences between groups of underage and overage third grade students and found that the overage

children had significantly higher achievement than the underage. He concluded that physiological factors had significant effects on early school achievement. This finding was basic to the particular way the problem of this study was formulated.

Kingston (14) conducted a study in an attempt to ascertain the relationship of beginning first grade readiness test scores and third and fourth grade achievement. The findings of his study indicated that perceptual development and abilities were positively correlated with reading achievement, and he concluded that children showing the greatest readiness for learning at first grade, as measured by readiness tests, would make the greatest scholastic achievement at third and fourth grade level. However, research findings by others in the area of growth and development indicated that many slower developing children managed to catch up during the early elementary school years.

Kingston's study was conducted in Florida public schools with groups of third and fourth grade subjects for whom achievement test scores could be obtained, and for whom Metropolitan Reading Readiness Test results were already available. The investigation revealed a significant relationship between the Metropolitan readiness test composite scores and third and fourth grade achievement scores. Kingston found that there was a significant relationship between each of the sub-tests of the readiness battery and third and fourth grade achievement scores.

However, none of the coefficients of correlation that were obtained were of sufficient strength for use in predicting success in individual cases.

### Summary

This chapter was devoted to a review of related research which provided the background and theoretical framework of the study. In order to facilitate the discussion, studies were presented in three parts: Studies Concerned with the Need, Design and Format of the Study; Studies Concerned with Readiness Assessment and the Effects and Implications of Sex Differences, Perceptual Maturation and Intelligence; and Studies Concerned with the Relationship of Achievement and Measures of Readiness and Adjustment.

A review of related research showed a general agreement among investigators that the incidence of serious emotional disturbance was about 10 per cent, and a consensus that this was considered very high and crucial (21, 24, 30). Educators agreed that this incidence of emotional disturbance gave some indication of the urgent need for a theory that would facilitate understandings of etiology and methods of control.

There was a conspicuous research gap in the area of childhood disturbance. Only a limited number of the earlier case study or idiographic type studies were found, which suggested a deficiency in the research and supported the need for the present study.

The literature indicated the nomothetic design, and offered as evidence for this approach the conclusions of Gessel (10) and Anastasi (2) that the maturation processes were patterned, sequential and orderly. Since many of the variables under scrutiny in this investigation were factors of the maturation process, the conclusions of Gessel (10) and Anastasi (2), that maturation was a universal phenomenon, rendered them particularly amenable for study by the nomothetic approach.

Further support was provided by the judgments of notable behavioral scientists like Eysenck (7), who stated that the nomothetic approach was more scientific and theoretically sound than the idiographic design.

In addition to supporting the need for the study, the value of the nomothetic approach and the validity of teachers' ratings of adjustment, previous studies also provided relevant information concerning the assessment of readiness.

Earlier research found the assessment of readiness to be affected by sex differences, perceptual maturation and intelligence (16, 19, 28). It was revealed that visual perceptual maturity was necessary for making visual discriminations essential in learning to read (19, 20, 28). Concomitantly, however, it was found that visual perceptual maturity was a factor of, and seemed to be dependent upon, the process of maturation (10, 12, 19). Earlier findings also indicated that many children had not

attained visual perceptual maturity by the time they entered first grade (10, 12, 14, 3).

Girls were found to be developmentally accelerated from the time of conception to maturity (2, 10, 16), which suggested that they attained visual perceptual maturity sooner than boys. Level of intelligence was found to be positively related to level of physical development (2, 12, 15), which suggested that those who attained visual perceptual maturity earliest were the more highly intelligent.

Earlier research concerning the relationships of school achievement and measures of readiness and adjustment contributed significantly to the direction of the predictions stated in this study. A number of studies investigated the relationship of achievement in the intermediate grades to first grade readiness; and results were in agreement that this relationship was positive and significant (5, 14, 21), regardless of whether readiness was measured by C. A. at entry or by readiness test scores.

Recent investigations also confirmed the negative relationship of achievement to problem tendency; *i. e.*, the higher the achievement, the lower the problem tendency. The negative relationships established by earlier investigations supported the possibility that a positive relationship between first grade readiness and level of adjustment, in the intermediate grades, would be found.

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## CHAPTER III

### PRESENTATION AND INTERPRETATION OF THE DATA

The purpose of this chapter is the presentation of statistical results as they relate to the hypotheses presented in Chapter I. The data will be analyzed and the findings discussed.

It was stated in Hypothesis I that there will be significant differences between the scores of intermediate age boys and girls on measures of reading achievement, reading readiness, school grades and level of adjustment. In order to test the hypothesis, it was necessary to calculate the levels of the significance of the differences between the means of boys and girls on the four measures involved. Using the critical ratio technique, significance levels were computed for each grade separately and for the grades combined, in order to determine whether differences increased with grade progress, or if differences for any one grade differed from the others. The .05 level of significance was necessary for rejection of the Null Hypothesis. The results for grade four are shown in Table I.

The outcomes shown in the table confirmed the hypothesis that fourth grade girls will have significantly higher scores than fourth grade

TABLE I

SIGNIFICANT DIFFERENCES BETWEEN MEANS OF BOYS AND  
GIRLS ON MEASURES OF ACHIEVEMENT, READINESS,  
GRADES AND ADJUSTMENT: GRADE 4

Measures	Subjects				C. R.	L. S.
	Boys N-138		Girls N-137			
	M	S. D.	M	S. D.		
<b>Achievement Sub-Tests</b>						
Vocabulary	17.42	6.93	21.67	5.35	5.74	.0001
Comprehension	19.36	6.23	22.95	5.03	5.27	.0001
<b>Readiness Sub-Tests</b>						
Using Symbols #I	19.62	3.37	20.50	1.73	1.70	NS
Visual Discrim. IIa	13.09	2.60	13.47	1.19	.24	NS
Visual Discrim. IIb	14.86	1.58	15.18	1.71	.29	NS
Using Context III	16.53	1.77	16.75	1.26	1.98	NS
Auditory Discrim. IV	14.78	1.11	14.81	2.30	.12	NS
Context & Aud. V	14.79	1.15	15.34	3.12	2.68	.01
Civ. Names of Let. VI	29.50	9.96	31.72	10.52	1.99	.05
<b>School Grade Average</b>	79.80	7.79	85.58	6.61	6.68	.0001
<b>Level of Adjustment</b>	20.15	6.04	22.10	5.10	2.03	.05

boys on measures of achievement, school grades, level of adjustment, and on part of the measure of reading readiness. An examination of Table I shows that differences on both the reading vocabulary and the reading comprehension sub-tests of achievement were significant at the .0001 level, as was the difference on the measure of school grades. The obtained difference between level of adjustment means was significant at the .05 level.

Further examination of Table I reveals that five of the seven readiness sub-tests failed to confirm Hypothesis 1. The two sub-tests that differentiated fourth grade boys and girls were sub-test V, "Using Context and Auditory Clues," significant at the .01 level, and sub-test VI, "Giving Names of Letters," significant at the .05 level.

These results indicated that the hypothesis of no significant difference between the means of fourth grade boys and girls was rejected for the measures of achievement, grades and adjustment, but was accepted in part and rejected in part for the measure of reading readiness.

As was predicted, the outcomes for fourth grade favored girls, with differences that were significant on three of the measures examined, as well as on part of the fourth measure, readiness.

The data for grade five provided the next test of Hypothesis 1, and the results are presented in Table II. An examination of the table shows that differences were highly similar to those obtained for grade four.

TABLE II

SIGNIFICANT DIFFERENCES BETWEEN MEANS OF BOYS AND GIRLS ON MEASURES OF ACHIEVEMENT, READINESS, GRADES AND ADJUSTMENT: GRADE 5

Measures	Subjects				C. R.	L. S.
	Boys N-146		Girls N-129			
	M	S. D.	M	S. D.		
<b>Achievement Sub-Tests</b>						
Vocabulary	22.05	8.30	24.76	9.31	7.38	.0001
Comprehension	24.38	7.56	26.29	8.46	1.96	.05
<b>Readiness Sub-Tests</b>						
Using Symbols #I	19.91	2.77	20.22	2.38	.31	NS
Visual Discrim. IIa	12.71	1.84	13.25	1.34	.93	NS
Visual Discrim. IIb	14.30	2.01	14.76	1.63	.15	NS
Using Context III	16.82	1.45	16.73	1.42	.61	NS
Auditory Discrim. IV	14.12	2.52	14.30	2.06	.12	NS
Context & Aud. V	14.91	3.40	15.74	2.73	1.01	NS
Giv. Names of Let. VI	26.24	1.21	29.18	1.22	5.56	.0001
<b>School Grade Average</b>	84.56	7.71	87.42	5.98	3.45	.001
<b>Level of Adjustment</b>	21.04	5.19	23.40	6.81	2.69	.01

Differences between the means of boys and girls were significant for the reading vocabulary sub-test of achievement at the .0001 level; for the reading comprehension sub-test at the .05 level; for school grades at the .001 level; and for level of adjustment at the .01 level. The only sub-test of readiness for which differences were significant was sub-test VI, "Giving Names of Letters," at the .0001 level.

It should be noted that sub-test VI was also one of only two readiness sub-tests which yielded significant differences for grade four. A question was raised as to why this particular sub-test supported the hypothesis, while the other sub-tests of readiness refuted the prediction of the hypothesis. Sub-test VI seemed to measure different factors from those measured by the battery as a whole. The relationship of this sub-test to measures of achievement, grades and adjustment was stronger than its relationship to the readiness test as a whole, and stronger than the relationships of the readiness battery and the measures of achievement, grades and adjustment.

The results for fifth grade were in the predicted direction on measures of achievement, school grades, level of adjustment, and on part of the measure of readiness. The hypothesis of no significant difference between the means of fifth grade boys and girls was therefore rejected with respect to those measures, but was accepted for six of the seven sub-tests of reading readiness.

These results indicated that fifth grade girls had higher achievement, grades and adjustment than fifth grade boys, but did not have higher readiness scores on most of the sub-tests of reading readiness. It was concluded that sub-test VI, "Giving Names of Letters," measured something different from the reading readiness battery as a whole, and that it was related to the other measures that were examined, while the battery as a whole was not.

The results for grade six are shown in Table III. It can be seen in the table that sixth grade girls, like those in grades four and five, had higher scores than boys on the measures of achievement, grades and adjustment, as well as on one sub-test of reading readiness.

The differences between the means of sixth grade boys and girls were significant at the .0001 level on the reading vocabulary sub-test of achievement; at the .001 level on the reading comprehension sub-test of achievement; at the .05 level on school grades; and at the .01 level on adjustment. However, as seen in the table, the only sub-test of readiness that differentiated boys and girls was sub-test VI, "Giving Names of Letters," significant at the .0001 level.

Again it should be noted that readiness sub-test VI was one of the two sub-tests that was significant for grade four, and it was the only one that was significant for grade five. These results strengthen the implication that only this one sub-test of readiness was predictive of subsequent levels of adjustment and achievement.

TABLE III

SIGNIFICANT DIFFERENCES BETWEEN MEANS OF BOYS AND  
GIRLS ON MEASURES OF ACHIEVEMENT, READINESS,  
GRADES AND ADJUSTMENT: GRADE 6

Measures	Subjects				C. R.	L. S.
	Boys N-126		Girls N-149			
	M	S. D.	M	S. D.		
<b>Achievement Sub-Tests</b>						
Vocabulary	28.17	10.21	29.72	9.11	4.15	.0001
Comprehension	28.34	8.98	29.40	8.64	3.69	.001
<b>Readiness Sub-Tests</b>						
Using Symbols #I	19.73	2.42	20.22	3.71	.58	NS
Visual Discrim. IIa	12.97	1.43	13.55	2.79	.69	NS
Visual Discrim. IIb	14.98	3.30	15.40	1.27	.90	NS
Using Context III	16.76	2.53	16.98	4.60	.27	NS
Auditory Discrim. IV	14.88	4.71	15.33	5.56	.73	NS
Context & Aud. V	15.22	3.42	15.66	3.08	.39	NS
Giv. Names of Let. VI	31.30	1.28	30.12	1.05	2.67	.001
<b>School Grade Average</b>	85.56	7.91	85.63	7.51	2.40	.05
<b>Level of Adjustment</b>	20.51	4.05	22.06	3.84	2.88	.01

The prediction of Hypothesis 1 was confirmed for measures of achievement, grades, adjustment and one sub-test of reading readiness; and for those measures the hypothesis of no significant difference between the means of boys and girls was rejected. However, the hypothesis of no significant difference was accepted for the six sub-tests of reading readiness which failed to support the prediction of the hypothesis.

The results for grade six supported the conclusion that girls excelled boys on all of the measures that were examined, with the exception of six of the seven sub-tests of readiness. The conclusion was also supported that the analysis of the data for the grades combined would reveal outcomes similar to those that were obtained when the grades were analyzed separately.

The results for the grades combined are shown in Table IV. Calculations of t tests confirmed that girls had higher scores on three of the four measures examined, as well as on part of the fourth, readiness.

It can be seen in the table that only certain sub-tests of reading readiness did not support Hypothesis 1. Measures that differentiated boys and girls, as predicted, were reading achievement, with differences significant at the .0001 level on the vocabulary sub-test and at the .001 level on the comprehension sub-test; school grades,

TABLE IV

SIGNIFICANT DIFFERENCES BETWEEN MEANS OF BOYS AND  
GIRLS ON MEASURES OF ACHIEVEMENT, READINESS,  
GRADES AND ADJUSTMENT: GRADES 4, 5  
AND 6 COMBINED

Measures	Subjects				C. R.	L. S.
	Boys N-410		Girls N-415			
	M	S. D.	M	S. D.		
<b>Achievement Sub-Tests</b>						
Vocabulary	22.60	3.04	25.38	7.40	5.04	.0001
Comprehension	24.30	7.10	16.16	7.21	3.59	.001
<b>Readiness Sub-Tests</b>						
Using Symbols #I	19.30	2.83	20.33	2.64	1.34	NS
Visual Discrim.IIa	12.90	1.64	13.42	2.62	1.18	NS
Visual Discrim.IIb	14.71	21.31	14.96	3.74	.80	NS
Using Context III	16.83	4.10	16.96	1.02	1.09	NS
Auditory Discrim.IV	14.01	3.46	14.29	3.96	1.83	NS
Context & Aud. V	14.97	3.30	15.52	4.11	1.19	NS
Giv. Names of Let.VI	28.97	3.40	30.36	3.08	2.72	.01
<b>School Grade Average</b>	32.64	7.74	36.14	6.73	4.96	.01
<b>Level of Adjustment</b>	21.51	2.48	23.06	2.31	2.84	.01

significant at the .0001 level; and level of adjustment, significant at the .01 level.

It was found that six of the seven sub-tests constituting the readiness measure failed to yield the predicted differences. Only sub-test VI, "Giving Names of Letters," differentiated in the direction predicted by the hypothesis, and the difference was significant at the .0001 level.

Because of these outcomes, the hypothesis of no significant difference between the means of boys and girls was rejected with respect to the measures of achievement, grades and adjustment. However, the hypothesis of no significant difference was accepted in part and rejected in part with respect to the measure of reading readiness.

These data, therefore, supported the conclusion that intermediate age girls will be better adjusted, will make better grades and will attain higher levels of achievement than boys, but will not make higher scores on reading readiness. The conclusion was supported regardless of whether the data were analyzed for the grades separately or when combined. Therefore, Hypothesis 1 was accepted in part and rejected in part.

The findings that girls had higher adjustment ratings than boys supported the findings of Rogers (15), that three times as many boys evidenced poor mental health as did girls, and Ullmann (19), that four times as many boys as girls were cited by teachers as being maladjusted.

Results were also in agreement with Anastasi (1), who concluded from a synthesis of research that girls had higher achievement in school than did boys, a finding in the same direction as those of the California Department of Mental Hygiene (18). Their report revealed that clinical services were more frequently sought by boys than by girls, and that more males than females were designated "unimproved" at the time of discharge.

The first logical explanation for the higher scores of girls was the possibility that they might somehow make better adaptations if they were more intelligent than boys. If girls were more intelligent, it could be a factor in accounting for their higher scores in achievement and adjustment.

It was stated in Hypothesis 2 that there will be significant differences between the intelligence test scores of boys and girls. In order to investigate the hypothesis, the critical ratio technique was employed to ascertain the significance between the intelligence scores of boys and girls. The results for the grades combined are presented in Table V.

It can be seen in the table that the difference between the mean scores of boys and girls was not statistically significant. The obtained level of significance was .25, which was not great enough to reject the Null Hypothesis. Hypothesis 2 was therefore accepted.

TABLE V

SIGNIFICANT DIFFERENCES BETWEEN MEAN INTELLIGENCE  
TEST SCORES OF BOYS AND GIRLS:  
GRADES 4, 5 AND 6 COMBINED

SUBJECTS:	<u>Intelligence Test Scores for Boys and Girls</u>			C. R.	L. S.
	NUMBER	M	S. D.		
Total Boys:	410	110.33	7.25	.961	NS
Total Girls:	415	110.83	7.42		
Total Sample:	825	110.58	7.34		

The finding that the sexes did not differ in intelligence was in agreement with findings of Anastasi (1), who synthesized similar outcomes from studies in the last decade. She concluded that the existence of any intelligence difference between boys and girls has not been demonstrated.

Several factors other than intelligence were predicted to be related to the differences favoring girls that were obtained on the measures of achievement and adjustment. Among these factors, the most prominently indicated and considered was chronological age at first grade entry. The C. A. variable had been examined in the past, but results were frequently inconclusive and nebulous (9, 19, 4). In order

to examine the relationship of the C. A. variable to levels of adjustment and achievement in the present study, Hypotheses 3, 4, 5 and 6 were formulated.

Hypotheses 3 and 4 were formulated in order to examine the significance of the differences between the adjustment levels of boys and girls who entered first grade when 6 years 7 months, or older. In order to test the hypotheses, it was necessary to analyze the differences between the "younger" and "older" entries in four different groups: boys of "average or below" I. Q. ; boys of "above average" I. Q. ; girls of "average or below" I. Q. ; and girls of "above average" I. Q.

It was stated in Hypothesis 3 that "average or below" boys who entered first grade "older" will have higher levels of adjustment than will boys who entered "younger. " In order to examine Hypothesis 3, it was necessary to calculate the level of the significance of the difference between the adjustment means of "younger" and "older" entries. The critical ratio technique was employed to obtain the significance level, and the results are presented in Table VI.

It can be seen in the table that the difference between the adjustment scores of "average or below" I. Q. boys who entered "younger" and those who entered "older" was significant at the .0001 level. This finding indicated that the hypothesis of no significant difference between the means of "younger" and "older" entries was rejected. The significance

TABLE VI

SIGNIFICANT DIFFERENCES BETWEEN THE ADJUSTMENT LEVELS OF "YOUNGER" AND "OLDER" BOYS WHO ARE CLASSIFIED "AVERAGE OR BELOW" I. Q.

Chronological Age at Entry	Level of Adjustment		C. R.	L. S.
	M	S. D.		
"Younger" C. A. at School Entry	14.80	3.97	7.44	.0001
"Older" C. A. at School Entry	21.71	9.62		

of the differences favored "older" entries, and Hypothesis 3 was therefore accepted.

It was concluded that "average or below" boys who entered first grade "older" had significantly higher adjustment in the intermediate grades than those who entered "younger." It was also found that early entry was apt to prove detrimental to the subsequent adjustment levels of boys of "average or below" intelligence.

It was stated in the first part of Hypothesis 4 that boys of "above average" I. Q. who entered first grade "older" will not have significantly higher level of adjustment scores than those who entered "younger." In order to examine this part of the hypothesis, the critical ratio technique was employed to calculate the significance of the difference between the

adjustment means of the "older" and "younger" entries. The results of the analysis of the data are presented in Table VII.

TABLE VII  
SIGNIFICANT DIFFERENCES BETWEEN THE ADJUSTMENT  
LEVELS OF "YOUNGER" AND "OLDER" BOYS WHO ARE  
CLASSIFIED "ABOVE AVERAGE" I. Q.

Chronological Age at Entry	Level of Adjustment		C. R.	L. S.
	M	S. D.		
"Younger" C. A. at School Entry	20.26	3.99	1.75	NS
"Older" C. A. at School Entry	21.99	4.42		

It can be seen in the table that there was no significant difference between the level of adjustment means of "older" and "younger" boys of "above average" I. Q. Those boys who entered "older" did not have the predicted higher scores than those who entered "younger." Therefore, the hypothesis of no significant difference between the scores of "above average" I. Q. boys who entered "younger" and "older" was accepted.

It was concluded that chronological age at school entry was not significant in identifying and predicting intermediate adjustment level for boys of "above average" I. Q., but that it was for boys of "average or below" I. Q.

It was stated in the second part of Hypothesis 4 that girls who entered "older" will not have significantly higher levels of adjustment than girls who entered "younger," regardless of intelligence classification. In order to test this part of the hypothesis it was necessary to compute the level of the significance of the difference between the means of "younger" and "older" entries. The critical ratio technique was employed for this purpose. The results are shown in Table VIII.

TABLE VIII

SIGNIFICANT DIFFERENCES BETWEEN THE ADJUSTMENT LEVELS OF BOTH "ABOVE AVERAGE" AND "AVERAGE OR BELOW" I. Q. GIRLS: THOSE WHO ENTERED FIRST GRADE "YOUNGER" AND THOSE WHO ENTERED "OLDER"

Intelligence Classification:	Level of Adjustment				C. R.	L. S.
	"Younger" C. A. at Entry		"Older" C. A. at Entry			
	M	S. D.	M	S. D.		
"Above Average" Intelligence	22.99	4.12	23.60	4.30	1.92	NS
"Average or Below" Intelligence	20.57	3.09	21.70	4.13	1.78	NS

An examination of Table VIII reveals that findings confirmed the second part of Hypothesis 4, which predicted no significant difference between the adjustment means of "older" and "younger" girls, regardless of intelligence classification. Although there were some observable differences favoring "older" entries, these differences were not statistically significant, and the hypothesis of no significant difference between the means of "younger" and "older" girls was accepted.

Hypothesis 4, which predicted that "above average" boys and girls, regardless of I. Q. , who entered "older" will not have higher adjustment scores than those who entered "younger, " was confirmed and was therefore accepted.

Evidence was therefore provided that level of adjustment could be predicted with some validity by the C. A. variable, provided subjects were dichotomized by sex and I. Q. In addition, it was concluded that sex and I. Q. were significant factors to consider in determining the appropriate chronological age for school entry. In conjunction with the C. A. variable, it was also concluded that early school entry was apt to prove detrimental for boys of "average or below" I. Q. . On the other hand, it was found that the effects of chronological age at school entry were negligible or insignificant with respect to the subsequent adjustment levels of "above average" boys and girls, regardless of I. Q.

Hypotheses 5 and 6 were related to Hypotheses 3 and 4, and were formulated in order to examine differences between the achievement levels,

grades and reading readiness scores of boys and girls who entered school when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older. Since it was established that "average or below" I. Q. boys who were "older" had higher levels of adjustment than those who entered "younger," it was necessary to determine whether or not they had higher scores on the other measures as well. It was also necessary to discover whether or not "above average" boys and girls, regardless of I. Q. , differed significantly on the basis of C. A. at school entry.

Hypothesis 5 stated that there will be no significant differences between the scores of "above average" boys and girls, regardless of I. Q. , who entered first grade when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older, on measures of reading readiness, reading achievement and school grades.

In order to examine the first part of Hypothesis 5, it was necessary to calculate the levels of the significance of the differences between the means of "above average" boys who entered school "younger" and those who entered "older" on measures of readiness, achievement and grades. The critical ratio technique was employed for this purpose, and the results are presented in Table IX.

It can be seen in the table that results failed to substantiate the first part of Hypothesis 5 on two of the three measures examined. Contrary to prediction, it can be seen that differences favoring "older"

entries were significant at the .05 level on the reading achievement measure and at the .01 level on school grades.

TABLE IX

SIGNIFICANT DIFFERENCES BETWEEN BOYS OF "ABOVE  
AVERAGE" I. Q. WHO ENTERED "YOUNGER" AND  
THOSE WHO ENTERED "OLDER" ON  
MEASURES OF ACHIEVEMENT,  
READINESS AND GRADES

Measures	Boys Classified "Above Average" I. Q.				C. R.	L. S.
	"Younger" C. A. at Entry		"Older" C. A. at Entry			
	M	S. D.	M	S. D.		
Reading Achievement Composite	17.42	4.32	18.03	4.24	2.10	.05
Reading Readiness Composite	26.26	8.13	28.99	9.03	.99	NS
School Grades	84.70	7.45	87.72	6.68	2.98	.01

Only the measure of reading readiness confirmed the prediction of the hypothesis regarding the differences between "younger" and "older" entries. Therefore, the hypothesis of no significant difference was accepted for the readiness measure but was rejected for the measures of achievement and grades.

It was concluded that the first part of Hypothesis 5 was substantiated only for the one measure of readiness, and it was accepted in part. However, since the hypothesis was not confirmed for the measures of achievement and school grades, the hypothesis was rejected in part, as well.

It was predicted in the second part of Hypothesis 5 that girls, regardless of I. Q. , who entered "younger" will not have significantly different scores from those who entered "older" on measures of reading achievement, reading readiness and school grades. In order to test the hypothesis the critical ratio technique was employed to calculate the levels of the significance of the differences between the means of "younger" and "older" entries. The results are presented in Table X.

An examination of Table X shows that differences between the means of "younger" and "older" entries were not significant on any of the measures examined, indicating that the hypothesis of no significant difference between the means of "younger" and "older" entries was accepted. However, findings supported only that part of the hypothesis which concerned girls of "above average" intelligence.

TABLE X

SIGNIFICANT DIFFERENCES BETWEEN GIRLS OF "ABOVE  
AVERAGE" I. Q. WHO ENTERED "YOUNGER" AND  
THOSE WHO ENTERED "OLDER" ON  
MEASURES OF ACHIEVEMENT,  
READINESS AND GRADES

Measures	Girls Classified "Above Average" I. Q.				C. R.	L. S.
	"Younger" C. A. at Entry		"Older" C. A. at Entry			
	M	S. D.	M	S. D.		
Reading Achievement Composite	19.72	5.03	19.96	5.63	1.03	NS
Reading Readiness Composite	26.27	7.18	27.11	8.10	.91	NS
School Grades	90.10	6.84	91.01	6.91	1.16	NS

The second part of Hypothesis 5 also predicted that differences would not be significant between girls of "average or below" I. Q. who entered "younger" and those who entered "older." An examination of the results shown in Table XI reveals that differences were in the predicted direction on measures of readiness and grades, but was significant at the .01 level on the measure of achievement.

TABLE XI

SIGNIFICANT DIFFERENCES BETWEEN GIRLS OF "AVERAGE  
OR BELOW" I. Q. WHO ENTERED "YOUNGER" AND  
THOSE WHO ENTERED "OLDER" ON  
MEASURES OF ACHIEVEMENT,  
READINESS AND GRADES

Measures	Girls Classified "Average or Below" I. Q.				C. R.	L. S.
	"Younger" C. A. at Entry		"Older" C. A. at Entry			
	M	S. D.	M	S. D.		
Reading Achievement Composite	17.88	6.09	18.28	6.62	2.58	.01
Reading Readiness Composite	25.50	8.06	26.01	8.53	.63	NS
School Grades	86.20	6.91	86.30	6.01	.15	NS

These findings for "average or below" girls indicate that the hypothesis of no significant difference between "younger" and "older" entries was accepted for the measures of readiness and grades.

It was concluded that the results obtained for "above average" boys failed to confirm the first part of Hypothesis 5, and that the results obtained for "average or below" girls failed to support the second

part of the hypothesis. However, an analysis of the data for "above average" girls substantiated the prediction of no significant difference between "younger" and "older" entries. On the basis of these findings, Hypothesis 5 was accepted in part and rejected in part.

It was stated in Hypothesis 6 that the scores of "average or below" I. Q. boys who entered school when 6 years 6 months, or younger, will be lower than the scores of boys who entered "older," on measures of readiness, achievement and grades. In order to examine the hypothesis, the critical ratio technique was used to calculate the significance levels between the means of "younger" and "older" entries. The results are shown in Table XII.

The results shown in Table XII confirmed the prediction of Hypothesis 6. Differences between the means of "older" and "younger" entries were significant at the .0001 level on all measures examined, with the "older" entries having the higher means. These findings indicated that the hypothesis of no significant difference between the means of "average or below" I. Q. boys, who entered school "younger" and those who entered "older" on measures of readiness, achievement and grades, was rejected. Hypothesis 6 was substantiated and was accepted.

The conclusion was reached that the extent to which early school entry had detrimental effects on later levels of adjustment and achievement was partially determined by the sex and intelligence of the

individual. It was also tentatively concluded that this finding was probably among the most important of the study.

TABLE XII

SIGNIFICANT DIFFERENCES BETWEEN BOYS OF "AVERAGE  
OR BELOW" I. Q. WHO ENTERED "YOUNGER" AND  
THOSE WHO ENTERED "OLDER" ON  
MEASURES OF ACHIEVEMENT,  
READINESS AND GRADES

Measures	Boys Classified "Average or Below" I. Q.				C. R.	L. S.
	"Younger" C. A. at Entry		"Older" C. A. at Entry			
	M	S. D.	M	S. D.		
Reading Achievement Composite	14.35	4.65	17.55	4.62	5.16	.0001
Reading Readiness Composite	16.01	4.04	21.80	4.75	7.02	.0001
School Grades	75.87	7.18	82.32	6.58	8.02	.0001

The results supported the finding of Weiss (20) that "normal age" school beginners had somewhat higher intermediate level achievement test scores than "early age" school beginners. These outcomes also

supported the findings of Kingston (9) that there was a moderate, positive correlation between reading readiness scores and intermediate level achievement test scores. The findings in this investigation also supported Kingston's implication that chronological age at school entry was valuable in predicting subsequent school achievement. These results were also in agreement with Carroll (4), who found that "older" groups of intermediate age students had higher achievement test performance than the "younger" groups, and concluded that the "younger" would have attained higher achievement if they had entered school a few months older.

It was stated in Hypothesis 7 that boys having scores in the "top" quarter on level of adjustment will have significantly higher means than boys whose scores are in the "bottom" quarter, on measures of readiness, achievement, grades and intelligence. In order to test the hypothesis the critical ratio technique was employed to calculate the levels of the significance of the differences between the means of boys in the "top" quarter and those in the "bottom" quarter. The results are shown in Table XIII.

An examination of the data shown in Table XIII indicates that higher adjustment tended to be accompanied by higher levels of achievement, grades, readiness and intelligence. Results show that boys in the "top" quarter had higher scores than boys in the "bottom" quarter on all four measures examined. Differences between the means

TABLE XIII

SIGNIFICANT DIFFERENCES BETWEEN BOYS WHOSE LEVEL OF  
ADJUSTMENT WAS IN THE "TOP" QUARTER AND THOSE  
WHOSE LEVEL OF ADJUSTMENT WAS IN THE  
"BOTTOM" QUARTER ON MEASURES OF  
READINESS, ACHIEVEMENT,  
GRADES AND I. Q.

Measures	Level of Adjustment Scores of Boys				C. R.	L. S.
	"Top" Quarter		"Bottom" Quarter			
	M	S. D.	M	S. D.		
Reading Achievement	25.10	2.14	16.41	6.62	9.55	.0001
Reading Readiness	18.04	5.62	16.82	5.41	3.63	.0001
School Grades	89.90	6.16	80.10	7.41	2.83	.01
Intelligence	113.40	6.58	101.60	6.14	14.05	.0001

of "top" and "bottom" adjustment groups were significant at the .0001 level on measures of intelligence and reading achievement; and on the measure of school grades, differences were significant at the .01 level. These results were in the predicted direction, and therefore Hypothesis 7 was confirmed and was accepted.

It was stated in Hypothesis 8 that girls in the "top" quarter on level of adjustment will have significantly higher means than girls in the "bottom" quarter, on measures of reading readiness, reading achievement, school grades and intelligence. In order to test the hypothesis it was necessary to calculate the significance of the difference between the means of the two groups on the measures in question, employing the critical ratio technique. The results are shown in Table XIV.

An examination of Table XIV reveals that results for girls were virtually the same as those obtained for boys. The outcomes were characterized by significant differences on all measures, with girls in the "top" quarter having the higher means. Differences between the means were significant on the reading achievement measure at the .001 level; and on the measures of reading readiness and intelligence, at the .05 level. The hypothesis of no significant difference between the means of girls in the "top" and "bottom" quarters was rejected for all measures examined, and Hypothesis 8 was accepted.

Results for both boys and girls revealed that those having level of adjustment scores in the "top" quarter had higher scores than those having scores in the "bottom" quarter. This finding strengthened the implication that failure to achieve might be a cause of failure to adjust, or vice versa.

TABLE XIV

SIGNIFICANT DIFFERENCES BETWEEN GIRLS WHOSE LEVEL OF  
ADJUSTMENT WAS IN THE "TOP" QUARTER AND THOSE  
WHOSE LEVEL OF ADJUSTMENT WAS IN THE  
"BOTTOM" QUARTER ON MEASURES OF  
READINESS, ACHIEVEMENT,  
GRADES AND I. Q.

Measures	Level of Adjustment Scores of Girls				C. R.	L. S.
	"Top" Quarter		"Bottom" Quarter			
	M	S. D.	M	S. D.		
Reading Achievement	24.99	6.62	17.16	5.26	3.51	.001
Reading Readiness	21.14	5.35	19.00	5.28	2.10	.05
School Grades	94.02	3.10	85.05	6.81	1.99	.05
Intelligence	113.20	6.19	101.82	6.44	2.84	.01

It was stated in Hypothesis 9 that level of adjustment will be significantly, positively related to reading achievement and school grades. In order to investigate the hypothesis, it was necessary to calculate Pearson product moment coefficients of correlation between adjustment and achievement, and between adjustment and school grades.

Correlations were then transformed to Fisher's  $z$  scores, and a critical ratio was computed to test the Null Hypothesis. Results of the data are shown in Table XV.

TABLE XV  
CORRELATIONS OF LEVEL OF ADJUSTMENT AND MEASURES  
OF READING ACHIEVEMENT AND SCHOOL GRADES

Variables Correlated:	Boys: N-410			Girls: N-415		
	Grade 4	Grade 5	Grade 6	Grade 4	Grade 5	Grade 6
Level of Adjustment and Reading Achievement	.84	.32	.46	.64	.32	.32
Level of Adjustment and School Grades	.64	.36	.36	.38	.20	.14

All  $r$ 's Were Significant at the .01 Level

An examination of Table XV reveals that the relationships between level of adjustment and the measures of achievement and grades were positive and significant for both boys and girls in all three grades, as was predicted in Hypothesis 9. It can also be seen in the table that there was a tendency for the strength of the relationships to decrease with each progressive grade in school. The highest relationships were obtained for grade four; the next highest for grade five; and the lowest for

grade six. The highest coefficient was .84, obtained between adjustment and reading achievement, for fourth grade boys. The lowest coefficient was .14, obtained between level of adjustment and school grades, for sixth grade girls. It can be seen in the table that the relationships were slightly greater between level of adjustment and school grades than between level of adjustment and reading achievement.

These results were in the predicted direction, and the hypothesis of no significant difference was therefore rejected. Hypothesis 9 was confirmed by the results, and it was accepted.

These findings, that adjustment level was related to measures of achievement and school grades, supported findings of Olson and Hughes (14), that there was a positive relationship between "problem tendency" and achievement level; i. e., the higher the problem tendency, the lower the achievement level. The outcomes also supported Bower (2), who similarly investigated problem tendency, and who also found that there was a negative relationship between achievement level and problem tendency.

The obtained relationships between level of adjustment and achievement in the present study indicated that the higher the adjustment level of subjects, the higher was their achievement level and the better their school grades. It was also indicated that the lower the school grade placement was, the stronger the relationship tended to be.

The established relationships raised several questions about causes. Did a low achievement level cause a low adjustment level? Or, did the low adjustment level cause a low achievement level? Did teachers rate the lower achievers as being poorly adjusted? Did the adjustment manifestations of a child condition the teacher's rating of his achievement and grades? Or, was there still another factor besides adjustment or achievement that was the cause of them both?

Although causal inference was not possible from these results, it was possible to conclude that the two variables were positively related, and that the presence of one tended to imply the presence of the other.

These findings that level of adjustment was related to measures of achievement and school grades supported speculations made by Olson and Hughes (14), and by Bower (3). They speculated that the factors of sex and chronological age both operated in their studies without adequate controls, and they further speculated that the relationships which they found between achievement and problem tendency would have been stronger if boys and girls had been examined separately. Related to this speculation was also the speculation that the relationship between achievement and problem tendency might be higher for boys than for girls. The results of the present study provided some evidence that this was so, since the strength of the relationships obtained for boys were greater than those obtained for girls. The obtained relationships were also greater for boys in this study than were those obtained by either of the

earlier investigations. The reasons for this difference between boys and girls, with respect to the strength of relationships between adjustment and achievement and grades, were not clear. One possible explanation was that boys had more extremes on the adjustment continuum, or that they were more heterogeneous than girls. Another possible explanation was that the adjustment levels of girls were not so significantly, or positively, related to achievement and grades as the adjustment levels of boys. It seemed also possible that some independent variable other than those mentioned could have caused the higher coefficients of boys.

It was stated in Hypothesis 10 that there will be a significant, positive relationship between intelligence scores and reading readiness test scores. In order to examine Hypothesis 10, it was necessary to calculate Pearson product moment coefficients of correlation between the two measures. Fisher's  $z$  test was used to determine the significance of the relationship between the two variables. The results are presented in Table XVI.

It can be seen in Table XVI that all of the correlations except two were in the predicted direction, and were significant at either the .05 or .01 levels. Only the relationships between intelligence and reading readiness sub-test III failed to be significant, when the data for boys were examined; and between intelligence and reading readiness sub-test V,

TABLE XVI  
CORRELATIONS BETWEEN INTELLIGENCE  
SCORES AND READING READINESS  
SCORES OF BOYS  
AND GIRLS

Reading Readiness Sub-Test Scores	Intelligence Test Scores			
	Boys: N-410	P	Girls: N-415	P
Sub-Test I	.09	.05	.22	.01
Sub-Test IIa	.14	.01	.16	.01
Sub-Test IIb	.09	.05	.14	.01
Sub-Test III	.02	NS	.11	.05
Sub-Test IV	.16	.01	.11	.05
Sub-Test V	.14	.01	.05	NS
Sub-Test VI	.18	.01	.15	.01
Composite	.13	.01	.14	.01

when the data were examined for girls. All of the significant correlations shown in the table were described as "positive" but "low" (6, p. 145).

The correlations obtained between intelligence and composite reading readiness confirmed the prediction of Hypothesis 10, which stated that there will be a significant, positive relationship between measures of intelligence and reading readiness. The hypothesis of no significant difference in correlations was rejected for fourteen of the sixteen correlations, including that between intelligence and readiness composite scores.

The hypothesis of no significant difference in correlations was accepted for only sub-test III for boys, and sub-test V for girls. On the basis of the relationships obtained between intelligence and the composite scores of both boys and girls, the prediction of Hypothesis 10 was supported and was accepted.

Evidence that the same factors were tapped by both measures served as the basis for the hypothesis. Kingston (9) found that sub-tests of the Metropolitan Reading Readiness Battery, which he judged to measure essentially visual-perceptual factors, were better in predicting the academic achievement in intermediate grades than was the battery as a whole. The remaining sub-tests in the battery were believed to measure factors of the general mental ability type. Coefficients obtained by Kingston between the sub-tests, which he determined were essentially

measuring "visual-perceptual" factors, and subsequent achievement ranged from .35 to .55.

It was tentatively concluded that the obtained relationship between intelligence and reading readiness test scores did not refute or confirm any previous studies, since there was no mention in the literature that any previous investigations were concerned with the postulation that they measured the same thing. However, the results were in agreement with earlier findings of Kingston (9), which implied that such might be the case.

#### Summary

The chapter was devoted to analyzing and interpreting the data as they were related to the hypotheses that were tested. The results confirmed Hypotheses 2, 3, and 4; and 6, 7, 8, and 10; partially confirmed Hypothesis 1; and failed to confirm Hypothesis 5. Therefore, Hypotheses 2, 3, 4, and 6, 7, 8, and 10 were accepted; while Hypothesis 1 was accepted in part and rejected in part; and Hypothesis 5 was rejected.

The statistical treatment of the data has yielded information relevant to level of adjustment in the intermediate grades.

Those variables found to be significantly related to adjustment level were sex, intelligence, chronological age at school entry, reading achievement, reading readiness and school grades.

Girls in the intermediate grades were found to have higher levels of adjustment than boys, but not higher intelligence or higher scores on most of the sub-tests of reading readiness.

In addition, girls were found to have higher reading achievement levels and to make better grades than boys.

Boys of "average or below" I. Q. who started to school when 6 years 6 months, or younger, were found to have lower adjustment, achievement and grades at the intermediate level than those who started to school older.

On the other hand, the adjustment levels, reading achievement and grades of "above average" I. Q. boys and girls, regardless of I. Q., were not found to be particularly affected by chronological age at school entry.

Boys and girls whose scores were in the "top" quarter on level of adjustment were found to have much higher reading achievement, school grades and I. Q. 's than those whose scores were in the "bottom" quarter.

Level of adjustment at the intermediate level was found to be significantly, positively related to measures of reading achievement and school grades.

In conjunction with this relationship between adjustment and measures of achievement and grades, it was found that there was a tendency for the strength of the relationships to decrease with each

progressive grade in school. More specifically, the highest correlations were obtained for grade four; the next highest, for grade five; and the lowest, for grade six.

Measures of intelligence and reading readiness were found to be significantly, positively related, and it was speculated that, to some degree, the two measures tapped the same factors.

Contrary to prediction, it was found that there were significant differences between the scores of "above average" I. Q. boys and girls, regardless of intelligence, who entered school "younger" and those who entered "older," on measures of readiness, achievement and school grades.

While these differences were not nearly so highly significant as those obtained between "younger" and "older" boys of "average or below" I. Q., they were, nevertheless, definite and significant.

Although girls were found to have higher scores than boys on measures of reading achievement, school grades and level of adjustment, they were found to have higher scores on only one sub-test of reading readiness, sub-test VI, "Giving Names of Letters."

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## CHAPTER IV

### SUMMARY, FINDINGS AND CONCLUSIONS

#### Summary

This study was conducted in order to investigate the relationship between readiness for first grade and levels of adjustment and achievement in the intermediate grades. The problem was to test the postulation that boys of "average or below" I. Q. , who entered first grade when 6 years 6 months, or younger, will have significantly lower levels of adjustment and achievement in the intermediate grades than will those who entered when 6 years 7 months, or older; while neither boys of "above average" I. Q. nor girls, regardless of I. Q. , will differ significantly according to age at entry.

Factors that were examined relevant to the problem were sex, intelligence, chronological age at first grade entry, reading readiness, reading achievement and school grades. A review of the literature suggested that each of these factors was predictive of level of adjustment in the intermediate grades. The factors of sex, intelligence, reading readiness and chronological age at school entry were predicted to differentiate level of adjustment in the intermediate grades; and the

factors of achievement, school grades and intelligence were predicted to be significantly related to it.

The gap that existed in the research, in the area of maladjustment among school children, provided evidence that there was a need for the present study. This need was also supported by earlier findings that about one in ten children now in school was severely emotionally disturbed, with the number of disturbed boys outnumbering girls by approximately two to one. In addition, the need was supported by an unanswered question, relevant to existing school practices and the adjustment of pupils, which was raised by Carl Rogers, in conjunction with a study conducted years ago. He asked, "Are the schools operated more in accord with the mental hygiene needs of girls than of boys?"

A major problem of the study was to provide information that would help fill the research gap in the area of maladjustment; and to provide findings about various aspects of the adjustment of children that would be valuable to education, in working with special problems, and in the better understanding of all children. It was also a purpose of this study to provide information that would contribute to making the term "readiness" more operational and definitive, and to help raise the validity of its assessment.

The problem of the study presupposed the following sub-problems:

1. The first sub-problem was to test the postulation that girls

will have significantly higher levels of adjustment and achievement in the intermediate grades than will boys.

2. The second sub-problem was to test the postulation that boys of "average or below" intelligence, who entered first grade when 6 years 6 months, or younger, will have lower levels of adjustment in the intermediate grades than will those who entered when 6 years 7 months, or older.

3. The third sub-problem was to test the postulation that boys of "above average" intelligence, who entered first grade when 6 years 6 months, or younger, will not have lower levels of adjustment in the intermediate grades than those who entered when 6 years 7 months, or older.

4. The fourth sub-problem was to test the postulation that girls, regardless of intelligence classification, who entered first grade when 6 years 6 months, or younger, will not have significantly different adjustment levels in the intermediate grades than will those who entered when 6 years 7 months, or older.

5. The fifth sub-problem was to test the postulation that there will be a positive relationship at the intermediate level between level of adjustment and measures of school grades and achievement.

6. The sixth sub-problem was to test the postulation that there will be a significant, positive relationship between intelligence and reading readiness.

From a review of related research and a consideration of existing theory, the following working hypotheses were formulated:

1. There will be significant differences between the mean scores of boys and girls in the intermediate grades, on measures of reading readiness, reading achievement, school grade average and level of adjustment, with girls having the higher means.

2. There will be no significant difference between the mean intelligence test scores of boys and girls.

3. There will be a significant difference between the mean level of adjustment scores of boys (classified "average or below" I. Q. ), who entered first grade when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older, with the "older" having the higher means.

4. There will be no significant difference between the mean level of adjustment scores of boys (classified "above average" I. Q. ), who entered first grade when 6 years 6 months, or younger, and those who entered when 6 years 7 months, or older.

5. There will be no significant differences between the mean scores of boys (classified "above average" I. Q. ) and girls (regardless of I. Q. ) who were 6 years 6 months, or younger, at first grade entry, and those who were 6 years 7 months, or older, on measures of reading readiness, reading achievement and school grade averages.

6. There will be a significant difference between the mean scores of boys (classified "average or below" I. Q.), who were 6 years 6 months, or younger, at first grade entry and those who were 6 years 7 months, or older, on measures of reading readiness, reading achievement and school grade averages.

7. Boys in the "top" level of adjustment quarter will have significantly higher means than will boys in the "bottom" quarter, on measures of reading readiness, reading achievement, school grade averages and intelligence.

8. Girls in the "top" level of adjustment quarter will have significantly higher means than will girls in the "bottom" quarter, on measures of reading readiness, reading achievement, school grade averages and intelligence.

9. There will be a significant, positive relationship between level of adjustment and measures of reading achievement and school grades.

10. There will be a significant, positive relationship between measures of intelligence and reading readiness, for both boys and girls.

The study sample was composed of 410 boys and 415 girls in the intermediate grades in one Texas city, which had a population of approximately 60,000. The subjects were selected by a systematized method, which was designed to insure the availability of all necessary measures for all subjects. The sample was selected by a three-step procedure. First, every third name was selected from alphabetized

list reports of Harrison-Stroud Reading Readiness Profiles scores, which had been kept on record from the time the tests were administered to the subjects when they were in the first grade. The second step involved checking list reports of SRA Achievement Series scores and California Test of Mental Maturity scores in order to eliminate the names of those in the sample for whom this data were not available. During this process, achievement and mental maturity measures were recorded on the data sheets for all subjects for whom they were available. Finally, the school principals completed forms that confirmed the attendance of subjects and provided the name of the current teacher for each subject who was currently enrolled. The final study sample was constituted of subjects for whom all data were available, and who were currently in attendance at the time of the study.

Measures of reading readiness, reading achievement and intelligence were obtained from alphabetized list reports of scores, and level of adjustment was obtained from ratings by teachers, using Ullmann's "Forced Choice Test" of adjustment. School grade averages, sex and chronological age at entry were obtained from the permanent record folders, and attendance confirmations were provided by the principals. Subjects were dichotomized as "younger" if they started to school when 6 years 6 months, or younger, and as "older" if they started when 6 years 7 months, or older. They were classified as

"average or below" I. Q. if their total scores on the California Test of Mental Maturity were 114 or below, and as "above average" I. Q. if their scores were 115 or above.

In order to test the hypotheses, the data were statistically analyzed and interpreted. Hypotheses 1 through 9 were investigated by employing the critical ratio technique in order to determine the levels of the significance of the differences between means, with the .05 level necessary for rejecting the Null Hypothesis. Hypotheses 9 and 10 were investigated by employing the Pearson's product moment coefficient of correlation technique. The obtained correlations were tested for significance by converting correlations from a Fisher's z table.

Analysis of the results indicated that Hypotheses 2, 3, 4, 6, 7, 8, 9 and 10 were confirmed and accepted. On the other hand, the results confirmed Hypothesis 1 only partially, and it was accepted in part and rejected in part. The results failed to confirm Hypothesis 5, and it was rejected.

### Findings

Variables that were significantly related to adjustment level of intermediate school children were sex, intelligence, chronological age at school entry, reading achievement, reading readiness and school grades.

Girls in the intermediate grades were found to have higher levels of adjustment than boys, but not higher intelligence or higher scores on

most of the sub-tests of reading readiness.

The only reading readiness sub-test on which girls excelled was sub-test VI, "Giving Names of Letters."

In addition, girls were found to have higher reading achievement levels and to make better grades than boys.

It was found that chronological age at first grade entry was more useful in predicting level of adjustment for "average or below" I. Q. boys than it was for "above average" I. Q. boys, or for girls, regardless of I. Q.

Boys of "average or below" I. Q. who started to school when 6 years 6 months, or younger, were not as well adjusted at the intermediate level as those who started when 6 years 7 months, or older.

On the other hand, boys of "above average" I. Q. and girls, of both I. Q. groups, who started to school when 6 years 6 months, or younger, were just about as well adjusted in the intermediate grades as those who started when 6 years 7 months, or older.

It was further found that boys of "average or below" I. Q., who started to school when 6 years 6 months, or younger, attained lower levels of achievement and received lower grades in the intermediate grades than those who started when 6 years 7 months, or older.

However, contrary to prediction, boys of "above average" I. Q. who started to school when 6 years 6 months, or younger, also attained

slightly lower levels of achievement and received somewhat lower grades, at the intermediate level, than those who started to school when 6 years 7 months, or older.

While these differences, which were found for "above average" I. Q. boys, were not nearly as highly significant as those obtained between "younger" and "older" boys of "average or below" I. Q. , they were nevertheless definite and significant, with the older entries having the higher scores.

It was also found that "average or below" I. Q. boys who started to school at 6 years 6 months, or younger, made lower scores on the measure of reading readiness than those who started older; while "above average" I. Q. boys did not differ significantly on the basis of chronological age at school entry.

Girls of "above average" I. Q. , who started first grade "younger" did not have lower scores than those who entered "older" on any of the measures examined, but girls of "average or below" I. Q. , who entered school "younger" had lower scores than those who entered "older" on the measure of reading achievement.

Both boys and girls whose level of adjustment scores were in the "top" quarter were found to have much higher reading achievement, school grades and I. Q. 's than those whose scores were in the "bottom" quarter.

Level of adjustment at the intermediate level was found to be significantly, positively related to measures of reading achievement and school grades.

In conjunction with this relationship between adjustment and measures of achievement and grades, it was found that there was a tendency for the strength of the relationship to decrease with each progressive grade in school. More specifically, the highest correlations were obtained for grades four; the next highest for grade five; and the lowest for grade six.

Measures of intelligence and reading readiness were found to be significantly, positively related, and it was speculated that to some degree they measured the same factors.

### Conclusions

The findings indicated and supported the following conclusions, which are presented in three sequential groups:

The conclusions immediately following are concerned with the question of whether or not girls excel disproportionately over boys in adjustment, achievement and grades at the intermediate level, and with whether or not girls have superior intelligence, affording them an initial advantage in school. Conclusions that are made about answers to these questions are considered at the outset, because they serve a

pilot-study type of purpose, in providing the basis and direction for all of the conclusions that follow them.

1. There are sex differences in the levels of adjustment and achievement, as well as in the school grades, of intermediate pupils.

2. Girls at this level are better adjusted, attain higher levels of achievement and make better grades than boys.

3. Similarly, boys in the intermediate grades have more problems of adjustment and achievement, as well as receiving lower grades, than girls.

4. However, there are no differences between the intelligence test scores of boys and girls, which eliminates the possibility that girls excel in adjustment, achievement and grades because of any superiority in intellectual ability.

5. Therefore, other factors are responsible for the disproportionate degree of failure and maladjustment among boys.

These conclusions make it clear that boys in contemporary society are confronted with more problems than the opposite sex, in the process of adjusting to their cultural roles. Furthermore, it seems that the school contributes largely to the problems, making the situation a proper and appropriate concern to professional educators.

Although causes cannot yet be inferred, there are definite relationships between the levels of adjustment and achievement of

intermediate pupils and certain factors of first grade readiness. The conclusions that follow are the essence of the study and are concerned with the question of whether or not the lower levels of adjustment and achievement, as well as the lower grades, observed at the intermediate level, are related to early chronological age at first grade entry.

6. Those factors of reading readiness which are related to adjustment and achievement at the intermediate level are sex, intelligence and chronological age at first grade entry, all three of which are also significantly related to the process of physiological maturation.

Chronological age at entry is related to physiological maturation, because the maturation process is dependent upon it and proceeds within its confines; intelligence is related to maturation, because maturation and intelligence levels tend to be commensurate; and sex is related to maturation, because girls are developmentally accelerated.

7. Those pupils who do not attain the necessary level of physiological maturity for learning to read at the time of first grade entry are apt to experience adjustment and achievement difficulties in the intermediate grades.

8. The desirability of a pupil's entering first grade younger than 6 years 7 months depends to a large extent on his sex and level of intelligence.

9. Girls in general are more apt to have attained the level of physiological maturity necessary for successfully learning to read in

the first grade, and they are therefore less apt to encounter early problems of frustration and failure in school than boys.

10. Boys of "above average" intelligence are more apt to have attained the level of physiological maturity necessary for successfully learning to read in the first grade, and they are therefore less apt to encounter early problems of frustration and failure in school than are boys of "average or below" intelligence.

11. Boys in general seem to be more adversely affected in adjustment and achievement by starting to school when 6 years 6 months, or younger, than girls in general.

12. Girls do not seem to be particularly handicapped by starting to school when 6 years 6 months, or younger, regardless of intelligence classification.

13. Boys of "above average" intelligence seem to be only slightly adversely affected in adjustment and achievement by starting to school when 6 years 6 months, or younger.

14. Boys of "average or below" intelligence seem to be most adversely affected by starting to school when 6 years 6 months, or younger.

15. Prior to the time a pupil starts first grade, knowledge of his sex and intelligence classifications can be used in combination with knowledge of his chronological age to constitute a basis for predicting the levels of adjustment and achievement in the intermediate grades.

School policies and procedures that currently exist regarding entrance age are such that girls seem to get a head start over boys at the very beginning, and to keep the position throughout at least the intermediate grades. In schools where it is the policy for all pupils to start to school at the same chronological age, the female student is more copiously rewarded and experiences less frustration and failure than her male counterpart, because she can adapt more naturally and with greater ease to the demands.

Where a policy of uniform age prevails in schools there is failure to recognize that boys, lagging behind in physiological development, have lower levels of reading readiness and have fewer early successes. These beginnings are ideal conditions for precipitating a cycle of reading retardation, failure and maladjustment, a phenomenon which is known to occur.

Furthermore, existing policies and procedures regarding entrance age are such that boys who are of average or below intelligence are the most deleteriously affected if the entrance age is uniform. Where a policy of uniform age prevails, not only girls but boys of above average intelligence are afforded an advantage over boys of average or below intelligence. Those boys who have above average intelligence are also apt to be above average in rate of physiological maturation, suggesting that they, as well as females, have higher levels of readiness than do boys of average or below intelligence. Therefore, boys of average or

below intelligence are apt to be unable to compete and are apt to experience more early frustration and failure than males of above average intelligence and females.

In order to alleviate the situation, the schools must at the outset discontinue current policies that require uniform entrance age, and must then replace them with new policies that require flexibility and variability in entrance age, taking into account and providing for the significant effects of the factors of sex and intelligence on readiness to start to school.

The schools not only fail to consider the effects of differences in sex and intelligence on readiness, but they also fail to recognize that they are unable at the present time to measure readiness with sufficient validity for use in making individual predictions.

Not only is it significant for educators to know what factors of readiness are related to adjustment and achievement in the intermediate grades, but it is also important for them to know what patterns of relationships exist between the measures of adjustment and achievement themselves, as well as among the four factors of adjustment, achievement, grades and intelligence. This knowledge about relationships among these factors is significant because the existence of relationships that are positive implies that at some time during school, a cycle of success or failure in adjustment and achievement is begun which perpetuates itself and becomes intensified.

The following conclusions are related to the question of whether or not those pupils who are well adjusted are also the ones who attain high levels of achievement and make good grades.

16. The higher the adjustment levels of pupils, the higher are their achievement levels and the better their grades.

17. Those pupils who are considered to be the best adjusted by their teachers are also the ones who make the best grades, attain the highest levels of achievement and are the most intelligent.

18. The strength of the relationship that exists between adjustment and measures of achievement and grades at the intermediate level tends to decrease consistently with each progressive intermediate grade.

The conclusions just preceding raise certain questions for educators to consider, rather than providing indications and direction for specific actions. Among the most obvious and important of these questions are those related to causes. Is a low achievement level responsible for a low adjustment level; or is a low adjustment level responsible for a low achievement level? Do teachers rate the low achievers as being poorly adjusted? Or, on the other hand, do the adjustment manifestations of pupils condition teachers' ratings of their achievement and grades? Or, do still other factors account for them both?

In addition, the explanation for the fact that the relationship between adjustment and measures of school success becomes weaker with each progressive grade in school is not clear. It is possible that the high

achievers become more poorly adjusted with each progressive grade in school; or, that the well adjusted become lower achievers with each progressive grade. On the other hand, it is possible that the low achievers become better adjusted through the grades; or, that the poorly adjusted become higher achievers through the grades. In addition, it is possible that none of these processes occurs, but that some factor of measurement or design is responsible. These questions, and others, are pertinent and remain to be answered by educators.

In relation to the conclusions that were reached about the relationships that exist between certain measures of readiness for first grade and levels of adjustment and achievement at the intermediate level, it seems highly relevant to consider the following conclusions concerning the assessment of readiness:

19. Tests of reading readiness and intelligence seem to measure many of the same factors.

20. Neither tests of reading readiness nor tests of intelligence are sufficiently valid for use in making predictions in individual cases.

There is currently an erroneous assumption, which is made by some educators, that the name "readiness test" on the face of a test is a guarantee of its validity; and there is furthermore an erroneous belief, held by some educators, that the term "readiness" is definitive. Both of these fallacious concepts must be rectified if the dilemma associated with readiness and adjustment is to be resolved. It must be recognized

by those who work with the situation daily in the schools that existing reading readiness tests seem to measure many of the same things that are measured by intelligence tests, and that neither type of instrument has, at this time, the pragmatic validity necessary for making predictions in individual cases. The effectiveness and accuracy of prediction are improved when reading readiness instruments are employed in combination with information about the sex and chronological age of pupils, but nevertheless remain less than satisfactory. Therefore, the current practice in schools of making predictions solely on the basis of existing tests of reading readiness must be critically examined and curtailed.

Among the most important implications of the study was that early school failure in learning to read seemed to precipitate, for many boys of "average or below" intelligence, a cycle of reading retardation and school failure, and eventual maladjustment in the intermediate grades.

#### Recommendations

Based on the results of the study, the following recommendations were made:

1. That research be devoted to finding a measure of reading readiness sufficiently valid for use in predicting with individuals.
2. That further research be conducted to determine whether or not the same results will be obtained with different subjects.

3. That efforts be devoted to determining just what reading readiness tests measure, and to operationally defining reading readiness.

4. That an effort be made to determine why one sub-test of the reading readiness test, "Giving Names of Letters," differentiated consistently and significantly in the hypothesized direction, while none of the other sub-tests did so.

5. That correlations be obtained between scores on the reading readiness battery employed in this study and other well-known reading readiness test batteries in order to determine whether or not the test was representative and valid.

6. That research in this area of reading readiness and level of adjustment be continued and expanded to determine what relationships exist between the factors that were investigated and possible factors related to delinquency and school drop-out.

7. That in-service workshops for teachers include information about the relationship of level of adjustment in the intermediate grades and certain factors of first grade readiness, including sex, chronological age at first grade entry and intelligence, in order to clarify the advantages afforded girls and boys of above average intelligence by policies of uniform entrance age.

8. That such workshops be devoted to examining, modifying and implementing the existing curricula in accordance with information

about level of adjustment and certain factors of reading readiness.

9. That a follow-up longitudinal study be conducted with the pupils that composed the sample of this study in order to examine their adjustment, achievement and grades at the junior and senior high school levels, as well as their occupational choices and socioeconomic status after they leave school.

10. That current school policies stipulating uniform entrance age for all pupils be revised to provide for boys of average or below intelligence to start to school a few months older than others, preferably not before they are at least 6 years 6 months of age.

APPENDIX

FORMS CONSTRUCTED OR MODIFIED  
FOR USE IN THE STUDY

Form	Page
1. Data Sheet . . . . .	101
2. Attendance Confirmation . . . . .	102
3. Adjustment Rating . . . . .	103





FORM NUMBER 3

**LEVEL OF ADJUSTMENT  
RATING SHEET**

To Be Completed By the  
Student's Classroom Teacher:

Name of Student \_\_\_\_\_ Sex \_\_\_\_\_ Grade \_\_\_\_\_

School \_\_\_\_\_ Name of Teacher Completing Form \_\_\_\_\_

**Directions:** Please complete this form on the basis of your observations of the student. There are 18 sets of descriptive statements, each of which is composed of four to five different statements, from which you are asked to check the one that best describes the student. Place the letter of the descriptive statement that best fits in the space provided. Do not be concerned if the statement does not apply exactly, and do not dwell too long on your decisions. Just select the statement that describes him most closely.

In addition you are asked to record your estimate of the student's grade average for last year, as recorded in the permanent record folder. Please record an average letter grade derived from the areas of Language Arts, Reading and Arithmetic. Please place the grade average in the following blank:

Grade Average at the End of Last Year \_\_\_\_\_

DO NOT MARK  
OR WRITE THIS  
SIDE OF LINE:

FOR USE BY  
EXPERIMENT  
DIRECTOR:

Descriptive Statements

Sets of Descriptive  
Statements:

Letter Indicating  
Statement That is  
Most Descriptive:

- |  |  |          |
|--|--|----------|
| 2 _____<br>1 _____<br>1 _____<br>2 _____ | 1. A. Sees the bright or funny side of things<br>B. Likes to be praised<br>C. Obedient<br>D. Participates actively in school functions | 1. _____ |
| 2 _____<br>1 _____<br>0 _____<br>1 _____ | 2. A. Fitches in when things are to be done<br>B. Requires corrections<br>C. Needs much extra help<br>D. Respects rules                | 2. _____ |

- |         |   |          |
|---------|---|----------|
| 0 _____ | 3. A. Is easily excited                       | 3. _____ |
| 1 _____ | B. Dislikes criticism                         |          |
| 1 _____ | C. Works better when praised                  |          |
| 2 _____ | D. Popular, has many friends                  |          |
| 1 _____ | 4. A. Talkative                               | 4. _____ |
| 2 _____ | B. Is happy and easy to get along with        |          |
| 1 _____ | C. Is conscientious                           |          |
| 2 _____ | D. Will always manage to get along            |          |
| 2 _____ | 5. A. Carries through an undertaking about    |          |
| 2 _____ | like others his age--about as well as         |          |
| 1 _____ | others  | 5. _____ |
| 1 _____ | B. Figures out things for himself             |          |
|         | C. Requires encouragement and praise          |          |
|         | D. Omits optional assignments                 |          |
| 1 _____ | 6. A. Would answer truthfully if asked a      |          |
| 2 _____ | question but would not volunteer any          |          |
| 1 _____ | information harmful to himself or             |          |
| 2 _____ | friends                                       | 6. _____ |
|         | B. Recognizes his own shortcomings            |          |
|         | C. Shows emotions in a strained way           |          |
|         | D. Helps others who are having difficulty     |          |
| 2 _____ | 7. A. Other children are eager to be near     |          |
| 1 _____ | him or on his side                            | 7. _____ |
| 1 _____ | B. Sensitive                                  |          |
| 0 _____ | C. Enjoys just being a part of the group,     |          |
|         | without leading                               |          |
|         | D. A scattered thinker                        |          |
| 0 _____ | 8. A. Is easily irritated, flustered or upset | 8. _____ |
| 1 _____ | B. Talks about self, what he has done,        |          |
| 0 _____ | how he feels, etc.                            |          |
| 1 _____ | C. Has trouble getting along                  |          |
|         | D. Quiet                                      |          |
| 0 _____ | 9. A. Resentful                               | 9. _____ |
| 1 _____ | B. Puts up a good front                       |          |
| 2 _____ | C. Gives up a habit which annoys others,      |          |
| 2 _____ | when it is called to his attention            |          |
|         | D. A typical child for his age                |          |

- 1 \_\_\_\_\_  
0 \_\_\_\_\_  
1 \_\_\_\_\_  
0 \_\_\_\_\_
10. A. Will work hard at a task only when he has chosen it himself 10. \_\_\_\_\_  
B. Is easily upset  
C. Is more apt to give in than continue a quarrel  
D. Rubs people the wrong way
- 0 \_\_\_\_\_  
0 \_\_\_\_\_  
1 \_\_\_\_\_  
1 \_\_\_\_\_
11. A. Does not seem to profit by experience 11. \_\_\_\_\_  
B. Criticizes other people  
C. Is easily confused  
D. Quiet
- 0 \_\_\_\_\_  
0 \_\_\_\_\_  
1 \_\_\_\_\_  
1 \_\_\_\_\_
12. A. Other children regard child as a pest 12. \_\_\_\_\_  
B. Is always thinking up alibis  
C. In group work, often insists his way is better
- 1 \_\_\_\_\_  
2 \_\_\_\_\_  
1 \_\_\_\_\_  
0 \_\_\_\_\_
13. A. Never gives up, regardless of how difficult the job 13. \_\_\_\_\_  
B. Is self-confident  
C. Resents it when people hurt his feelings  
D. Repeats mistakes
- 1 \_\_\_\_\_  
2 \_\_\_\_\_  
1 \_\_\_\_\_  
1 \_\_\_\_\_
14. A. Is rarely asked for his opinion by other students 14. \_\_\_\_\_  
B. Considers the welfare of his class, team, or school as his personal interest  
C. Maintains a calm appearance and behavior, even when emotionally disturbed  
D. Lacks confidence in himself
- 1 \_\_\_\_\_  
2 \_\_\_\_\_  
1 \_\_\_\_\_  
1 \_\_\_\_\_  
1 \_\_\_\_\_  
2 \_\_\_\_\_
15. A. Can become absorbed by his own interests 15. \_\_\_\_\_  
B. Gets along well in school activities  
C. Is alert, interested  
D. Laughs at children who clown  
E. An active child  
F. Can be depended upon by an adult leader of a group to do his share

- |  |   |           |
|--|---|-----------|
| 0 _____<br>1 _____<br>1 _____<br>0 _____<br>1 _____            | 16. A. Needs much prodding<br>B. Expresses his annoyance when provoked<br>C. Makes sensible, practical plans<br>D. Is popular with all his classmates<br>E. Pretty honest, on the whole, though he may occasionally slip<br>F. Assertive  | 16. _____ |
| 2 _____<br>1 _____<br>1 _____<br>0 _____<br>1 _____            | 17. A. Others come to him for help<br>B. Reports those who break the rules<br>C. Sometimes disturbs others by laughing and talking, but stops when reminded<br>D. Continually on the defensive<br>E. Is forgetful<br>F. Show-off, attention-getter  | 17. _____ |
| 1 _____<br>0 _____<br>0 _____<br>1 _____<br>0 _____<br>1 _____ | 18. A. When assigned work, does only part of it<br>B. Others cannot work with him<br>C. Will not give in, even when proven wrong<br>D. Likes to daydream, but can bring himself back to reality when there is work to be done<br>E. Is tense or ill-at-ease when reciting<br>F. Although he does not show enthusiasm for group activities, he cooperates when assigned a task | 18. _____ |

DO NOT WRITE BELOW THIS LINE: TO BE COMPLETED BY THOSE CONDUCTING STUDY

-----

\_\_\_\_\_ TOTAL SCORE (Raw Score) FROM CODE #  
TABULATION

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