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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

PERCEPTUAL RELATIONSHIPS PERSONALITY-READING

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF EDUCATION

BY

MAURICE PETER WALRAVEN

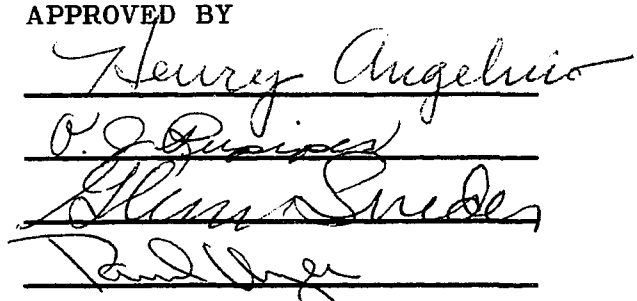
Norman, Oklahoma

1967

PERCEPTUAL RELATIONSHIPS

PERSONALITY-READING

APPROVED BY



DISSERTATION COMMITTEE

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PERCEPTUAL RELATIONSHIPS

READING-PERSONALITY

CHAPTER I

INTRODUCTION

There has always been considerable interest in the difficulty various individuals have in learning to read adequately. The inability to progress in the development of reading skills at a "normal" rate has been blamed on any of a multitude of reasons depending upon the orientation of the particular critic. Until recently the critics of poor reading progress ended by promoting their pet method of teaching reading. In general, most reading programs were assumed to be efficacious for all students and did not take into consideration the existance of special problems which could deter individual learning. Gates (p. 18) recognizes the possibility of physical, mental and emotional factors contributing to reading disabilities, but feels that through the use of optimum teaching methods most children who have intelligence quotients above 70 can be taught to read. Apparently the "optimum teaching method" has not been found

for the number of individuals who are deficient in reading skills appears to be on the rise. Terman and Walcutt (p. 25) state that the evidence indicated reading ability appears to be decreasing. They cite numerous studies, and list causes claimed to be the reasons for failure of many children to learn to read adequately. Even though recognizing the possible presence of many causal factors they (p. 33) feel that most reading disabilities arise from poor teaching procedures. They advocate the use of phonic methods as a means of remediating reading disability and are not concerned with motivation, effort, or interest on the part of the student. These same authors (p. 81) compare the relationship between reading disability and emotional problems to that found in conditioned responses such as those elicited by Pavlov. They state:

> The child whose reading is retarded goes through the same cycle. He has learned to recognize a number of words by sight in his primer. So long as his memory keeps up with the words that he has to know he is successful and adjusted. But when the new words come faster than he can remember them, or, more typically, when the phonic clues that are introduced interfere with the habits of word-recognition he is employing, then he finds himself in the situation of the dog when the ellipse is every day becoming more like the circle. And his response is similar. He sulks, he withdraws into himself, may hate school, fear his teachers, and quarrel with his school mates. The real trouble is that he is confronted with new demands which he is not capable of meeting. He can't make the required discriminations; he is forced to work out a problem with no solution and is punished for failure. If the frustration reaches a certain point the child ceases to try, and the deterioration of both his reading and his personal adjustment may from that point be very rapid.

The above statement is similar to the one made by Combs (p. 185) in his discussion of the interaction of learning and adequacy, He states:

> The process of perception involves differentiation and selection from the environment which the learner "sees" at the moment. When we recognize that the self concept is learned, the role of the school in this learning becomes increasingly significant. . . . Openness to experience is dependent upon feelings of adequacy, on the one hand, and contributes to greater adequacy, on the other.

The inter-relationship of personality deviations and reading problems is also suggested by Betts (p. 11) when he states:

> . . . In some instances, children have emotional and personality problems that interfere with reading achievement. In other instances, frustration in reading situations has clearly produced the personality problem.

Hutt and Gibby (p. 135) express this same inter-relationship in the following way:

> . . . and when he has learned to anticipate not only failure but rejection, there may be a sharp and intense conflict between striving to perform to gain acceptance and fear of performing in order to avoid rejection. The whole school situation may become unconsciously threatening, and the conflict which is experienced may become so severe that withdrawal (at a psychological level) may be the only apparent solution. . . . The effects of this anxiety may not only produce the immediate effect of increased anxiety and diminished effectiveness, but may have crippling effects upon the development of the person's ego. There may also be the cyclical effect of: persistent, unconscious anxiety which leads to reduced energy and effectiveness, which leads to decreased intellectual functioning, which leads to increased conflict, which leads to still additional anxiety, and so on.

The relationship stated by both reading specialist

and psychologist is the major point of concern in this study. There have been numerous investigations involving youngsters with reading disabilities who also appear to have personality disorders; these will be discussed more thoroughly in the next chapter. Also of interest is the extent of the apparent relationship and the possibility of determining the presence of a personality deviation without the use of highly trained personnel and extensive psychological testing. This is not to imply any attempt to find a highly diagnostic instrument that can pin-point fine emotional deviations and establish causal relations. In fact, causal relations are not a point of concern of this study as it is realized that in working with a highly complex area, such as personality development, there are so many factors operating it is impossible to isolate one of them as the specific, causal factor of a specific personality disorder. The same point concerning causal relationship is also applicable to the study of reading disabilities. Delacato (p. 6-9) lists twenty-nine traits suggested as factors in causing reading disability. Of the twenty-nine characteristics suggested by teachers and psychologists, as causal factors, not one of them was found to be present in twenty or more of forty-five poor readers. Delacato (p. 10) concluded no one single item was, in itself, causal in the reading disabilities of the children studied.

Delacato also noted other characteristics not

mentioned by either teachers or psychologists as being common to more than forty of the forty-five students he studied. The common factors he noted were primarily neurological or physiological and apparently developmental in nature. Delacato's entire philosophy of remedial teaching is based on his belief that mental development follows the pattern of physical and neurological development and if some facet of this development is interrupted, mental development is also affected.

The opposing views presented so far are typical of the unresolved nature of the research attempting to establish the etiology of reading disability and the means of remediating the condition. The literature reviewed indicates that regardless of the approach used in teaching reading we will still have some individuals who will not perform up to expectancy. A defeatist attitude could be adopted and research and study in this area stopped as no positive results seem to be forthcoming. A more fruitful approach would be continued effort to find better ways of identifying the handicapped reader and of determining if there may exist some common factors, while not causal in nature, which may be exerting an influence on the individual so as to negate normal development. The identification of traits which appear significantly often in individuals with reading disabilities cannot be written off simply because causal relationship cannot be established. These

traits need to be identified and considered when the remedial approach to be taken is determined. Mesinger (p. 237) takes note of the necessity of considering the various problems of children with reading disabilities and of the inadvisability of attempting to work with these children, as a group, when they have varied combinations of difficulties.

The present study will attempt to determine, using available tests, if a significant relationship exists between reading disability and a personality trait. The trait or personality deviation to be studied is the apparent tendency of individuals with reading disabilities to withdraw from contact with their environment and to lack openness to new experience, especially in the area of communication.

Statement of the Problem

Studies indicate that there is a relationship between personality and achievement, especially as poor personal adjustment may cause inadequate differentiation and perception with a resulting decrease in the ability to use the means of communication. The inter-relationship between personality and achievement is one of the major assumptions of the "perceptual," "phenomenological," "interactional," or the "existential" frame of reference regarding personality growth and development and forms the basis for the problem studied and reported herein.

The major problem was to determine if a significant

relationship could be shown to exist between retarded development in the ability to read and a personality deviation characterized by withdrawing type behavior. A secondary problem was to study the possibility of using tests, easy to administer and score, in place of more complicated, expensive, time consuming methods which necessitate the use of personnel with extensive training and special skills. To investigate fully this problem the effect of intelligence on the common incidence of the two disabilities was also determined.

Definition of Terms

Throughout this report the following terms and concepts will be used extensively, therefore, in order to avoid misunderstanding they are operationally defined as follows:

Reading Disability or Retardation. A reading disability shall be assumed to exist if the subjects reading grade placement is one year or more below reading expectancy.

Reading Expectancy. Reading expectancy shall be determined by multiplying the individual's intelligence quotient by his years in school and then adding one year. The resulting figure will give the reading expectancy as a grade placement figure and, as can be noted, takes into consideration the subjects ability level and experience.

Size Constriction. Size constriction will be considered to exist when five of the nine figures of the Bender Visual-Motor Gestalt Test are reduced in size by as much as

one-fourth of their standard measurement. The reduction in size can be in either dimension, but does not have to be in both dimensions.

Space Constriction. Space constriction will be considered to exist when all the figures of the Bender Visual-Motor Gestalt Test are grouped in such a manner as to use one-third or less of the space available on a standard eight and one-half by eleven sheet of paper.

Reading Level. Reading level will be defined as the grade placement scores earned by the subjects on the following tests:

1. The Gates Reading Survey.
2. The Gilmore Oral Reading Test.
3. The reading section of the Wide Range Achievement Test.
4. The Slossen Oral Reading Test.

Hypotheses

In order to determine if an inter-relationship does exist between the two factors, depressed reading achievement and faulty personality development, the following null Hypotheses were tested:

Hypothesis One. There is no statistically significant difference in the frequency of size reduction and or space constriction on the Bender Gestalt among individuals with a reading disability, and those without a disability, as measured by the Gates Reading Survey.

Hypothesis Two. There is no statistically significant difference in the frequency of size reduction and or space constriction on the Bender Gestalt among individuals with a reading disability, and those without a disability, as measured by the Gilmore Oral Reading Test.

Hypothesis Three. There is no statistically significant difference in the frequency of size reduction and or space constriction on the Bender Gestalt among individuals with a reading disability, and those without a disability, as measured by the Slossen Oral Reading Test.

Hypothesis Four. There is no statistically significant difference in the frequency of size reduction and or space constriction on the Bender Gestalt among individuals with a reading disability, and those without a disability, as measured by the reading section of the Wide Range Achievement Test.

To determine the possibility of using a quick oral reading test in place of more lengthy and complicated diagnostic surveys as a means of determining reading disability the following null hypotheses were tested:

Hypothesis Five. There is no statistically significant correlation between an individual's grade placement scores on the Slossen Oral Reading Test and the Gates Reading Survey.

Hypothesis Six. There is no statistically significant correlation between an individual's grade placement

scores on the Slossen Oral Reading Test and the Gilmore Oral Reading Test.

Hypothesis Seven. There is no statistically significant correlation between an individual's grade placement scores on the reading section of the Wide Range Achievement Test and the Gates Reading Survey.

Hypothesis Eight. There is no statistically significant correlation between an individual's grade placement scores on the reading section of the Wide Range Achievement Test and the Gilmore Oral Reading Test.

To determine the effect of intelligence on the relative incidence of the two factors studied the following null hypotheses were tested:

Hypothesis Nine. The incidence of students exhibiting reading retardation as measured by the Slossen Oral Reading Test and space and or size constriction on the Bender Visual-Motor Gestalt Test will be statistically significantly higher among subjects who have intelligence quotients below 100 as compared to those who have intelligence quotients above 100. I.Q. was measured by the Stanford-Binet Intelligence Scale.

Hypothesis Ten. The incidence of students exhibiting reading retardation as measured by the Gates Reading Survey and size and or space constriction on the Bender Visual-Motor Gestalt Test will be statistically significantly higher among subjects who have intelligence quotients

below 100 as compared to those who have intelligence quotients above 100. I.Q. was measured by the Stanford-Binet Intelligence Scale.

CHAPTER II

RELATED LITERATURE

Theoretical Considerations

Through the past years many testing techniques have been developed to provide some measure of objectivity in the process of evaluating personality development and functioning. The relationship between perception and personality adjustment in particular, has been of interest to psychologists for many years. The development of Gestalt Psychology by the work of Wertheimer, Kohler and Koffka gave added emphasis to the role of perception as it relates to the "whole" personality. More recently Maslow (p. 365) had this to say about perception:

> The healthier people are, the more their capacities are inter-related. This holds also for the sensory modalities that make synaesthesia in principle a more basic study than the isolated study of separate senses. Not only is this so, but the sensory equipment as a whole is related to the motor aspects of the organism.

The vital factor of self regulation in perceptual processes has been recognized as the influencing force in the way each individual reacts to a total situation. Bender (1938, p. 5) states:

> There is an innate tendency to experience gestalten (Schilder) not only as wholes which are greater than their parts (Wertheimer, Koffka, Kohler) but in the state of becoming (Eddington) which integrates the configuration not only in space but in time. Furthermore, in the act of perceiving the gestalt the individual contributed to the configuration. The final gestalt is, therefore, composed of the original pattern in space (visual pattern), the temporal factor of becoming and the personal-sensory-motor factor. The resulting gestalt is also more than the sum of all these factors. There is a tendency not only to perceive gestalten but to complete gestalten and to reorganize them in accordance with principles biologically determined by the sensory motor pattern of action. This pattern of action may be expected to vary in different maturation or growth levels and in pathological states organically or functionally determined.

Investigators soon noted that the copying of the nine simple geometric designs, selected by Bender (see figure 1), involved more than a simple response to a stimulus. As Bender indicated, the test response is a product of the total situation, including the organism. Any deviation in production should reflect a deviation in the organism due to the organism's perception of the total situation, and its ability to respond. Billingslea (1948, p. 1) indicates that a response to the Bender test involves, "(a) sensory reception, (b) central neural interpretation, and (c) motor reproduction (hand drawing) by the perceiving subject of the stimulus objects." Pascal and Suttell (p. 6) express their interpretation of the task of copying the Bender designs as follows:

> Thus one would expect that on a task such as copying B-G designs, performance would not only be a function of the individual's capacity to perceive correctly

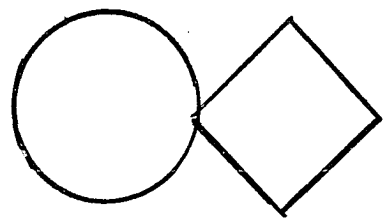


FIGURE A



FIGURE 1

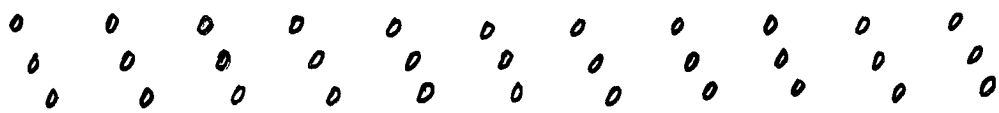


FIGURE 2

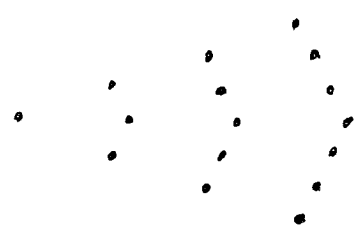


FIGURE 3

Figure 1. - Bender Visual-Motor Gestalt Test Figures

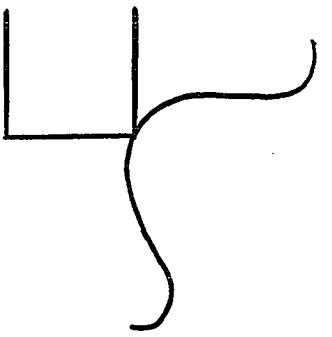


FIGURE 4

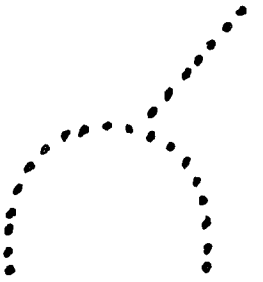


FIGURE 5

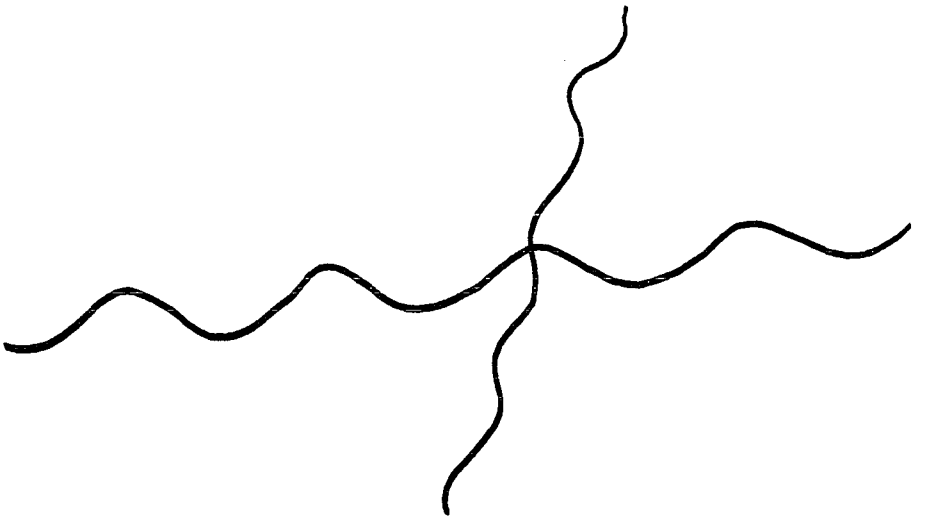


FIGURE 6

Figure 1. - Bender Visual-Motor Gestalt Test Figures (Cont'd)

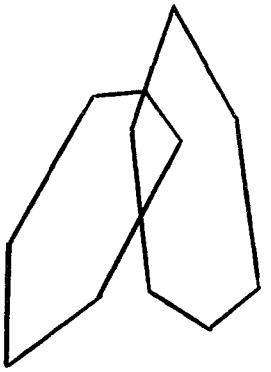


FIGURE 7

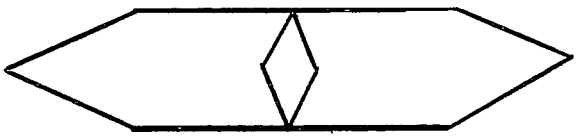


FIGURE 8

Figure 1. - Bender Visual-Motor Gestalt Test Figures (Cont'd)

> and execute the figures but also of the individual's interpretation of them, i.e., what they and the task mean to him in the light of his own experience.

Again we note the fundamental factors involved in the copying of the Bender figures: (1) sensory reception or perception, (2) interpretation, and (3) motor execution.

In a sense the execution of the Bender Visual Motor Gestalt Test is a sampling of the kind of work which can be expected from the individual. The sample indicates not only ability to perceive and execute but also involves some personal factor. In the individual possessing the ability to execute the designs any deviation from the norm can be assigned to some variable within that individual; some interpretive factor. In connection with this Pascal and Suttell (p. 6) state:

> The test for the individual, once he is subjected to it, becomes a bit of reality with which he has to cope. We would expect, therefore, that in those persons in whom the attitude toward reality is most disturbed, we will find greater deviations from the stimuli. Our findings corroborate this expectation. In the population tested by us, of normal intelligence and free from brain damage, a number of deviations were found in the psychotic subjects, fewer in psychoneurotic subjects, and least in non-patients.

There have been many other studies which have verified the assumptions that the test results of normal subjects do differ from the results obtained from disturbed individuals. Kleinman (p. 52) found this to be true with adults, as did Simpson (p. 68) in his study of normal and disturbed first grade boys. Both investigators ascribe

the deviations in performance to some factor that intrudes between visual perception and motor response. Since the subjects had no known motor disturbances the deviations were assumed to be the result of the individuals personal interpretation of his relationship to this sample of reality.

Some of the major assumptions of the studies involving the use of the Bender Visual-Motor Gestalt Test center around the ability to perceive and reproduce the test figures. Most of the studies involved adult populations and did not need to be concerned with maturational factors that could have some affect on the reproduction of the Bender test designs. In considering maturation and its effect on the individual's reproductions Pascal and Suttell (p. 55) write:

> The ages over seven add very little more than an improvement of obliquity and an increase in the number of combinations. Thus, by taking the age of nine as our contrasting age we feel fairly safe in suggesting that the incidence of deviations common to six and seven year olds and not common for ages nine or above is indicative of at least failure in normal maturation . . . we would postulate now, that it is possible there are two kinds of deviations one kind resulting from psychogenic illness and one kind from failure of maturation or organic cause.

Bender (p. 113) noted the following maturational changes:

> From the standardization of the gestalt drawings we found that the three year old child usually responds with a scribble which is somewhat controlled; . . . The four year old uses circles and closed loops. . . . A five year old child may modify his circles and loops into closed square-like figures, . . . A six year old child may produce closed squares . . . He may also

> make circles so small that they are dots and represent points in space. . . . The ages over seven add very little more than an improvement of obliquity and an increase in the numbers of combinations. . . .

Bender does not consider her maturational chart of much use or value for individuals whose mental level is above eleven years unless there is some mental disease present causing distortion of the visual motor gestalt. A study of her chart shows very little change in basic form of the reproductions after age seven. The changes that can be noted are, as have been previously mentioned, an improvement in oblique constructs and some increase in the number of combinations. Bender (p. 113) indicates:

> The test may, therefore, be considered of value as a maturation test of performance in the visual motor gestalt function between the ages of four and eleven- which is the age when language function including reading and writing are developing.

It would appear from the above discussion that the Bender test is an instrument which is capable of indicating the presence of some internal regulation of the reaction to a perceived stimulus, assuming the ability to perceive and execute the copying of the required designs. We have also noted the tendency of individuals, who are having difficulty in reading, to also give indications of reduced ego strength because of their inability to succeed. Reduced ego strength has been related to feelings of inadequacy and insecurity with a concurrent tendency to withdraw from reality. The Bender test has been described as

a segment of reality and Pascal and Suttell (p. 8) consider distortion or impairment of the basic gestalt in Bender Protocols as being related to the ego strength of the organism. Theoretically the Bender Visual-Motor Gestalt Test should be the ideal instrument for determining the presence of some internal self-regulatory factor which inhibits the individual's relationship to his environment. The use of the Bender in studies similar to this study will be discussed in the next section.

Related Literature

Since Bender initiated her test of visual motor functioning in 1938 the patterns she selected with their varied qualities, their size, shape and degree of complexity, the depth of psychological implications inherent in their inter-relationships and inner-relationships as well as the numerous possibilities in the organization of the total gestalt has led to their use in many studies. Functional and organic disorders were studied and the integrative state of the organism was probed at all levels of maturation. Clawson (p. 3) indicates that the use of the Bender test with children began in about 1945 and, while there were several studies done, they were distributed over various areas of interest so that there are actually very few studies on any one specific problem. While Clawson's list is not all inclusive she, no doubt, tried

to include as many of the studies relating to the Bender test as she was able to locate. The investigator found that many studies, such as this one, do not use the name of the tests used in their titles and are, therefore, easily over-looked in reviewing the literature. Again, many of the studies read did not pertain to the subject of this investigation, such as those dealing with organic disorders, others were relative in only very general terms. The studies reported herein are the ones the investigator felt would be most significant to the problem. Some of the studies relating in a more general way were discussed under theoretical considerations and will not be repeated here.

Basic to this study is the assumption that some factor in the personality make-up of the individual can cause the organism to respond to the Bender-Gestalt in a manner that differs from the response of the individual with a well organized and adjusted personality. This assumption has been verified by every study examined by the investigator. Pascal and Suttell (p. 67) indicate that scores on the Bender-Gestalt correlate with the seriousness of psychiatric illness. Psychotics tend to score higher than neurotics etc. The scoring system referred to is the one developed by Pascal and Suttell on an adult population and is far too complicated and subjective for use by untrained personnel. Pascal and Suttell's scoring

system was used, however, by several investigators who found it fairly useful with children. Simpson (p. 47-49) used it in investigating the use of the Bender Gestalt with normal and disturbed children. He found that disturbed children exhibited significantly more scorable deviations than the normal group and assigned this difference to "interpretive" factors. Klienman (p. 15) used the same scoring system and in addition had his subjects respond on separate four by six cards. The use of individual cards ruled out the use of size or space constriction as they did not allow the total gestalt of the test situation to be a factor in the reproduction. The cards also provided a clue as far as placement and size of the individual's responses are concerned, since they were of the same size as the cards containing the stimulus figures. Klienman did find that normal subjects differed in scorable deviations from schizophrenic subjects, again varifying the use of the Bender as an instrument for differentiating between normal and disturbed subjects. More closely related to the present study was one done by Parrish (p. 31) using first grade youngsters. His sample was composed of readers and non-readers and he (p. 27) also used Pascal and Suttell's scoring system. Parrish (p. 13) asked his subjects to reproduce the Bender Gestalt figures on separate cards, as did Klienman, so ruling out the possibility of considering size of the figure or its position and relationship to

the other figures of the test. Simpson (p. 12) followed the same procedure for securing his reproductions of the Bender Gestalt test figures as did Klienman and Parrish. As can be noted there are several factors in the above mentioned studies that are antithetical to the purpose of this study. They used scoring systems beyond the grasp of any but the highly trained psychometrist. Pascal and Suttell (p. 12-13) make the following statements in regard to their scoring system:

> The scoring system is practical. It is not, however as we have stated, entirely objective or rigidly accurate in measurement. It is most certainly not foolproof. Training, therefore, is essential. It is necessary to understand what is meant by each deviation. It is necessary to study the manual thoroughly and to work through the sample records before attempting to use the scoring system in practice.

Secondly, each of the investigators mentioned above used separate cards to record the students response. The use of separate cards provides a size comparison factor which, no doubt would invalidate the results as far as attempting to score for size reduction. Space constriction, of course, could not be measured at all since there is no way of observing this factor. In two of the mentioned studies the problem of maturation was involved, due to the age of the subjects. Gesell, et al (p. 104), Terman and Merrill (p. 230), and Bender (p. 113-136) all indicate the necessity of sufficient development before the individual can be expected to complete some of the figures of the Bender

Gestalt in a satisfactory manner. Simpson and Parrish used a set of simple geometric designs to determine if the motor ability of the two groups in their study was identical, or in other words to rule out the effect of motor maturation. The investigator solved the maturation problem by selecting subjects who were sufficiently old enough to have developed the motor ability to construct the designs. Those who had insufficient mental development or who had motor or visual problems which would hinder their performance on the Bender were eliminated immediately. In talking about the Bender figures Taylor (p. 392) sees the ages between eight and ten as the minimum age before which even the normal child cannot draw the designs with any degree of accuracy. The subjects of this investigation were drawn from grades four through seven assuring ages above nine.

Another factor of concern was the use of size reduction as an indicator of a personality deviation. Most of the investigators of personality through the use of drawing have considered this factor at one time or another. Swensen (p. 538), Pascal and Suttell (p. 93), Byrd (p. 758) all relate size with personality disorders, as does Koppitz (p. 137) when she states, "Small Size in drawings is associated with anxiety, withdrawal behavior, constriction, and timidity in children."

Koppitz (p. 7) constructed a scoring system for use in assessing the individuals performance on the Bender.

She (p. 6) suggests its use for children, age 5 to ten years. Because of the age limit her scoring system does not apply to the present study and is mentioned only because it points out the lack of a simple quantitative scoring system for use with the Bender with children age ten through fifteen. The need to adapt existing scoring systems because of the lack of a good method is, no doubt, one of the reasons for a scarcity of good studies using children with mature visual motor perception.

Clawson in her manual for use in interpreting Bender protocols presents one of the few discussions concerning the significance of "size" as a factor to be considered in the evaluation of childrens responses. She (p. 11) has this to say about decreased figure size:

> A record is classified in this category if five or more figures show a decrease of the vertical or horizontal axis by more than one-fourth of the corresponding axis of the stimulus figure.

Clawson (p. 11) presents the following hypothesis concerning reduced figure size:

> The child who reduces figure size reveals impulse poverty in his personality. He is typically an inhibited child whose behavior generally is withdrawn. He has adjusted by conforming under adult scrutiny and has repressed recognition of his impulses and emotional responsiveness.

Clawson (p. 8) also states:

> No claim is made for the absolute validity of any hypothesis because of the paucity of studies and clinical findings in this subject area. The hypotheses are offered for continued clinical validation.

This study, it is hoped, will help fill in some of the gaps still open at this time and possibly give validation to some of the hypotheses needing additional statistical support.

CHAPTER III

PROCEDURE

Introduction

The purpose of this study was to determine whether or not a relationship existed between a lack of openness to one's environment and retardation in the development of one's ability to read. A secondary purpose was to determine the effectiveness of short, oral word recognition tests in determining reading retardation as compared to the use of more extensive diagnostic reading instruments.

The investigator was fortunate in obtaining permission from the Midwest City Public School system to correlate this study with a special reading project the system was about to undertake. The relating of this study with the proposed reading project strengthened the study by making available the results of extensive individual testing that would not have been available under other circumstances.

The Subjects

The criteria used as a basis for the selection of subjects for this study were grade level and an indication

of a reading disability. The theoretical rationale for the criteria used is set forth in the following paragraphs.

Grade Level. The subjects for this study were selected from grades four through seven. This grade range was chosen so as to be sure the subjects would be old enough to have developed the visual-motor and perceptual abilities needed for adequate performance on the Bender Visual-Motor Gestalt Test. Prior experience indicates that children age nine, or at the fourth grade level, have matured sufficiently to copy the required figures. Furthermore, children nine or over are aware of the size factor in their reproductions of the Bender figures and changes in size now become significant indicators of factors other than maturation.

The fourth grade was selected as the lower limit for the study because of one final factor. Prior to grade four there is much emphasis on teaching the fundamental reading skills and the development of the abilities are still in the active process of formation. Beginning with the fourth grade level the emphasis changes to the use of the developed skills in acquiring knowledge in the various areas of learning. The need for students to begin to use reading as a tool in meeting their environment in a competent manner is at the core of our hypothesis. The relationship between personality and the use of the communicative skill of reading now becomes a critical issue in the

life adjustment of the individual.

Reading Disability. The second major criterion used in selecting subjects for this study was evidence of a reading disability. Initially all the students in grades four through seven of four selected schools were selected by the counselors and principals of the schools involved. The criterion for screening was a reading disability of a degree sufficient to show a negative deviation of at least a year from the individuals expected achievement. Counselors and principals examined the student's test records and also used teacher recommendation in making the first list of students who might be eligible for their proposed reading project.

The students recommended were then administered a battery of tests under the direction of the reading clinic of the University of Oklahoma. Better than 162 students were given the Stanford-Binet Intelligence Scale, Form L-M. The students were also given the Gilmore Oral Reading Test, Form A, the reading section of the Wide Range Achievement Test, (W.R.R.), the Gates Reading Survey, Form 1, and the Dolch Basic Word List. The extent of the individuals reading problem was then determined by obtaining an average reading grade placement using the scores from the reading tests and noting the difference between this score and the individual's expected reading grade placement. The expected reading grade placement score was determined by

multiplying the individual's I.Q., as obtained from the Stanford-Binet, by his number of years in school. To this figure was added one year, thus obtaining the individual's expected grade placement score. This method of figuring expected reading level takes both age and intelligence into consideration, so taking care of the factors of experience and ability which otherwise might add confusion to the final determination of a reading disability.

Other Factors. Students with major problems involving communication ability such as defective hearing, speech or vision were not considered as subjects for this study if their problem was of such a magnitude as to obviously affect communication. Also screened out were individuals with problems of central nervous system dysfunction as indicated by lack of adequate motor control. No epileptic, mentally retarded or cerebral palsied children were included in the study.

The Test Instruments

Two instruments were used to gather data needed to test the stated hypotheses, they were:

The Slossen Oral Reading Test. This instrument was chosen because it appeared to have the necessary characteristics for our purpose. It is a short oral reading test which can be administered in three minutes and very simply scored by merely calculating the number of correct

responses. A convenient table enables the examiner to find the proper grade placement. The S.O.R.T. was copyrighted in 1963 by Richard L. Slossen, it is individually given and measures the ability of the student to pronounce words. The words used were selected from standard school readers and an individual's score represents the median achievement at that level. Test-retest reliability was found to be .99 and a correlation of .96 was obtained with Gray's Standardized Oral Reading Paragraphs (Slossen, Appendix). The test format consists of ten lists of twenty words each, totaling two hundred words. The lists are graded in difficulty so the examiner may start where the student is able to read the words and stop as soon as he fails one complete list. Since the entire test does not have to be given this not only saves time but also prevents frustration on the part of the student, since he does not have to continue much beyond his actual level. Failure experience is cut to a minimum.

The Bender Visual-Motor Gestalt Test. In 1938 Lauretta Bender assembled the series of figures which formed the basis for her test. She selected nine of the many patterns previously used by Max Wertheimer in his studies of perception and perceptual organization (Bender, 1938, p. 4). While principally designed as an instrument to measure perceptual motor maturation, the nine figures lend themselves to the study of other aspects of the

organisms functioning. For the purpose of the present study, Bender's test will be used to measure perceptual organization as it relates to the development of the individual's personality. The specific factor to be observed in the protocols of the subjects tested will be the reduction in size of the production as compared to the stimulus figure. A reduction in size, equivalent to one-fourth of either dimension of the stimulus figure, in five of the nine will be considered evidence of the existence of the "size reduction factor". Size reduction has been previously related to the existence of a tendency towards withdrawal type behavior, or in other words, towards a personality classified as "restricted". The individual with a tendency towards "restriction of personality" is also characterized as exhibiting behavior indicative of a lack of openness to experience and apparently is unable to make adequate use of the various channels of communication. Studies by Billingslea (1965, p. 720) and Clawson (p. 10) tend to validate the use of the Bender Visual-Motor Gestalt Test for the purpose of establishing the existence of the personality characteristics under examination in this study. Koppitz (1965, p. 772) also points to the usefulness of the Bender test as a tool for determining the etiologies of various behaviors.

The Study Procedure

Pre-screening of subjects was done by the principals

and counselors of their respective schools on the basis of group test scores and teacher recommendations. This screening was done in four schools: Soldier Creek Elementary, Barnes Elementary, Glenwood Elementary and the seventh grade of Carl Albert Jr. High School. All the fourth, fifth and sixth grade students in the elementary schools and the seventh grade students in the Junior High were screened. The names of all students reading a year or more below expectancy as indicated by their records, or those specifically recommended by the teachers, were placed on the original list. The students on this list were then administered a battery of tests including the following:

1. The Gates Reading Survey, Form 1
2. The Gilmore Oral Reading Test
3. The reading section of The Wide Range Achievement Test
4. The Stanford-Binet Intelligence Scale, Form L-M

Using the results of the reading tests an average reading grade placement score was established. Using the results of the Stanford-Binet Intelligence Scale, Form L-M and the number of years the individual had been in school, a reading expectancy score was determined. All the students with a reading deficiency of at least one year were selected to serve as subjects for the study. There were no major hearing, speech, vision or motor problems among this group, as children with these defects had been previously eliminated

from the sample. Children diagnosed as mentally retarded were also excluded from the sample. There were 162 students screened by the above procedure, resulting in a final selection of 92 students who met the criteria established for the actual study group.

The two experimental instruments were individually administered to 71 students. The other 21 students had moved or were ill on the days the tests were given. The examiner visited each school involved in the study. A quiet place was selected for the administration of the tests with arrangements made to insure privacy and to prevent interruption of the test situation.

The Bender Visual-Motor Gestalt Test was given first as it is the kind of test that does not arouse unusual emotional behavior, nor do the subjects become frustrated because of inability to produce the designs (Pascal and Suttell, p. 10). Bender (1946, p. 5-6) also indicates:

> In a battery of tests, this test may often prove to be an effective introductory test as it is apparently innocuous and may make an anxious and uneasy individual feel more at ease in the test situation.

For the reasons stated, this order of presentation was felt to be better than presenting the reading test first as failure on the reading test could have had some affect on the subsequent Bender Gestalt performance.

Each subject was provided with a sharp pencil and eraser. A sheet of plain white unlined paper 8½" by 11"

was placed before the subject with additional paper stacked on the table within reach in case he should desire more than one sheet. No mechanical aids were allowed. The table was kept clear of other materials to prevent the possibility of any distraction during the test performance.

The method of administration followed that proposed by Bender (1946, p. 6) in her instruction booklet:

> The cards may be presented one at a time laid on the table at the top of the sheet of paper correctly oriented and the individual to be tested should be told simply "Here are some figures (or designs) for you to copy; Just copy them the way you see them." It may be necessary to discourage the turning of the test card to some new position. If it is not easily discouraged, it should be permitted and noted. It is well to encourage the placing of the first figure near the upper left hand corner of the paper although if the suggestion is not readily accepted, it should not be insisted upon. The orientation of the figure on the background and in the series is also a part of the gestalt function. All other instructions should be non-committal. For example, if the question is asked if the dots should be counted, the answer should be, "It is not necessary but do as you like." Several attempts at any one figure may be permitted by leaving all trials on the record. Erasures to improve lines may be permitted but not encouraged.

When the subject finished all the designs he was requested to write his name on the back of the sheet. The cards and sheet were then removed and the Slossen Oral Reading Test (S.O.R.T.) was then given.

The administration of the S.O.R.T. followed the instructions given by Slossen (appendix) as follows:

> Allow the child to read from one sheet while you keep score on another. At the start, say the following: "I want to see how many of these words you can read. Please begin here and read each word aloud as

> carefully as you can." (Indicate at what list to start) "When you come to a difficult word do the best you can and if you can't read it, say 'blank' and go on to the next one."

The starting point for each individual was determined using reading scores from other available tests. In general, each child was asked to start with a list a year below his score on the Gates Reading Survey, Form 1. This method insured a measure of success before difficult words would be encountered. The subject was allowed five seconds for each word and then asked to move to the next word. Errors were determined according to the directions given by Slossen (appendix) and were as follows:

> Count as an error each mispronounced or omitted word as well as a word which takes more than about 5 seconds to pronounce. (If a child has a speech defect such as a stutter, disregard the 5 second interval and allow as much time as necessary.) Count it an error when a child is uncertain about a word and gives more than one pronunciation, even though one of them may have been correct. Be particularly careful about scoring the word endings as they must be absolutely correct.

When all the tests had been given the Bender Gestalt was scored for size and or space constriction. The size of standard and reduced figures is given in table 1. To simplify scoring of the protocols a transparent overlay of the figures, with dotted lines indicating the degree of reduction in size necessary before the figure is scored as constricted, is used (see figure in appendix II). If the figure is reduced in size, as indicated by the overlay, it was given a plus (+) score indicating the presence of size

TABLE I

DIMENSIONS OF STIMULUS AND REDUCED FIGURES

Figure	Description of measure	Std. Fig.	Red. Fig.
		inches	
A	Length of figure	2	1 1/2
	Height of figure	1	3/4
1	Length of row of dots	5 1/4	3 7/8
2	Length of figure	5 1/4	3 7/8
	Width of figure	1/2	3/8
3	Length of figure	1 13/16	1 5/16
4	Height of entire figure	1 3/4	1 5/16
	Width of entire figure	1 3/4	1 5/16
5	Width of base	1 1/8	13/16
	Altitude of entire figure	1 7/16	1 1/16
6	Length of horizontal sine wave	4 15/16	3 5/8
	Length of vertical sine wave	3 15/16	2 1/4
7	Length of each sub part	1 11/16	13/16
	Width of each sub part	5/8	7/16
8	Length of figure	3.0	2 1/4
	Width of figure	5/8	7/16

constriction. If the figure is not reduced, a minus (-) score was recorded, indicating the absence of size constriction in that figure. The plus (+) signs were added for each subject and the total was recorded as a fraction. Each individual's protocol was then dichotomized into presence or absence of size constriction. The criterion for size constriction was five out of nine figures scored plus.

The reading tests were scored according to the directions with each test and these results were compared with the individual's reading expectancy. If an individual's score was a year or more below expectancy, the test sheet was marked with a Plus (+) indicating reading retardation was present. If less than a years discrepancy was observed a minus (-) was recorded as indicative of the absence of reading retardation. In this manner reading scores were forced into a dichotomy. The students were then assigned a code number and their individual scores, dichotomized as plus for the presence of reading retardation and size constriction or minus to indicate the absence of the two traits, were recorded. A discussion of the results found is given in the next chapter.

CHAPTER IV

THE RESULTS

Introduction

A group of 71 fourth, fifth, sixth and seventh grade students were tested using several reading tests of differing format and the Bender Visual-Motor Gestalt Test. The major purpose of the investigation was to determine if a relationship exists between the presence of a reading disability and a tendency to exhibit behavior indicative of a "constricted personality", characterized as "withdrawing" which seems to carry with it a lack of openness to experience. A secondary purpose was to determine if there was significant correlation between the shorter oral reading tests and the more complicated lengthy diagnostic reading surveys. If significant correlation between the reading tests does exist, it is hoped the shorter tests might be as effective for selecting students for remedial reading instruction as the more length diagnostic procedures.

Reading Test Results

Two reading tests were used in selecting the group

of students who were subjects for the study, namely:

1. The Gates Reading Survey.
2. The Gilmore Oral Reading Test.

All of the subjects were given the Gates Test, however a few of them, the seventh graders, were not tested on the Gilmore test as it was not applicable to their level. Since all the students in the study did take the Gates Reading Survey it was used as the basis for selection of the sample. The Gilmore test results were used in making decisions on borderline cases, four of them to be exact, whose Gates test scores indicated .9 of a years reading retardation instead of the one year as used in the definition of a reading disability. In the four borderline cased the scores they earned on the Gilmore test were lower, indicating over a year of retardation, therefore, they were kept in the final sample.

The reading section of the Wide Range Achievement Test (W.R.R.) and the Slossen Oral Reading Test (S.O.R.T.) were used as experimental procedures to determine their correlation with the Gates and Gilmore reading tests and the possibility of using them in place of the longer tests in ascertaining reading disability. Raw scores on all these tests are on tables 7 and 8 in the appendix. Grade placement scores for each student were computed (see tables 9 and 10). Mean scores vary 4 months between tests with the quicker oral reading tests rating the students as

slightly better readers than do the more extensive diagnostic reading instruments. Standard errors of the means were computed using the formula from Edwards (p. 246). Table 2 gives the values found.

TABLE 2

STANDARD ERRORS OF THE MEANS OF THE READING TESTS

Tests	Standard Error in Months
Gates	± 2.00
Gilmore	± 1.32
S.O.R.T.	± 2.09
W.R.R.	± 1.39

Homogeniety of variance was tested using the F ratio (Edwards, p. 272). Results show that the Gates, the Gilmore and the Wide Range Reading test do not differ significantly, however, there was a statistically significant difference between the variance of the S.O.R.T. and the other three tests. The .05 level of significance was used.

The means of the reading tests were then examined to determine the validity of the assumption that the difference between $\overline{X}_1$, $\overline{X}_2$, $\overline{X}_3$, $\overline{X}_4$ = 0. The t test of significance at the .05 level of significance was used. Consideration was given to the lack of homogeniety of variance

between the S.O.R.T. and the other three tests. In all cases the basic assumption of no difference between the means had to be rejected as the results obtained using the formulas from Edwards (p. 254 & 273) indicated a statistically significant difference between the means, as all the values obtained exceeded the $\underline{t}_{.05}$ value of 2.03 (Edwards, p. 501).

Product moment correlation coefficients were determined using the formula from Edwards (p. 147). The resulting correlations are shown in the following table.

TABLE 3

READING TESTS CORRELATION MATRIX

Tests	Gates	Gilmore Correlation	S.O.R.T. Coefficients	W.R.R.
Gates	-----	.6902	.7698	.7346
Gilmore	.6902	-----	.8076	.7391
S.O.R.T.	.7698	.8076	-----	.8685
W.R.R.	.7346	.7391	.8685	-----

The correlations were tested for statistical significance using students $\underline{t}$ test and the .001 level of confidence. A general null hypothesis that no significant correlation is present between each group of two tests under consideration was established. The hypothesis was then tested by substituting the appropriate values in Seigel's formula (p. 212). All the $\underline{t}$ values were found to be highly significant as

they exceeded the needed values listed in the t table of values at the .001 level of significance (Siegel, p. 248). The highly significant t values indicating positive correlation between the Gates, the Gilmore, the S.O.R.T. and the reading section of the Wide Range test are listed in the following table.

TABLE 4

t VALUES OF THE PRODUCT MOMENT CORRELATION COEFFICIENTS

Tests	t Value
S.O.R.T. and Gates	13.337
S.O.R.T. and Gilmore	13.140
W.R.R. and Gates	11.670
W.R.R. and Gilmore	10.262
S.O.R.T. and W.R.R.	20.043

Note: Value of t must exceed 3.551 to be significant at the .001 level of significance (Siegel, p. 248).

The high level of significance of the obtained correlations is sufficient evidence to reject null hypotheses five, six, seven and eight which state that there is no significant correlation between the four reading tests used in the study. Rejecting the null hypotheses of no relationship would seem to suggest these tests may be used interchangeably, and that one test is as good as another when testing for reading disability. Correlations are

fairly high and much of the variation of one test can be associated with the variation of another. There are, however, some factors which are independent and cannot be accounted for as indicated by the coefficients of nondetermination which range from .25 to .52. Inadvisability of suggesting interchangeability is also supported by the data previously presented indicating a significant difference between the means of the reading tests. Apparently while measuring many of the same factors, there are enough independent factors in the tests to negate interchangeability. The data do support the use of either the W.R.R. or the S.O.R.T. as a device for selecting students in need of remedial instruction, because all the students designated as retarded readers by the W.R.R. or the S.O.R.T. were also selected as handicapped readers by the Gates Reading Survey. If interest is centered around selecting the most seriously handicapped, it would appear, from the data gathered, that the W.R.R. or the S.O.R.T. would be the most economical tests to use, both in terms of cost and time of administration.

Bender Visual-Motor Gestalt Test Results

The results of the subjects performance on the Bender Gestalt are compiled in table 11 (see appendix II). Each figure observed to be reduced by at least one-fourth of its standard size was scored plus (+), those not reduced

were scored minus (-). Five or more plus scores was considered indicative of "size constriction" and it was inferred that the subjects protocol indicated the presence of withdrawing type behavior. No particular pattern can be noted with some students reducing some figures while others reduced a different group. Figure five can be noted, however, to be more resistant to being copied reduced in size than any of the other figures. The explanation for this is not evident and could be a point to consider in future studies using the Bender Gestalt, especially if size of the figures is going to be a major factor in interpretation.

Only six of the subjects used less than one-third of the sheet of paper for their reproductions. The small number of subjects showing space constriction as well as size reduction would indicate this factor to be of little value in attempting to identify possible personality deviation. Space constriction is, therefore, not considered in discussing the relationship between reading disability and Bender Gestalt performance.

Comparison of Bender Gestalt and Reading Test Results

The test results of each individual subject, having been dichotomized into presence or absence of the two factors under investigation in the study, are presented in table 12. All 71 of the subjects scored as reading retarded

on one or more of the four reading tests used. Of the 71 students, 55 reduced five or more of the figures of the Bender Gestalt, or in other words 77 percent of the subjects in the study did show the presence of both factors under consideration. The significance of the relationship was tested by organizing the data in 2 x 2 contingency tables (see tables 13, 14, 15 and 16). Expected frequencies were determined by multiplying the totals common to a specific cell and then dividing by N, the total number of observations. Because of an insufficient number of expected observations in each cell of the contingency tables, the chi square test for significance could not be used except for the S.O.R.T. and the Bender Gestalt comparison. The significance of the other relationships were examined using Fisher's Test of Exact Probability.

The S.O.R.T. and B.V.M.G. comparison were tested using the chi square test formula from Siegel (p. 107). A chi square value, corrected for continuity, of 7.4104 was obtained. The value 7.4104 is significant at the .01 level of significance (Siegel, p. 249). Null hypothesis number three which states there is no relationship between reading retardation, as measured by the S.O.R.T. and size constriction on the Bender Gestalt can be rejected. On the basis of these two tests and with this group of subjects there does exist a statistically significant relationship between the two factors studied. The presence

of a personality tendency characterized as "withdrawing", the underlying cause of size constriction, and the inability to read up to expectancy are assumed to be interrelated. The suggested co-relationship should have many implications for the remedial reading teacher, one of them being the need for the student to have many successful experiences.

Null hypotheses one, two and four stating that size and or space constriction would exist in equal frequencies among readers and disabled readers were tested using the method developed by Fisher for determining the percentage of possibility that a particular distribution of observed cases would exist when the data are set up in a 2 x 2 contingency table. The investigator established the rejection level at the .05 level of probability so that if the calculations indicate a higher level of possibility, the null hypothesis, in each case would be accepted. The exact probability of observing a particular set of frequencies in a 2 x 2 table, with fixed marginal totals is given by the formula from Siegel (p. 97). If one of the cells of the 2 x 2 table has zero frequencies we need run the formula only once, substituting the appropriate values. If, however, none of the cells shows zero observations there is a possibility of even more extreme occurrences and they must be considered. The process followed was to decrease the smallest cell by one, keeping

the marginal totals fixed. In order to keep the marginal totals fixed the other cells must be adjusted accordingly. The formula was run each time and the process continued until one of the cells reached zero. The probabilities were then summed giving the exact probability of the observed occurrence as well as any that may be more extreme. Using the above process the probabilities were run substituting the figures from tables 14, 15 and 16. The results are shown in table 5. In all three cases the figures exceed the rejection level established by the investigator. Null hypotheses one, two and four which state that there is no significant relationship between frequency of incidence of size reduction and reading retardation as measured by the Gates, the Gilmore and the W.R.R. tests must be accepted.

TABLE 5

PROBABILITY OF CELL DISTRIBUTION OCCURRENCE AS DETERMINED BY FISHER'S EXACT TEST OF PROBABILITY

Tests	Probability
Gates and B.V.M.G.	.783
Gilmore and B.V.M.G.	.776
W.R.R. and B.V.M.G.	.196

Note: A probability of .05 or less is needed before the cell distribution can be considered to have occurred other than by chance.

The data indicates that with this group of subjects and these three tests of reading ability, a statistically significant relationship between the factors under consideration does not exist.

To determine if intelligence was involved in the manner in which an individual would react to the Bender Gestalt the group was divided into two sections. Students with intelligence quotients 100 and above in one group; those with scores below 100 in the other. The distribution of the scores is shown on 2 x 2 contingency tables 17, 18, 19, and 20. The percentage of responses falling into each cell of the contingency table for the below 100 I.Q. group was calculated. The percentage figure was then used in determining the number of expected occurrences in each cell for the 100 and above I.Q. group, assuming that relative intelligence would not affect the distribution. These figures are shown in table 6.

TABLE 6

PERCENT OF OCCURRENCE IN EACH CELL OF THE 2 X 2 CONTINGENCY TABLES OF THE BELOW 100 I.Q. GROUP AND THE NUMBER EXPECTED IN EACH CELL OF THE 100 AND ABOVE I.Q. GROUP

Tests Compared	Percentage	Expected Occurrences
S.O.R.T. and B.V.M.G.		
Cell a	20.3	3.45
Cell b	61.1	10.39
Cell c	7.4	1.26
Cell d	11.1	1.89
Gates and B.V.M.G.		
Cell a	1.9	.33
Cell b	79.6	13.53
Cell c	0	0
Cell d	18.5	3.14

The null hypotheses that the incidence of reading disability and size constriction would be greater significantly among students with I.Q.'s below 100 than among those with I.Q.'s above 100, as stated in null hypotheses nine and ten, were tested in terms of the chi square distribution using the formula from Edwards (p. 367). Observed and expected occurrences from tables 17, 18, 19 and 20 were used to obtain the chi square value for each cell. The values thus obtained were summed over the four cells of each 2 x 2 table. The chi square value for the S.O.R.T.--B.V.M.G. comparison is 11.28 and for the Gates--B.V.M.G. a value of 11.07. The values indicated, are highly significant exceeding the figure needed for significance at the .001 level of significance. The data forces acceptance of null hypotheses nine and ten, with the resulting rejection of the concept that relative intelligence will have no effect on the common incidence of reading disability and personality constriction. According to the data presented students with I.Q.'s above 100 who are not reading up to expectancy are more resistant to personality deviations than are students with I.Q.'s below 100.

The results obtained may have been influenced by the manner of determining a reading disability. Students with I.Q.'s above 100 may be reading below their expectancy and yet be able to read at grade level. Since they are able to achieve adequately, their view of self is not

distorted and personality deviations do not occur.

Another factor which may have influenced the results of the study was the fact that the area in which these students reside is classified as being socially and economically deprived. The ability to read adequately is not considered as vital a factor in an individuals life among this group as it would be among higher social and economic levels. As long as they are able to communicate orally in a satisfactory manner, the inability to read with competence would not become a major point of concern among family and peers, and the individual's view or perception of self in relation to his environment would not be affected.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

One hundred and sixty two students from four schools in a large mid-western school system were recommended by their teachers for a proposed remedial reading project. These students were given a battery of tests to determine their reading abilities. They were also administered the Stanford-Binet Intelligence Scale so that intellectual functioning could be considered in determining actual reading disability. Seventy one of the students met the criteria established for the subjects of this study. They were in the fourth through seventh grade in school, were at least one year retarded in reading ability as compared to their individual reading expectancies, were not mentally retarded and had no major oral, aural or physical handicaps.

These students were given the Slossen Oral Reading Test and the Bender Visual-Motor Gestalt Test in order to determine the validity of the hypotheses set forth by the investigator. The basic problem under consideration was to determine the probability of the existence of a

perceptual relationship involving an interaction between achievement and personality. Secondary considerations involved the investigation of the affect of intelligence on the incidence of the factors involved and under consideration and the possibility of finding a quicker, less complicated method of selecting candidates for remedial reading programs.

Findings

Statistical analysis of the data gathered indicate the following:

1. There is a statistically significant correlation between the reading tests used in this study. Correlation between oral reading tests is higher than between oral tests and those standardized tests requiring an interpretation of meaning as well as the ability to recognize and pronounce words.

2. The relationship between reading retardation and size constriction on the Bender-Gestalt proved to be of no significance in three of the four comparisons made. The figures indicate a closer relationship between reading retardation, as measured by simple oral reading tests, and size constriction. The significant relationship found between the Slossen Oral Reading Test and the Bender Visual-Motor Gestalt Test is indicative of this fact. The oral reading section of the Wide Range Achievement Test

also showed a greater degree of relationship with the size constriction factor on the Bender Gestalt than did the two more diagnostic reading tests used in the study.

3. Intelligence was shown to have a significant effect on the incidence of the two factors under study. The data shows that three out of four of the subjects of this study had I.Q.'s below 100 indicating a far higher incidence of reading retardation among subjects with ability levels below the mean than among those of above average intelligence.

4. Chi square tests of expected frequencies in the 100 and above I.Q. group compared with the actual observed numbers in the cells resulted in highly significant figures. A significant change in the incidence of size reduction among the above 100 I.Q. group as compared with the below 100 I.Q. group is therefore indicated. The direction of change is towards less incidence than would be expected if I.Q. had no effect on the individuals view of self and his relationship to his environment.

Conclusions

In view of the findings discussed above the following conclusions seem warranted.

1. Individuals with I.Q.'s above 100 are, apparently able to adjust to a reading disability without a corresponding withdrawal reaction to their personality

development in greater proportions than those individuals with I.Q.'s below 100. The apparent resistance may be due to the fact that even though they are not reading up to their expectancy, in many cases they are reading near enough to grade level so that they can achieve at a level at least high enough to prevent complete failure. They are able to see themselves as fairly adequate and do not need to protect their self concept through withdrawing type behavior.

2. The reading tests, used in this study, correlate with each other at a level significantly high enough to indicate the possibility of using any one of them in selecting subjects for remedial reading programs. A year or more deficiency on one of the oral reading tests would constitute a greater reading disability than the same discrepancy on a more diagnostic type test, such as the Gates, as there would be a greater possibility of a concurrent emotional problem. The above fact would indicate the desirability of working with the students selected using the simpler test first, especially if the number of students needing help is so large that some decision must be made as to the students who will receive priority.

3. Even though three of the four reading tests used do not relate at a significant level with size reduction on the Bender Gestalt, the size reduction factor does appear in better than 75 percent of the cases under

consideration. Seemingly any factor, with this degree of incidence, could not be ignored in planning the remedial reading program. The ease of administration and the lack of subjectivity in the scoring system used in this study, are additional reasons for using the Bender as part of a battery used in selecting students for remedial reading programs. The knowledge of the existence of a personality deviation would certainly be of value to the teacher.

Implications for Research

Any study of this type always seems to raise more questions than are answered. Since this study was done in an area classified as socially and economically disadvantaged a replication of the investigation using youngsters from a more favored section of the population would seem to be in order. A repeat study of this type might answer the question as to why significance was obtained between one of the reading tests and size reduction and not with the others.

Another area open to study would be an analysis of the effect of intelligence on the incidence of a concurrent personality problem in a school system where classes are organized or grouped homogeneously using I.Q. as the basic criterion for differentiation. In this type of study the reading level of the materials being used should be checked. If the materials were too easy for the

group in general, a reading discrepancy might not be a reading problem as the individual would still be able to comprehend and have successful reading experiences, hence less chance of a personality problem developing.

A very basic study would be the determination of the change, if any, remediation of the reading problem would have on the individual's reaction to the Bender Gestalt.

BIBLIOGRAPHY

Association for Supervision and Curriculum Development, 1962 Yearbook Committee, Combs, A. W. Chairman. Perceiving, Behaving, Becoming: A New Focus For Education. Washington, D. C.: National Education Association, 1962.

Bateman, B. "Learning Disabilities--Yesterday, Today and Tomorrow." Exceptional Children, XXXI, No. 4 (December 1964), 167-177.

Bender, L. "A Visual-Motor Gestalt Test and its Clinical Use." Res. Monogr. Amer. Orthopsychiat. Asso., 1938, No. 3.

_____. Manual For Instruction and Test Cards for Visual-Motor Gestalt Test. New York: American Orthopsychiatric Association, 1946.

Betts, E. A. Foundations of Reading Instruction. New York: American Book Co., 1946.

Billingslea, F. Y. "The Bender Gestalt: an objective scoring method and validating data." J. Clin. Psychol. Monogr., 1948, No. 1.

_____. "The Bender-Gestalt: A Review and a Perspective." in B. I. Murstein (ed.) Handbook of Projective Techniques, pp. 703-736. New York: Basic Books Inc., 1965.

Buck, J. N. "The H-T-P Technique: A Qualitative and Quantitative Scoring Manual." J. Clin. Psychol. Monogr. Suppl., 1948, No. 5.

_____. Administration and Interpretation of the H-T-P Test. Beverly Hills, California: Western Psychological Services, 1950.

Byrd, E. "The Clinical Validity of the Bender-Gestalt Test with Children: A Developmental Comparison of Children in Need of Psychotherapy and Children

Judged Well Adjusted." in B. I. Murstein (ed.) Handbook of Projective Techniques, pp. 751-765. New York: Basic Books Inc., 1965.

Clawson, A. The Bender Visual-Motor Gestalt Test for Children: A Manual. Beverly Hills, California: Western Psychological Services, 1962.

Clymers, T. W. "Teaching Reading in the Elementary School." The Three R's Plus. Minneapolis, Minn.: University of Minnesota Press, 1956.

Delacato, C. H. The Treatment and Prevention of Reading Problems. Springfield, Ill.: Carl C. Thomas, 1959.

Edwards, A. L. Statistical Methods for the Behavioral Sciences. New York: Rinehart & Co., 1954.

Gates, A. I. The Improvement of Reading. New York: The Macmillan Company, 1936.

_____. Manual For the Gates Reading Survey. New York: Columbia University Press, 1960.

Gilmore, J. V. Gilmore Oral Reading Test. New York: Harcourt, Brace and World, 1951.

Goodenough, F. L. Measurement of Intelligence by Drawing. Yonkers: World Book Co., 1926.

Jastak, J. Manual for Wide Range Achievement Test. Wilmington: Charles Story, 1946.

Kleinman, B. "A Study of Factors Involved in the Reproduction of Bender Designs in Normal and Schizophrenic Subjects." (Unpublished doctoral dissertation, University of Oklahoma, 1955).

Koppitz, E. "The Bender Gestalt Test and Learning Disturbances in Young Children." J. Clin. Psychol., 1958, 14, 292-295.

_____. "The Bender Gestalt Test for Children: A Normative Study." J. Clin. Psychol., 1960, 16, 432-435.

_____. The Bender Gestalt Test for Young Children. New York: Grune & Stratton, Inc., 1964.

_____. "The Bender Gestalt Test and Learning Disturbances in Young Children." in B. I. Murstein (ed.) Handbook of Projective Techniques. pp. 767-773. New York: Basic Books Inc., 1965.

Maslow, A. H. Motivation and Personality. New York: Harper & Row Publishers, 1954.

Mesinger, J. F. "Emotionally Disturbed and Brain Damaged Children--Shall We Mix Them." Exceptional Children, XXXII, No. 4 (December, 1965), 237-240.

McWilliams, B. J. "The Language Handicapped Child and Education." Exceptional Children, XXXII, No. 4 (December, 1965), 221-228.

Rubinstein, E. A. "Personality Integration and the Perceptual Process." J. Clin. Psychol., 1954, 10, 23-29.

Schilder, P. Contributions to Developmental Neuropsychiatry, ed. Lauretta Bender, M. D. New York: International Universities Press, Inc., 1964.

Siegel, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company, Inc., 1956.

Simpson, W. H. "A Study of Some Factors in the Bender-Gestalt Reproductions of Normal and Disturbed Children." (Unpublished doctoral dissertation, University of Oklahoma, 1958).

Slossen, R. L. Slossen Intelligence Test for Children and Adults. East Aurora, New York: Slossen Educational Publications, 1963.

Spache, G. D. Toward Better Reading. Champaign, Illinois: Garrard Publishing Company, 1964.

Taylor, E. M. Psychological Appraisal of Children With Cerebral Defects. Cambridge, Massachusetts: Harvard University Press, 1961.

Walcutt, C. C. and Terman, S. Reading: Chaos and Cure. New York: McGraw-Hill Book Co., Inc., 1959.

APPENDIX I

READING TEST DATA

TABLE 7

READING TEST DATA
RAW SCORES

Student No.	Gates Voc.	Gates Comp.	W.R.R.	S.O.R.T.
1	21	16	48	110
2	3	3	21	23
3	0	4	23	45
4	6	2	25	56
5	10	9	33	52
6	10	10	36	53
7	14	11	36	86
8	15	13	40	95
9	18	21	42	85
10	23	26	43	112
11	26	16	47	130
12	20	13	47	103
13	22	20	47	130
14	25	29	56	132
15	21	19	56	126
16	24	27	44	107
17	29	27	58	152
18	29	21	56	151
19	14	10	38	61
20	23	17	42	90
21	25	22	37	113
22	20	20	59	136
23	17	23	46	96
24	24	18	41	82
25	19	16	43	94
26	29	27	36	92
27	28	22	47	120
28	20	20	57	136
29	24	25	50	144
30	31	21	72	147
31	28	24	66	76
32	28	25	44	117
33	27	21	63	142
34	28	24	66	149
35	26	21	52	124
36	10	9	29	63
37	2	4	36	45
38	14	11	48	83
39	0	2	18	21
40	11	7	37	73
41	6	0	25	34

(Table continued on next page)

TABLE 7--Continued

Student No.	Gates Voc.	Gates Comp.	W.R.R.	S.O.R.T.
42	2	0	24	30
43	1	0	25	25
44	16	14	39	84
45	21	17	42	102
46	24	17	42	97
47	15	13	46	99
48	16	18	39	91
49	11	8	28	43
50	12	11	21	29
51	18	19	43	80
52	19	21	36	63
53	15	12	40	93
54	18	18	59	128
55	20	12	46	102
56	16	8	36	73
57	1	5	40	84
58	12	4	37	81
59	23	22	44	94
60	23	15	39	97
61	2	2	26	43
62	14	14	43	94
63	16	8	36	64
64	2	0	20	30
65	9	4	28	50
66	8	3	35	64
67	17	11	37	52
68	19	11	37	83
69	28	22	56	126
70	20	13	44	100
71	21	3	51	114
Totals	1208	1001	2949	6300
Means	17.28	14.1	41.54	88.73
Variance	71.51	65.01	138.28	1240.91
Std. Dev.	8.46	8.06	11.76	35.23

TABLE 8

READING TEST DATA
RAW SCORES

Student No.	Gilmore		W.R.R.	S.O.R.T.
	Acc.	Comp.		
1	35	29	48	110
2	7	14	21	23
3	18	9	23	45
4	13	15	25	56
5	20	22	33	52
6	34	23	36	53
7	34	23	36	86
8	36	27	40	95
9	35	33	42	85
10	43	32	43	112
11	37	24	47	130
12	40	28	47	103
13	31	12	47	130
14	41	32	56	132
15	41	32	56	126
16	35	28	44	107
17*	..	..	..	...
36	28	29	29	63
37	26	17	36	45
38	25	24	48	83
39	7	19	18	21
40	27	30	37	73
41	16	24	25	34
42	15	20	24	30
43	12	14	25	25
44	36	24	39	84
45	36	23	42	102
46	29	15	42	97
47	36	31	46	99
48	32	23	39	91
49	18	28	28	43
50	16	15	21	29
51	24	24	43	80
52	23	31	36	63
53	30	18	40	93
54	33	29	59	128
55	28	28	46	102

*Students 17 thru 35 did not take the Gilmore test.

(Table continued on next page)

TABLE 8--Continued

Student No.	Gilmore Acc.	Gilmore Comp.	W.R.R.	S.O.R.T.
56	28	32	36	73
57	31	28	40	84
58	34	20	37	81
59	28	23	44	94
60	35	38	39	97
61	10	19	26	43
62	23	21	43	94
63	16	15	36	64
64	7	12	20	30
65	19	24	28	50
66	19	20	35	64
67	19	21	37	52
68	23	19	37	82
69	31	20	56	126
70	29	30	44	100
71	30	26	51	114
Totals	1378	1217	1976	4078
Means	26.5	23.4	38	78.42
Variance	91.55	42.0	100.3	1007.6
Std. Dev.	9.57	6.48	10.02	31.74

N = 52

TABLE 9

READING TEST DATA
GRADE PLACEMENT SCORES

Student No.	Gates		W.R.R.	S.O.R.T.
	Voc.	Comp.		
1	4.5	4.3	4.8	5.5
2	2.3	2.4	2.1	1.2
3	2.0	2.5	2.3	2.2
4	2.5	2.2	2.5	2.8
5	2.8	3.1	3.3	2.6
6	2.8	3.3	3.6	2.6
7	3.4	3.4	3.6	4.3
8	3.6	3.8	4.0	4.7
9	4.2	5.3	4.2	4.2
10	4.8	6.5	4.3	5.6
11	5.4	4.3	4.7	6.5
12	4.4	3.8	4.7	5.1
13	4.7	5.3	4.7	6.5
14	5.2	7.4	5.6	6.6
15	4.5	5.0	5.6	6.3
16	5.0	6.9	4.4	5.3
17	5.8	6.9	5.9	7.6
18	5.8	5.3	5.6	7.5
19	3.4	3.3	3.8	3.0
20	4.8	4.4	4.2	4.5
21	5.2	5.4	3.7	5.6
22	4.4	5.2	6.0	6.8
23	4.0	5.6	4.6	4.8
24	5.0	4.8	4.1	4.2
25	4.3	4.3	4.3	4.7
26	5.8	6.9	3.6	4.6
27	5.6	5.4	4.7	6.0
28	4.4	5.2	5.8	6.8
29	5.0	6.2	5.0	7.2
30	6.2	5.3	7.8	7.3
31	5.6	5.8	6.9	3.8
32	5.6	6.2	4.4	5.8
33	5.5	5.3	6.5	7.1
34	5.6	5.8	6.9	7.4
35	5.4	5.3	5.2	6.2
36	2.8	3.1	2.9	3.1
37	2.2	2.5	3.6	2.2
38	3.4	3.4	4.8	4.1
39	2.0	2.4	1.8	1.0
40	2.9	2.8	3.7	3.6

(Table continued on next page)

TABLE 9--Continued

Student No.	Gates Voc.	Gates Comp.	W.R.R.	S.O.R.T.
41	2.5	2.0	2.5	1.7
42	2.2	2.0	2.4	1.5
43	2.1	2.0	2.5	1.2
44	3.8	4.0	3.9	4.2
45	4.5	4.4	4.2	5.1
46	5.0	4.4	4.2	4.8
47	3.6	3.8	4.6	4.9
48	3.8	4.8	3.9	4.5
49	2.9	2.9	2.8	2.1
50	3.1	3.4	2.1	1.5
51	4.2	5.0	4.3	4.0
52	4.3	5.3	3.6	3.1
53	3.6	3.6	4.0	4.6
54	4.2	4.8	6.0	6.4
55	4.4	3.6	4.6	5.1
56	3.8	2.9	3.6	3.6
57	2.1	2.6	4.0	4.2
58	3.1	2.5	3.7	4.0
59	4.8	5.4	4.4	4.7
60	4.8	4.2	3.9	4.8
61	2.2	2.2	2.6	2.1
62	3.4	4.0	4.3	4.7
63	3.8	2.9	3.6	3.2
64	2.2	2.0	2.0	1.5
65	2.7	2.5	2.8	2.5
66	2.7	2.4	3.5	3.2
67	4.0	3.4	3.7	2.6
68	4.3	3.4	3.7	4.0
69	5.6	5.4	5.6	6.3
70	4.4	3.8	4.4	5.0
71	4.5	2.4	5.1	5.7
Totals	285.4	294.3	296.7	313.7
Mean G. P.	4.0	4.1	4.2	4.4

TABLE 10

READING TEST DATA
GRADE PLACEMENT SCORES

Student No.	Gilmore		W.R.R.	S.O.R.T.
	Acc.	Comp.		
1	4.5	4.9	4.8	5.5
2	1.6	2.0	2.1	1.2
3	2.8	1.1	2.3	2.2
4	2.2	2.2	2.5	2.8
5	3.0	3.5	3.3	2.6
6	3.9	3.3	3.6	2.6
7	4.4	3.7	3.6	4.3
8	4.5	4.5	4.0	4.7
9	4.5	5.7	4.2	4.2
10	5.3	5.5	4.3	5.6
11	4.6	3.9	4.7	6.5
12	5.0	4.7	4.7	5.1
13	4.1	1.7	4.7	6.5
14	5.1	5.5	5.6	6.6
15	5.1	5.5	5.6	6.3
16	4.5	4.7	4.4	5.3
17*	. .	. .	. .	. .
36	3.3	4.5	2.9	3.1
37	3.1	2.2	3.6	2.2
38	3.0	3.5	4.8	4.1
39	1.0	2.6	1.8	1.0
40	3.2	4.7	3.7	3.6
41	2.0	3.5	2.5	1.7
42	1.9	2.8	2.4	1.5
43	1.6	1.7	2.5	1.2
44	4.1	3.5	3.9	4.2
45	4.1	3.3	4.2	5.1
46	3.4	1.9	4.2	4.8
47	4.1	4.9	4.6	4.9
48	3.7	3.3	3.9	4.5
49	2.2	4.3	2.8	2.1
50	2.0	1.9	2.1	1.5
51	3.5	3.5	4.3	4.0
52	2.8	4.9	3.6	3.1
53	4.8	2.8	4.0	4.6
54	4.3	4.9	6.0	6.4

*Students 17 thru 35 did not take the Gilmore test.

(Table continued on next page)

TABLE 10--Continued

Student No.	Gilmore Acc.	Gilmore Comp.	W.R.R.	S.O.R.T.
55	3.8	4.7	4.6	5.1
56	3.8	5.5	3.6	3.6
57	4.1	4.7	4.0	4.2
58	4.4	3.2	3.7	4.0
59	3.8	3.7	4.4	4.7
60	4.5	8.5	3.9	4.8
61	1.9	3.0	2.6	2.1
62	3.3	3.3	4.3	4.7
63	2.6	2.2	3.6	3.2
64	1.6	1.7	2.0	1.5
65	2.8	3.9	2.8	2.5
66	2.9	3.2	3.5	3.2
67	2.9	3.3	3.7	2.6
68	3.3	3.0	3.7	4.0
69	4.1	2.8	5.6	6.3
70	3.9	5.1	4.4	5.0
71	4.0	4.3	5.1	5.7
Total	180.9	193.2	197.7	202.8
Av. G. P.	3.5	3.7	3.8	3.9
Gates Totals on the Same 52 subjects				
Total	188.0	191.7		
Av. G. P.	3.6	3.7		

APPENDIX II

SIZE CONSTRICTION DATA

TABLE 11

BENDER VISUAL-MOTOR GESTALT TEST
SIZE CONSTRICTION DATA

Student No.	Figure A	1	2	3	4	5	6	7	8	Total +
1	-	-	-	-	-	-	-	-	-	0
2	+	-	+	+	+	+	+	+	+	8
3	+	+	+	-	+	-	+	+	-	6
4	+	+	+	+	+	+	+	+	-	8
5	-	+	+	-	+	-	+	-	-	4
6	-	-	+	+	-	-	-	-	-	2
7	-	-	-	+	+	+	+	-	+	5
8	-	-	-	-	-	-	-	+	-	1
9	-	-	+	+	-	-	+	-	-	3
10	+	-	+	+	+	-	+	+	+	7
11	-	-	-	-	-	-	-	-	+	1
12	-	+	+	+	+	-	+	-	-	5
13	-	-	+	+	+	-	-	-	-	3
14	-	-	-	-	-	-	+	-	+	2
15	+	+	-	+	+	-	+	+	-	6
16	-	+	-	+	-	+	+	+	+	6
17	-	-	+	-	-	-	+	-	-	2
18	-	+	+	+	-	-	+	+	-	5
19	+	+	+	+	+	-	+	+	-	7
20	+	+	+	+	-	-	+	+	-	6
21	+	+	+	+	-	-	-	+	-	5
22	-	+	+	+	+	+	+	+	+	8
23	+	+	+	+	-	-	+	+	-	6
24	+	+	+	-	-	-	+	+	-	5
25	+	+	+	+	-	-	-	+	+	6
26	-	+	+	+	-	-	-	+	-	4
27	+	+	+	-	-	-	+	+	-	5
28	+	+	+	-	+	+	+	+	-	7
29	+	+	-	+	-	+	-	+	+	6
30	+	+	-	+	-	-	-	+	+	5
31	+	+	+	+	+	-	+	+	-	7
32	+	+	-	+	-	-	-	-	-	3
33	+	+	+	+	+	-	-	-	-	5
34	-	-	-	+	+	-	+	+	+	5
35	-	+	-	-	-	-	-	-	-	1
36	+	+	+	+	-	+	-	-	+	6
37	+	+	+	+	+	-	-	+	+	7
38	+	+	+	+	-	-	-	+	+	6

(Table continued on next page)

TABLE 11--Continued

Student No.	Figure A	1	2	3	4	5	6	7	8	Total +
39	+	+	-	+	+	-	-	-	+	5
40	+	+	+	+	-	-	+	+	-	6
41	+	+	+	+	-	+	+	-	-	6
42	+	+	+	+	+	-	+	+	-	7
43	-	+	+	+	+	+	+	+	-	7
44	+	-	+	+	+	+	-	-	-	5
45	-	-	+	+	+	-	-	+	+	5
46	+	+	-	-	+	-	-	+	-	4
47	+	+	-	-	+	+	+	-	-	5
48	+	+	+	+	+	-	+	+	-	7
49	-	+	+	+	-	+	+	-	-	5
50	-	+	+	+	+	+	+	+	+	8
51	+	+	+	-	-	+	+	+	+	7
52	+	+	-	-	-	-	+	+	-	4
53	+	-	+	+	-	-	-	+	+	5
54	+	+	+	+	+	+	+	+	+	9
55	+	+	+	+	-	-	+	+	+	7
56	+	+	+	+	+	-	-	+	-	6
57	+	+	+	+	-	-	-	+	-	5
58	+	-	+	-	+	-	+	-	+	5
59	+	-	+	-	-	-	+	+	+	5
60	+	-	-	+	-	-	-	+	+	4
61	+	-	-	+	+	-	+	+	-	5
62	-	-	-	-	-	-	-	+	+	2
63	-	-	-	+	-	-	-	-	-	1
64	+	+	+	+	+	+	+	-	+	8
65	+	+	+	+	-	-	+	+	-	6
66	+	+	+	+	+	+	+	+	+	9
67	+	+	+	+	+	+	+	+	+	9
68	-	+	+	+	+	-	+	+	-	6
69	+	+	-	+	+	+	+	+	+	8
70	+	+	+	+	-	+	+	-	+	7
71	+	+	+	+	+	+	+	+	+	9
+ TOTALS	47	50	50	53	34	22	45	48	30	

Note: A plus (+) sign indicates the presence of size constriction and a minus (-) indicates the absence of the characteristic.

TABLE 12

READING TEST AND BENDER GESTALT TEST DATA
PRESENCE OR ABSENCE OF
READING RETARDATION OR SIZE CONSTRICTION

Student No.	Gates	Gilmore	W.R.R.	S.O.R.T.	B.V.M.G.
1	+	+	+	-	-
2	+	+	+	+	+
3	+	+	+	+	+
4	+	+	+	+	+
5	+	+	+	+	+
6	+	+	+	+	-
7	+	-	-	-	+
8	+	+	+	-	-
9	+	-	+	+	-
10	+	+	+	+	+
11	+	+	+	-	-
12	+	+	+	+	+
13	+	+	+	-	-
14	-	+	-	-	-
15	+	+	+	-	+
16	+	+	+	+	+
17	+	.	+	-	-
18	+	.	+	-	+
19	+	.	+	+	+
20	+	.	+	+	+
21	+	.	+	+	+
22	+	.	-	-	+
23	+	.	+	+	+
24	+	.	+	+	+
25	+	.	+	+	+
26	+	.	+	+	-
27	+	.	+	+	+
28	+	.	-	-	+
29	+	.	+	-	+
30	+	.	-	-	+
31	+	.	+	+	+
32	+	.	+	+	-
33	+	.	-	-	+
34	+	.	-	-	+
35	+	.	+	+	-
36	+	+	+	+	+
37	+	+	+	+	+
38	+	+	+	+	+

(Table continued on next page)

TABLE 12--Continued

Student No.	Gates	Gilmore	W.R.R.	S.O.R.T.	B.V.M.G.
39	+	+	+	+	+
40	+	+	-	+	+
41	+	-	-	+	+
42	+	+	+	+	+
43	+	+	+	+	+
44	+	+	+	+	+
45	+	+	+	-	+
46	+	+	+	+	-
47	+	+	+	-	+
48	-	+	+	-	+
49	+	+	+	+	+
50	-	+	+	+	+
51	+	+	+	+	+
52	+	+	+	+	-
53	-	+	-	-	+
54	+	+	-	-	+
55	+	+	+	-	+
56	+	+	+	+	+
57	+	+	+	+	+
58	+	+	+	+	+
59	+	+	+	+	+
60	+	+	+	+	-
61	+	+	+	+	+
62	+	+	+	-	-
63	+	+	+	+	-
64	+	+	+	+	+
65	+	+	+	+	+
66	+	+	+	+	+
67	+	+	+	+	+
68	+	+	+	+	+
69	+	+	+	-	+
70	+	+	+	+	+
71	+	+	-	-	+
+ TOTALS	67	49	59	47	55

Note: A plus (+) indicates the presence of a reading disability of at least one years retardation in reading from expectancy; also indicative of size constriction of at least five of the nine figures of the Bender Gestalt Test. A minus (-) indicates the basence of the characteristics of size constriction or reading retardation.

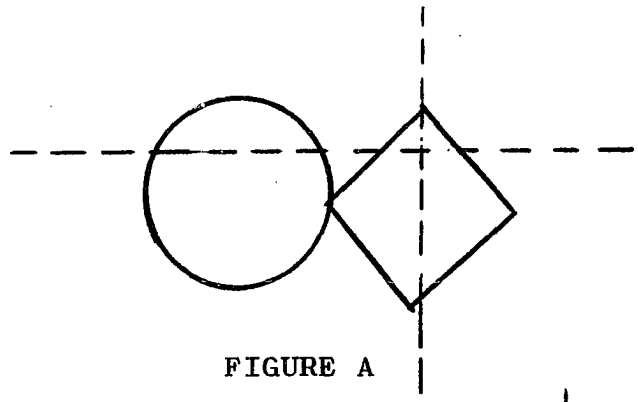


FIGURE A

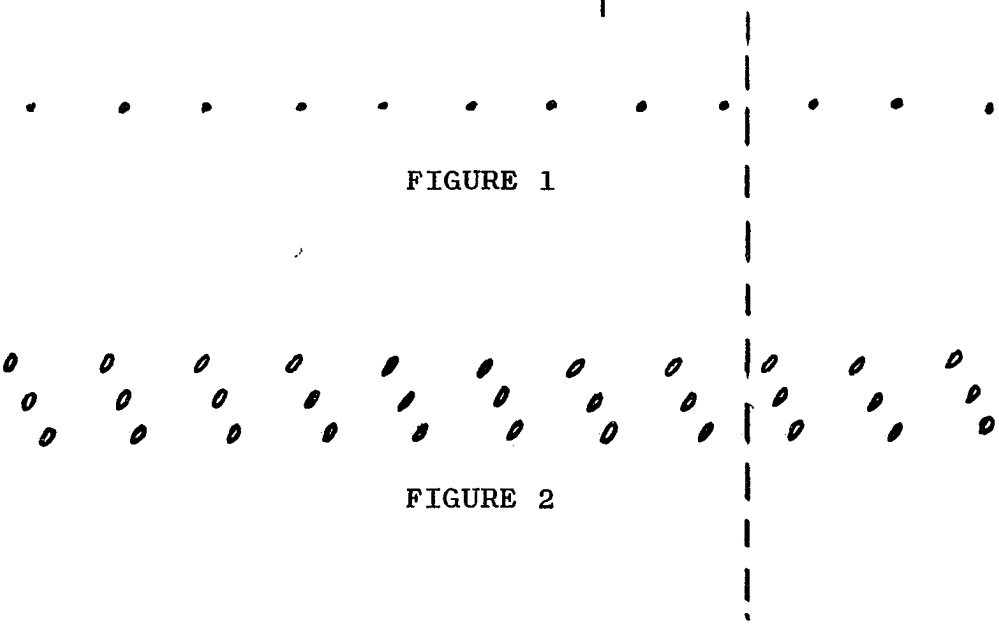


FIGURE 1

FIGURE 2

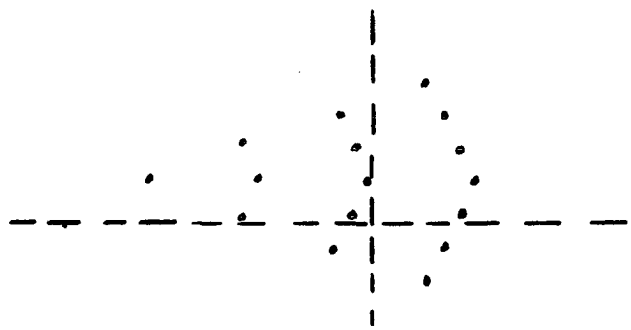


FIGURE 3

Figure 2.--Bender Gestalt Figures with Critical Dimensions Indicated by Dotted Lines

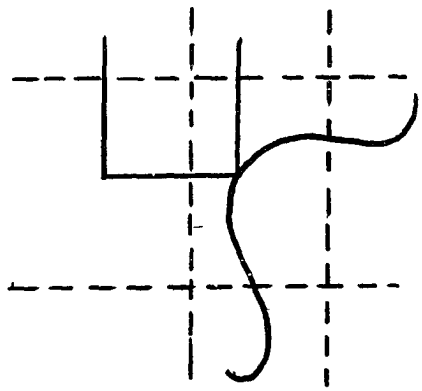


FIGURE 4

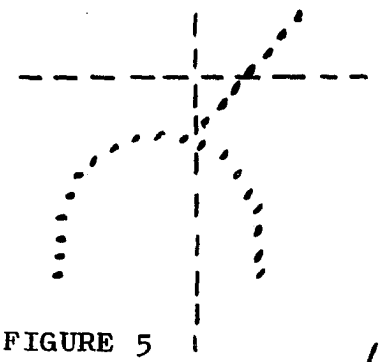


FIGURE 5

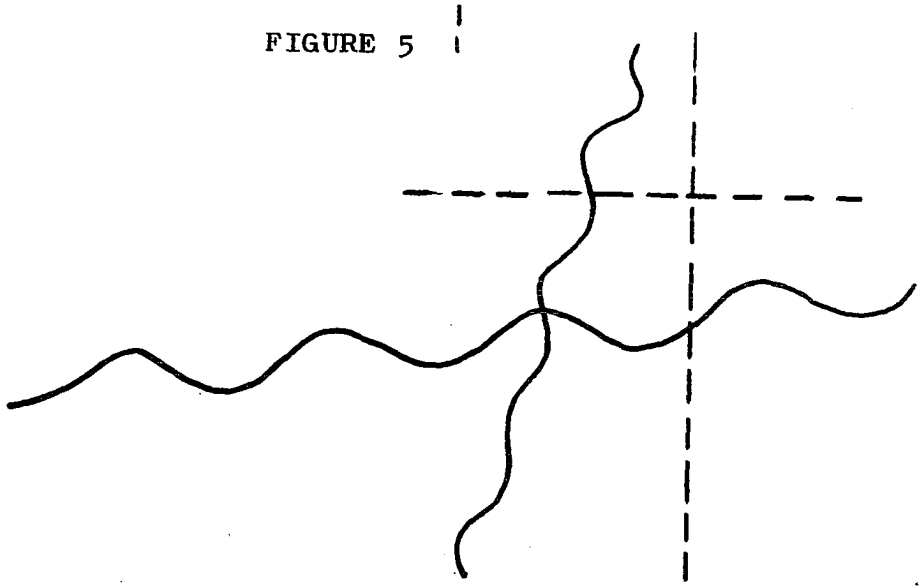


FIGURE 6

Figure 2.--Bender Gestalt Figures with Critical Dimensions Indicated by Dotted Lines (Cont'd)

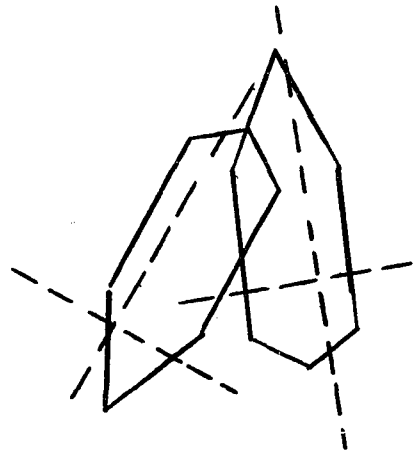


FIGURE 7

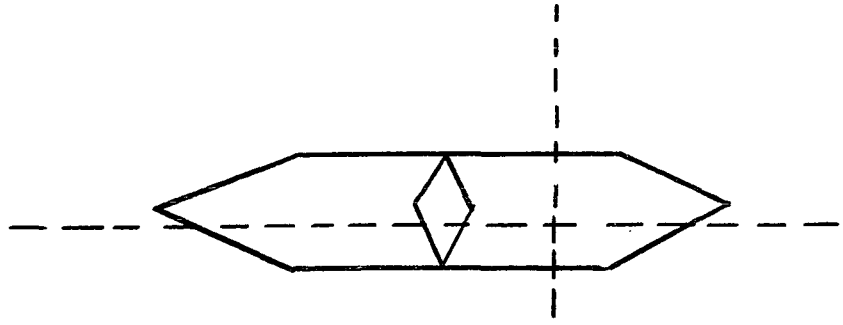


FIGURE 8

Figure 2.--Bender Gestalt Figures with Critical Dimensions Indicated by Dotted Lines (Cont'd)

APPENDIX III

2 x 2 CONTINGENCY TABLES

TABLE 13

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE S.O.R.T.-B.V.M.G.

	Reading Disability No	Yes	Total
Size Reduction			
Yes	17	38	55
No	8	8	16
Totals	25	46	71

Note: The chi square value corrected for continuity was 7.4104. The .01 level of significance was met.

TABLE 14

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE GATES-B.V.M.G.

	Reading Disability No	Yes	Total
Size Reduction			
Yes	3	52	55
No	1	15	16
Totals	4	67	71

Note: Fishers Test of Exact Probability yielded a value of .783. A probability of .05 or less was needed for significance.

TABLE 15

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE GILMORE-B.V.M.G.

	Reading Disability No	Yes	Total
Size Reduction			
Yes	3	37	40
No	1	11	12
Totals	4	48	52

Note: Fishers Test of Exact Probability yielded a value of .776. A probability of .05 or less was needed for significance.

TABLE 16

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE W.R.R.--B.V.M.G.

	Reading Disability No	Yes	Total
Size Reduction			
Yes	10	44	54
No	1	16	17
Totals	11	60	71

Note: Fishers Test of Exact Probability yielded a value of.196. A probability of .05 or less was needed for significance.

TABLE 17

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE S.O.R.T.-B.V.M.G. I.Q.'s BELOW 100

	Reading Disability No	Yes	Totals
Size Reduction			
Yes	11	33	44
No	4	6	10
Totals	15	39	54

TABLE 18

OBSERVED FREQUENCIES OF READING DISABILITY AND SIZE REDUCTION ON THE S.O.R.T.-B.V.M.G. I.Q.'s 100 AND OVER

	Reading Disability No	Yes	Totals
Size Reduction			
Yes	6	5	11
No	4	2	6
Totals	10	7	17

TABLE 19

OBSERVED FREQUENCY OF READING DISABILITY AND SIZE REDUCTION ON THE GATES-B.V.M.G. I.Q.'s BELOW 100

	Reading Disability No	Yes	Totals
Size Reduction			
Yes	1	43	44
No	0	10	10
Totals	1	53	54

TABLE 20

OBSERVED FREQUENCY OF READING DISABILITY AND SIZE REDUCTION ON THE GATES-B.V.M.G. I.Q.'s 100 AND OVER

	Reading Disability No	Yes	Totals
Size Reduction			
Yes	2	9	11
No	1	5	6
Totals	3	14	17

APPENDIX IV

READING EXPECTANCY TABLES

TABLE 21

READING EXPECTANCY DATA

Student No.	Years In School	Binet IQ	Grade Level Reading expectancy
1	4.5	109	5.9
2	3.5	97	4.4
3	3.5	75	3.6
4	3.5	80	3.8
5	5.5	96	6.3
6	4.5	109	5.9
7	3.5	98	4.4
8	5.5	83	5.6
9	4.5	100	5.5
10	5.5	109	7.0
11	5.5	103	6.7
12	6.5	85	6.5
13	5.5	96	6.3
14	5.5	101	6.5
15	5.5	104	6.7
16	5.5	99	6.4
17	6.5	101	7.5
18	6.5	95	7.2
19	6.5	85	6.5
20	7.5	85	7.3
21	6.5	86	6.6
22	6.5	88	6.7
23	7.5	81	7.1
24	7.5	87	7.5
25	6.5	82	6.3
26	6.5	93	7.0
27	7.5	85	7.4
28	6.5	85	6.5
29	6.5	95	7.2
30	6.5	95	7.2
31	6.5	115	8.5
32	6.5	95	7.2
33	6.5	88	6.7
34	6.5	115	7.5
35	6.5	96	7.2
36	4.5	92	5.1
37	5.5	77	5.2
38	5.5	100	6.1
39	2.5	116	3.9

(Table continued on next page)

TABLE 21--Continued

Student No.	Years In School	Binet IQ	Grade Level Reading expectancy
40	3.5	99	4.6
41	2.5	97	3.4
42	3.5	87	4.0
43	4.5	78	4.5
44	4.5	101	5.5
45	6.5	77	5.7
46	5.5	97	6.3
47	5.5	84	5.6
48	3.5	118	5.1
49	6.5	90	6.9
50	3.5	84	3.9
51	4.5	99	5.5
52	5.5	98	6.4
53	3.5	100	4.5
54	4.5	100	5.6
55	5.5	91	6.0
56	5.5	83	5.5
57	5.5	89	5.9
58	5.5	98	6.4
59	6.5	91	6.9
60	7.5	98	8.4
61	4.5	81	4.6
62	4.5	97	5.4
63	5.5	91	6.0
64	4.5	81	4.7
65	6.5	90	6.9
66	6.5	85	6.5
67	6.5	97	7.3
68	6.5	84	6.5
69	5.5	106	6.8
70	6.5	97	7.3
71	5.5	91	5.9