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PSYCHOLOGICAL INFORMATION TO TEACHERS AND ITS
EFFECT ON STUDENT ACHIEVEMENT

By

MARGERY LEVERN ROBINSON

Bachelor of Science
Oklahoma City University
Oklahoma City, Oklahoma
1951

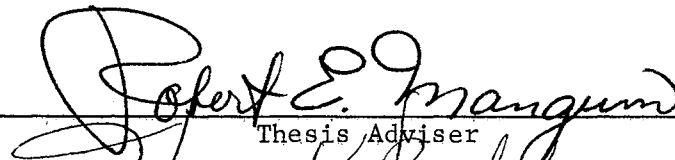
Master of Science
Fort Hays Kansas State College
Hays, Kansas
1964

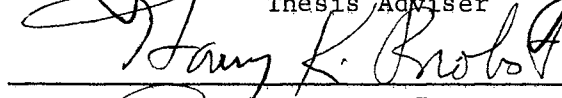
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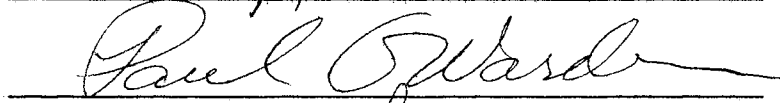
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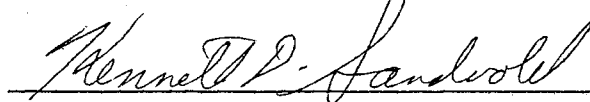
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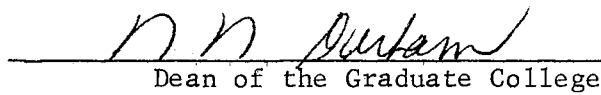
Thesis Approved:


Thesis Adviser








Dean of the Graduate College

873438

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TO ALL CHILDREN

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CHAPTER I

THE PROBLEM

Introduction

One persistent question since the Thayer Conference in 1954 has been the question of the role or the function of School Psychologists, which has yet to be defined (Pielstick, 1970). One of the psychologist's many roles, the one in which most spend a large share of their time, is psychological assessment. This role is seen by both psychologists and teachers as a very important one (Kirschner, 1971; Flax and Anderson, 1966). However, no experimental studies were found in which the effect of psychological reports to teachers upon achievement was measured.

The school psychologist's role as a consultant has been examined carefully (Fischer, 1967; Mannino, 1969; Berkowitz, 1968; Losen, 1964; Farnsworth, 1966; Newman, 1967) and almost all models of school psychology view the psychologist-teacher relationship as the center for effective service. Studies have shown the amount of personal contact a psychologist has with the teacher is directly related to positive attitudes toward psychological services (Lucas and Jones, 1970; Baker, 1965). Bardon (1965) has indicated that supervisors of school psychological services felt that school psychologists should work more with those who influence children rather than with individual children.

In actual practice, the psychologist-pupil ratio is such that it is impossible to work with many individual children, but he could have a wider influence by working through the teachers. Only one example was found (Trione, 1967) in which the achievement of students was measured as a result of psychologist-teacher consultations.

The school psychologist can find many articles defining his role as perceived by various authors but in none is the effectiveness of the psychologist in this preferred role measured in an objective way. Accountability in the area of school psychology is not yet upon us. However, little is known about the best use of a psychologist's time in the area of pupil change. This study is an attempt to measure only one aspect of the work of the psychologist.

Statement of the Problem

Some psychological reports are mere reporting of facts in the terminology of the discipline. Some reports are given in terms of educationally relevant concepts. In some places the psychologist mails the report to the teacher after testing the child. In other places the psychologist meets with the teacher to discuss the report and test results. Does it make any difference in the child's academic achievement the manner in which the psychologist writes the reports and disseminates this information?

This study will investigate two types of psychological reports and the manner in which the information within the reports is disseminated. The effect of these reports will be measured by student's achievement on the Metropolitan Achievement Tests (MAT). Teachers will receive information about their referrals from the school psychologist in

different ways that are compared. The study will examine the child's academic test scores as a result of the report.

Need for the Study

Despite all the literature attention to consultation, many school psychologists seem unresponsive to the interpersonal dimensions of their functioning, preferring to operate out of a narrow, insulated tester-reporter model. The psychological reports historically have been quite enigmatic, yet many school psychologists still seem content for the report to represent their main contact with the teacher. The 'hit and run' school psychologist, who tests and weeks later sends a jargonish report, is more prevalent than one would like to admit (Fine and Tyler, 1971).

Does it really make any difference to the child whether a report is sent in such a 'hit and run' manner, or if the psychologist takes time to consult with the teacher? The teacher may have a better attitude toward the psychologist, but what is the effect on the child?

At present there have been very few measures of the influence of the school psychologist indirectly through the teacher on the child's achievement. Ojemann and Wilkinson (1939) measured achievement as one of their dependent variables as a result of appraising the teacher of personality and environmental data of the students. These students made a significant academic gain over the control group. Hoyt (1955) also measured achievement as one effect of teacher knowledge of pupil characteristics and found no effect. Other studies have measured variables other than achievement, such as attitudes and self-concept (Anderson, 1955; Coppersmith, 1969).

Although goals other than achievement are stated for education in general, achievement, meaning mastery of subject content, is still one of the major goals. School psychologists are inextricably involved with all the goals of education, and achievement in particular. Since referrals come through teachers and principals, most of the children referred are having academic difficulty.

This study is an attempt to separate these different types of reports to the teacher to see if there is an effect on the achievement of the child. It is felt that the reporting in psychological jargon which leaves the teacher puzzled as to what action to take has been prevalent too long in school psychology. It may also indicate that reports, in and of themselves, have no value in improving academic learning. If they are not, then a search for methods to be used other than reports should follow.

It is acknowledged by the writer that pupil change as a result of learning can affect many aspects of behavior other than achievement. However, these other traits will not be measured in this study. It is also acknowledged that achievement is not the only variable to measure teacher competency and is perhaps not the most valid measure, and so no inferences of this nature are intended. But, even so, achievement of students is still an important educational goal.

Definition of Terms

Referral

This term will refer to the process of the teacher filling out the referral form, standardized for this school system, with reference .

to a particular child, and sending this form through the prescribed channels. This form goes from the teacher to the principal then to the psychologist. Most referrals are teacher initiated because she is dissatisfied with the progress of the child in academic or social areas. The referral can also be initiated by any school personnel who has contact with the child, such as the school nurse, speech therapist, reading specialist, or principal. On occasion the parent or child's physician has requested a referral be initiated. All of the subjects of this study were referred by their teacher. The referral form may be examined in Appendix A.

Diagnosis

Diagnosis is the ordering of data for purposes of understanding degrees of behavioral events. Diagnostic work-ups should lead to insights, which provide hypotheses upon which remedial, compensatory or preferential treatment may be based. Differential diagnosis in school psychology is still in its nascent stage but advances are being made.

The school psychologist is expected to identify mental retardation, indications of organicity for medical referral, degrees of personality or behavioral disorders, educational disabilities and be competent to provide direction for guidance in remediation, alleviation, or accommodation.

This diagnosis is of no value unless communicated to those who can use the information for rearranging the child's environment in such a way as to remedy, compensate or in some way alleviate the situation to help the child.

Psychological Report

Communication of the diagnostic work-up is most often given in a psychological report. Outlines of the two types used in this study can be found in Appendix B and C. Since the school psychologist must communicate with personnel who have had minimal psychological training the use of clinical terms or labels should be minimal with a greater use of behavioral descriptive terms.

Making a diagnosis implies a legal responsibility. Many states have legislated the services of the school psychologist. These legal responsibilities are recognized in the conduct of this experiment, in the verbal communication with teachers and the written report. Every effort has been made to preserve the rights of the individual students involved.

Achievement

Achievement in this study will mean the raw scores obtained on the Metropolitan Achievement Tests, Elementary, Form F (Copyrighted 1971, Harcourt Brace Jovanovich, Inc.). The raw scores on the Total Reading and the Total Mathematics sections will be used as the dependent variables.

Teachers

The term Teacher(s) will be applied to those persons who are employed to teach a group of students in a public school classroom. The pronoun 'she' will usually be used because the majority of the third grade teachers in this study are females.

Feedback

The term Feedback will be restricted in this study to mean the type of psychological report given, or not given. Also included in the term is the manner of communication whether by written report only, written report plus consultation, or no communication or feedback given.

Major Assumptions

One of the main assumptions is that organismic variables will be equalized by the random assignment of students to treatments. There is also the assumption all the students are samples of a normal population. An important underlying assumption is the tests administered will not bias student outcomes as their administration will be done under standardized conditions for each.

The teachers were aware this was a study, however, they did not know its exact nature, or was it expected their normal classroom performance would be changed by this knowledge. They are accustomed to the appearance and disappearance of specialized help and also that their expectations are not always met. Although teachers were asked for the referral, this was the time of year the third grade teachers usually refer and it was expected those selected students were ones she had already been considering for referral.

Limitations of the Study

This study was limited to one primary grade level in one urban school system. It is felt the study can be generalized to all the

primary grades within that system.

Since each teacher in this study had all three treatment levels it could be hypothesized that it would affect her treatment of all three referred students as well as her class as a whole. While this is a possibility, it would be rare that all three referrals would be of exactly the same nature, therefore they would require differential treatment. With the time limitation of a teacher in a classroom any special help given to one student would require less time given to others. It is doubtful that a teacher would generalize to a classroom of students specific recommendations worked out for one child.

The organismic variables, such as the socio-economic factor and parental influences will not be considered. It is felt these are randomized by the assignment. It is also known that the psychologist can influence the child's environment by parental consultations as well as teacher consultations. This would constitute a vital area to be studied but will not be considered in this study.

There are other areas of influence on the child that could be considered, such as self-esteem, attitudes and feelings of control. At present our tools for measuring these variables are not highly reliable, however, these variables should be investigated but would require a separate study.

CHAPTER II

RELATED LITERATURE

Introduction

People influence people. School psychologists are people, teachers are people, students are people. Each is influencing the other. The question arises as to the quality and quantity of this influence. Herein lies the difficulty. Delineation of the variables to be measured and the measurement tool is the topic of many studies.

In this study the subject of measurement is the student. He is measured by a variety of instruments, some highly reliable, some with moderate reliability. It is through measurement of the subject that influences both direct, via the teacher-student interaction, and indirect, via the teacher-psychologist interaction, will be assessed,

The covariate will be the student's intelligence. The dependent variables will be his achievement in reading and mathematics. Each of these variables will be discussed.

Achievement

In 1946 Wadsworth pleaded "give teachers the facts about pupils". The results were supposed to increase understanding and thereby facilitate achievement. The studies that have been done in this area have produced conflicting results. Doyle (1971) found when teachers over

estimated the student's I.Q. the student achieved more. There is the familiar study by Rosenthal and Jacobson (1968) which reported increased achievement in students who were perceived by their teacher to have greater potential than was actually measured. This effect was also found by Conn (1968) and Flowers (1966) but they both felt other variables, such as the student's ability to perceive and interpret subtle, non-verbal communications of emotions, were more related to the results than actual content of communication. They stated that positive expectations do not necessarily lead to positive results for all students. Ojemann and Wilkinson (1939) found that teachers' understanding of students' motives, attitudes and environmental conditions along with consultation with the psychologist produced greater academic gains. They proclaimed the need for teachers to understand all her students, not just the 'problem' children.

Beggs and Mayer (1970) found the teachers' awareness of the student's I.Q. did not influence her rating of the student's over-all achievement. The only influence was in her assignment of I.Q. scores to her students. Hoyt's (1955) results indicated you can increase teacher knowledge of her students but that does not increase academic achievement. The only improvement found was in the attitude of the students toward the teachers. Anderson (1955) felt improvement of attitudes of the teacher toward the pupils would influence achievement, but the results of his study did not verify this. Ahlem (1962) found that teachers' knowledge of pupil characteristics and background did not affect classroom climate. Pitt (1956) did a study related to Rosenthal's, in that he gave teachers correct I.Q.s and incorrect I.Q.s, both higher and lower. He found the teachers' knowledge of I.Q.

was not related to scores on achievement tests nor to the teachers' marks given to the students. He also found teachers' knowledge of I.Q. was not related to conduct, effort, nor to the student's attitude toward himself or toward the teacher. Dudley (1970) found communication of achievement test scores to students and/or teachers had no effect on later achievement test results.

These findings are conflicting and confusing. If giving test results to the teachers does not change achievement or attitudes, what can be a change agent? Will a change of teacher behavior result in student achievement? Widell (1969) found no change in the student's achievement after working with teachers in a micro teach-reteach method which changed their teaching behavior. However, Trione (1967) found that long term consultations between the school psychologist and fourth grade teachers brought about measurable teacher change which in turn increased the student's reading achievement. Barclay (1970), using micro-consultation procedures with school psychologists and teachers, found that changes in the consultation process had many favorable outcomes, but the most interesting is the gain in academic achievement of the teachers' students. High self-esteem seems to be a factor which proves to be a self-fulfilling prophecy and increased academic achievement is associated with these feelings more than with I.Q. (Coppersmith, 1969).

Perhaps more techniques should be developed to foster this attitude toward oneself that is such a powerful motivator. This positive self-esteem is not usually fostered in boys by their teachers. Boys constitute the greater percentage of referrals to the school psychologist. Boy's 'masculine' behavior is not tolerated by the typical

teacher and he is the recipient of more blame in the classroom than the female (Meyer and Thompson, 1956).

Ginott (1972) discusses these self-esteem factors in his chapter on "Tales of Motivation". Although he does not cite experimental studies he gives clear examples and directions for increasing achievement by reducing fear in the students and increasing appreciative behavior in the teacher.

Although Bandura (1969) cites few examples of achievement change as a result of behavior modification he does discuss many studies relating to behavior change in the areas of increased self-esteem. His book is filled with techniques that can be used to produce a change in behavior which could in turn increase motivation toward academic achievement.

Morgan (1952) found several variables that relate positively to academic achievement. The first is maturity and seriousness of interest; second, awareness of and a concern for other people; third, a sense of responsibility; fourth, dominance, persuasiveness and self-confidence; and fifth, the motivation to achieve. Turney (1931) states the two major factors in school achievement are interest and motivation.

Achievement of students is an important variable since one of the major goals of education is achievement. Whenever a student is experiencing difficulty whether it be in the academic, social or personality areas of his life, it is reflected in lowered academic achievement. The most frequently stated reason for psychological referrals by the teacher is the low achievement status of the student, whether accompanied by behavior problems or not. She is very concerned

with academic outcomes and, therefore, as part of the school milieu, so is the school psychologist.

Achievement and Intelligence

It is a known fact that there is a relationship between I.Q. and achievement. Popenoe (1927) found a correlation coefficient between A.Q., achievement quotient, and I.Q., intelligence quotient, ranging between $r .23$ and $r .60$. This is not surprising since Binet's original intent was to develop an instrument to determine which children in France were in need of special education. He made no claims for measuring a fixed, innate, culture-free determinant of behavior. The intelligence test is still our best predictor of academic success, for that was its purpose, and hence, there should be a high correlation with that of achievement tests.

An interesting note is that the discrepancy between achievement and latent ability is greater in the more intelligent (Jastak, 1938). Brown (1931) states the relationship of achievement to mental ability depends not so much on the level of intelligence as upon the position of that level within the group receiving instruction. This would appear to relate to self-concept rather than actual intellectual level. Wilson (1926) contends pupils of the lower quartile do classwork closer to possible achievement than do those in the middle or high quartiles. He finds the higher quartile falls below its possible achievement more as the mental age increases. Because of the known correlation it is possible some factors that operate to depress achievement scores may also act to depress intelligence scores, while other variables, such as self-esteem and interest may be the factors working in the higher

quartiles. Lewis' (1944) study confirms these findings. However, achievement tests relate more accurately to intelligence than they do to teachers' marks (St. John, 1930).

In a large study done at the Kennedy Memorial Hospital (Black, 1971), it was found that there was no significant effect of intelligence on level of reading retardation for those referred. Hence, intelligence is not the only factor to be investigated by the school psychologist.

It appears many factors are involved in the learning process with intelligence and achievement being only two. Learning is a change in behavior and that involves more than losses or gains on an achievement test. Unfortunately we do not have very satisfactory instruments at present for measuring these other areas. Studies attempting to evaluate teacher competence and effectiveness by use of the criterion of pupil change have produced contradictory and inconsistent results. Effectiveness is a multi-dimensional factor. The study of teacher effectiveness must assume the possibility of different kinds of effectiveness for different kinds of teachers, pupils, programs or situations (Ackerman, 1954). This acknowledgment is kept in mind in this study, but achievement is the only dimension that will be used to measure the effectiveness of the various reporting techniques of the school psychologist when communicating with teachers.

Types of Feedback

The word feedback is in common usage and had its beginning with teaching machines and the computer age. However, the word has a variety of meanings and usages. Only those pertaining to student

achievement will be considered here. Bridgeman (1971) tried a unique experiment in which he told students directly of their success, failure, or no information on a previous test. The 'successes' or 'failures' were randomly assigned. It was found the feedback of 'success' produced significantly higher scores on a subsequent test. This again refers to the self-esteem concept and the self-fulfilling prophecy. There was a delay in both feedback and retesting in Bridgeman's experiment. In Sweet and Ringness' (1971) study they gave immediate feedback to the student in terms of correctness of the item, or correctness plus money, or standard test conditions, while administering the WISC. This feedback did not improve achievement with any group except lower-class white children.

In another study (Lovett, 1971) with feedback of responses directly to students and their knowledge of behavioral objectives it was found that increasing feedback alone had no effect on achievement. Increasing knowledge of the step by step objectives alone decreased achievement. The only factor that increased achievement was the knowledge of what the terminal behavioral objectives were. It would appear that terminal behavior objectives should then be communicated by the school psychologist to the teacher and through her to the child if his consulting is to be effective in regard to achievement. Wentling (1971) worked with students on three feedback levels, knowledge of number of correct responses, knowledge of correctness of response, and no knowledge of results, with criterion-referenced and norm-referenced evaluation. He found that knowledge of correctness on criterion-referenced evaluation produced the greatest achievement as well as the best retention. It helps to have a well defined goal and know you are progressing

toward it.

Pinsky (1970) gave both students and teachers continuous feedback on achievement of the students throughout one school year then tested for post and retentive achievement and did not find this monitoring and feedback increased achievement. Mikulas (1970) found immediate feedback to students on items on tests to self correct had a great effect in producing changes. Verbal feedback appears to have a calming effect but does not communicate as accurately as written feedback (Forster, 1966). This indicates school psychologists might be wise to use both the written and personal form of communicating with teachers and to give them information on the student as rapidly as possible. In a study on the kinds of information about students preferred by teachers it was found that the training of the teacher gives her greater perspective in perceiving and evaluating environmental stimuli (Runkel and Damrin, 1967). Consultations with teachers is a form of training and can increase the teacher's perceptions of the student.

The Role of Psychological Communication

The role of the school psychologist is as varied as the jobs available and depends on his position, hence guidelines cannot be set by others (Pielstick, 1970). However, Fine and Tyler (1971) have found several major concerns which are rather universal. These are the psychological report, prescriptive teaching and behavior modification. These concerns can be met by either an in-school psychologist or one operating from a nearby clinic (Silberberg and Silberberg, 1971). Since effectiveness increases as cooperation with school personnel increases (Roberts, 1952) then direct communication is one way to obtain

cooperation. This should be the major concern of the psychologist regardless of the place of employment.

Lack of contact with the school psychologist has been cited by teachers as their major source of dissatisfaction (Lucas and Jones, 1970). Contact is the route to meeting the teacher's needs and indirectly the child's needs. Teachers can become an effective tool for the psychologist's work with children (McDonald, 1968). There can never be enough psychologists for each school's problems. However, teacher training can multiply the efforts of one psychologist (Trione, 1967). This means more time spent with teachers and less in diagnosis and individual therapy. Values, attitudes and behavior of teachers can be changed even under brief exposure to change conditions brought about by the psychologist (Rokeach, 1971).

Survey studies have been done to determine what are the actual functions of school psychologists and what are desirable or ideal functions. When comparisons are made between the views of the psychologists and those of other school personnel it appears quite similar. Flax and Anderson (1966) found psychologists spend a great deal of time in testing and test interpretation. Kirschner (1971) found supervisors of school psychological services viewed the functions of consultant, researcher, diagnostician and prescriptive recommendation the major roles desired of school psychologists. Teachers saw the role of the psychologist as testing, interpreting results, suggesting areas of remediation and behavioral management (Lucas and Jones, 1970). Comparing the views of both psychologists and other school personnel, Yaffe (1966) found high agreement between them upon the importance of the psychologist as a consultant, therapist and tester. It appears there

is a major emphasis upon diagnosis throughout the surveys.

The diagnosis is usually summed in a psychological report. Rucker (1967) researched the terminology used in psychological reports and found the terms could lead to much misunderstanding since they were not understood equally by teachers and by other psychologists. Since the ratio of psychologists to teachers is at least 200:1 it seems logical for the psychologist to state his meanings in clearly understood language. But more than just test scores need to be communicated since Gray (1965) found student test results given to teachers were used less than any other information and had no classroom use as far as program development was concerned.

One of the reasons that a psychologist administering an individual test to a student has been so successful has been because he has not looked to the test for dimensions of intelligence, but for a sampling of behavior. The difficulty he has met arose when others have required that he quantify his results. Psychologists have never found the I.Q. as helpful as the observations and analysis of the test behavior and of the processes the subject utilized to produce the behavior. In the psychological report and in consultation with the teacher these observations need to be emphasized with an equal de-emphasization of the I.Q. (Zach, 1966).

The expectations of the role of school psychologist, his diagnosis, reports, consultations and implementations, places him at the leading edge of efforts to use what is known about child development and behavior. He needs to know what has been found to be effective in environmental conditions within which children attain maximum development. What is only surmised, he needs to research. The school

psychologist is in a position to continually question and test methodology in education. It is time we assessed the value of various types of reports to teachers in effecting changes in the child. This study is needed and should contribute to the field in that it researches a school practice that has been prevalent for many years without experimental substantiation.

Summary

The various studies investigating the relationship of the kinds of information given to teachers and the effect of this information upon student academic achievement is inconclusive. Yet this dissemination of information to the teachers either in a psychological report or in conference has been the main activity of school psychologists. A few studies have been done investigating the effects of conferences with teachers and also the effect of these conferences upon student achievement. These studies, too, have produced conflicting results. A student's achievement appears to be influenced by many variables and the teacher or psychologist may be able to manipulate only a few.

Intelligence is one factor known to have a direct correlation with achievement. Whether this correlation exists as a direct result of the tests themselves or there is some independence has never been conclusively established. However, because of the known correlation the intelligence factor will be used as a covariate in this study to increase sensitivity to actual achievement changes.

There is a large body of literature on feedback or the evaluation of performance and its effect on achievement. The research indicates that immediacy of feedback when the terminal objectives are known does

influence performance in a positive direction. This procedure could be used by both psychologists and teachers in their work to change behavior.

A psychologist is expected in most school systems to do diagnostic evaluations of students to help others understand student academic needs and to help the school provide programs best suited to those needs, whether it be within the regular classroom or in a specialized class. Little is known through research what the most effective methods are in meeting various student problems. One of the ways psychologists have been working is to evaluate the student and express this evaluation through a psychological report. This procedure has not been examined for its effectiveness. Because many variables are involved, not only the report but how the information is utilized as well as the effectiveness of the recommended programs, it is not a simple direct relationship. However, this is an area needing research and will require many related studies to examine all the variables.

CHAPTER III

RESEARCH METHODOLOGY AND PROCEDURES

Introduction

This study was conducted within one school district in the State of Alaska. This particular school system was selected because of the familiarity of the faculty and administration with the researcher. Time is necessary to establish trust and a working relationship between a school psychologist and other school personnel. By using a familiar system, time was saved as well as better cooperation was achieved with faculty members. This system is in an urban area and serves children of a predominately middle socio-economic range.

The third grade level was selected because usually more referrals are made at the primary level than at later school years. Also children at this grade level are more accustomed to the school environment and the assistance of other school personnel than students at earlier grade levels.

Teachers selected the students who were referred for this study. This was an attempt by the writer to keep the study as close to an actual school situation as possible. In fact, many of the referrals were already on the waiting list prior to the study. A copy of the request letter to the teachers can be found in Appendix D. It would be rare for the psychologist to initiate a referral. Referrals are usually

based on the concern of the teacher for the child in either the cognitive or affective areas or both.

Sample

The sample for this study consisted of thirty-nine third grade students. In this school system there are a total of thirteen third grade classes. Each of the thirteen teachers were asked by letter to select three students that had been causing her concern and whom she would like to have evaluated by the psychologist. Some of the selected students had previously been referred by the teacher but had not yet been evaluated. This selection method was used because it most closely fits the typical referral procedure whereby referrals originate from the teacher. The letter form is found in Appendix D.

The thirteen teachers presented a variety of experience in education. They averaged 13.7 years of teaching experience ranging from 3 to 43 years with an average of 7.5 of those years teaching the third grade, ranging from 2 to 23 years. Ten of the thirteen had Bachelor degrees with 4 to 72 hours of credit past the degree. This averaged 29.6 credits past the Bachelor degree. Three had Master degrees with only one of the three having credit, 6 hours, past the degree.

Group Treatments

The three selected students from each teacher were randomly assigned into one of three groups. The three groups were then randomly assigned to one of three treatment levels. Therefore, each teacher had one subject in each of the treatment levels. There was a total of thirteen subjects in each of the treatment levels.

Each of the thirty-nine selected students were administered a battery of diagnostic tests. This battery consisted of the following.

Wechsler Intelligence Scale for Children (WISC):

The WISC consists of 12 subtests, of which two are to be used either as alternate or as supplementary tests. The subtests are grouped into a Verbal and a Performance Scale as follows:

Verbal Scale	Performance Scale
1. General Information	6. Picture completion
2. General Comprehension	7. Picture Arrangement
3. Arithmetic	8. Block Design
4. Similarities	9. Object Assembly
5. Vocabulary (Digit Span)	10. Coding (or Mazes)

Raw scores on each subtest are transmuted into normalized standard scores within the subject's own age group. These subtest scale scores are expressed in terms of a distribution with a mean of 10 and a standard deviation of 3 points. The scaled subtest scores are added and converted into a deviation I.Q. with a mean of 100 and a standard deviation of 15. Verbal, Performance and Full Scale I.Q.s can be found by the same method.

Split-half reliability coefficients are reported for each subtest of the WISC, as well as for Verbal, Performance and Full Scale Scores. These reliabilities were computed separately within the 7½, 10½ and 13½ year-old sample of 200 cases each. The Full Scale reliability coefficients for the three age levels were .92, .95 and .94. The corresponding reliabilities for the Verbal Scales were .88, .96 and .96, for the Performance Scale they were .86, .89 and .90. Standard error of measurement of the three I.Q.s range from 3.00 to 5.61 I.Q. points.

A different picture is presented by the subtest reliabilities. A

few of these coefficients are in the .50s. Most are evenly distributed in the .60s, .70s and .80s. Only the Vocabulary yielded a coefficient in the .90s.

The WISC compares favorably with other individual intelligence scales in the quality of its test-construction procedures (Anastasi, 1969).

Bender Visual-Motor Gestalt Test:

The Bender consists of nine figures which are presented one at a time and which the subject is asked to copy on a blank piece of paper. Dr. Lauretta Bender points out that the perception and the reproduction of the Gestalt figures are determined by biological principles of sensory motor action and vary depending on (a) the growth pattern and maturation level of an individual and (b) his pathological state either functionally or organically induced.

The Bender Gestalt Test may be interpreted in a clinically developmental approach and as a projective test. There are over 130 books and studies dealing with this test. The writer used the objective scoring system developed by Elizabeth M. Koppitz.

The Developmental Bender Scoring System as developed by Koppitz consists of 30 mutually exclusive scoring items which are scored as present or absent. All scorings are added into a composite score. Since the Bender Test is scored for errors, a high score indicates a poor performance while a low score reflects a good performance.

Each scoring item was validated against achievement on the Metropolitan Achievement Tests. Scorer reliability ranged from .88 to .96. The test reliability was done by test-retest since split-half and

alternate form method are not appropriate with this test. The correlations between the two testings were found to be statistically significant at the .001 level (Koppitz, 1963).

Goodenough-Harris Draw-A-Man Test:

In the Goodenough-Harris Drawing Test the individual is simply instructed to "make a picture of a man; make the very best picture that you can." Emphasis is placed on the child's accuracy of observation and on the development of conceptual thinking, rather than on artistic skill. Credit is given for the inclusion of individual body parts, clothing detail, proportion, perspective and similar features. A total of 73 scorable items were selected on the basis of age differentiation, relation to total scores on the test, and relation to group intelligence test scores. Point scores are transmuted into standard scores with a mean of 100 and a standard deviation of 15.

The reliability coefficients for test-retest was .68 and split-half reliability was .89. Interscorer reliability was .90 and intrascorer reliability was .94. Correlations with other intelligence tests vary widely but the majority are over .50 (Anastasi, 1969).

Frostig: Developmental Test of Visual Perception (DTVP):

The DTVP is composed of five subtests, each tapping a distinct and specific type of perceptual ability and to assess its developmental level, the abilities being operationally defined by the subtests measuring them. These five perceptual areas were chosen because of their relationship to preschool and early elementary academic performance. These subtests are (1) Eye-Motor Coordination (16 items);

Figure-Ground (8 items); (3) Form Constancy (17 items); (4) Position in Space (8 items) and (5) Spatial Relationships (8 items).

The rationale for the subtests evolved from Frostig's own clinical observations. The manual gives clear directions for administration. The test yields three types of scores (a) Perceptual Age (PA) for each of the 5 subtests; (b) Scale Scores, which are PA divided by CA and multiplied by 10; and (c) the Perceptual Quotient (PQ) which is a deviation score, normalized with a median of 100 and a quartile deviation of 10.

Test-retest reliabilities for the subtests range from .27 to .74. The global reliability for the PQ was .98. Split-half reliabilities for the subtests range from .35 to over .90 and for the total score from .78 to .89 (Buros, 1972).

Wepman Test of Auditory Discrimination (ADT):

The ADT purports to identify those children from 5 to 8 years of age with auditory discrimination deficits. There are two forms of the test, each of which contains 40 items comprising 40 three- to five-letter word pairs of the consonant-vowel-consonant variety. On each form the vowel or vowel sound is identical in 36 of the word pairs. Thirteen releasing consonants and thirteen arresting consonants differ, while ten word pairs are identical as false positive choices. The words for each pair were matched for: (a) familiarity, as determined by position in the Lorge-Thorndike list, (b) membership in the same phonetic category, and (c) length. Vowel comparisons were based on parts of the tongue raised, height of tongue, and position of lips.

The test is administered individually and requires only several

minutes. A period of practice precedes the test. When the child understands the task, the test is given with the child's back to the examiner. The examiner reads the word pairs and the child indicates whether the words in each pair are the same or different.

The score achieved is determined by the number of errors the child makes in calling words which are different identical (X-score). Errors in calling identical words different are counted only to determine whether the test results should be considered valid (Y-scores). Inadequate auditory discrimination is indicated when 5-year-old children make more than 6 errors; 6-year-olds, more than 5 errors; and children 8 years old and older, more than 3 errors.

A test-retest coefficient is reported as .91. Calculation of phoneme difficulty on the two forms resulted in a rank order correlation of .67. Information on the relation between test results and intelligence ($r = .32$), articulatory disorders and reading disability is reported as indicators of validity (Buros, 1972).

Illinois Test of Psycholinguistic Ability (ITPA):

The ITPA was developed by Samuel A. Kirk, James J. McCarthy and Winifred D. Kirk based upon a model of the communication process proposed by C. E. Osgood. The model purported to analyze the individual's communication with the environment and with other individuals in terms of channels, levels of organization and processes. The ITPA was designed to tap what were considered the more important combinations-- primarily, combinations that would contrast the "representational" and the "automatic" levels, "Auditory-vocal" and "visual-motor" channels and, at the "representational" level, "decoding", "associational", and

"encoding" processes. The revised edition, in addition to the above measures "visual-motor automatic" and "auditory-vocal automatic" functions.

The revised ITPA is intended to assess intraindividual differences in psycholinguistic ability. It is restricted to ages 2 to 10 years of age. There are 10 to 12 subtests: (1) Auditory Reception; (2) Visual Reception; (3) Visual Sequential Memory; (4) Auditory Association; (5) Auditory Sequential Memory; (6) Visual Association; (7) Visual Closure; (8) Verbal Expression; (9) Grammatical Closure; (10) Manual Expression; (11) Auditory Closure (optional); (12) Sound Blending (optional). These subtests each yield a raw score and together a total raw score. The subtests raw scores are converted to scale scores and age scores. The total converts to a psycholinguistic age (PLA).

This test requires at least one hour to administer and it is not unusual for it to last one and one-half hours. The examiner requires extensive training before using this instrument. It is a test of language, perception and short term memory skills rather than of intelligence and is a unique tool for diagnosing school learning difficulties.

It was standardized on average intelligence, middle-class children. Since the standardization sample is restricted the authors report both the obtained reliabilities and estimates of the reliabilities for the full range of intelligence. There are 12 subtests and a composite at each of the 8 age levels, resulting in 104 internal consistency coefficients. Of the 104 uncorrected reliabilities, 51 fall below .80; 23 below .70; and 15 above .90. The corresponding numbers for the corrected-for-range estimates are 15, 6 and 40, respectively. The

tests appear to be reasonably reliable at each age level.

As a measure of stability, a retest after a five- to six-month interval yielded reliabilities for the 12 subtests ranging from .12 to .86 with a median of .50. The corrected-for-range estimate ranged from .28 to .90, with a median of .71. The retest correlations for the Composite score are .83, .70 and .70, respectively, for 4-year, 6-year, and 8-year olds. The test has moderate reliability and the profiles are fairly stable (Buros, 1972).

Informal Assessment of Eye, Hand and Foot Dominance :

This assessment is done by the writer as one form of behavior description. It is not a standardized test and was devised by the writer as a quick screening device.

The child is observed while writing and then asked to throw and catch a lightweight paper ball with one hand. This is to observe hand dominance. For foot dominance the child is asked to kick the same ball after catching it. The "game" is played several times. For eye dominance two checks are made along with any observed unusual head tilting during the tests. Overlapping hands are held out in front of the child with elbows stiff. A hole is left between the overlapping thumbs on his hands. The child raises the stiffened arms to "look" at the examiner through this hole. The other check is for the child to look through a "telescope" made by his hands held adjacent forming a tube by curling the fingers.

The results of this battery of tests were then compiled into a psychological report for each student. Also included in the reports was pertinent information gained by reviewing the student's cumulative

and confidential files as well as a personal interview with the student.

The three treatment levels were:

1. A written psychological report sent to the teacher via the school mail system reporting the testing results in the form of scores and interpretation in psychological terminology.

2. A written report, given to the teacher by the psychologist in consultation, in which the results of the tests are reported. In this report a recommendation section was added in which the child's learning characteristics and curriculum prescriptions for the teacher were given in educationally relevant terminology.

3. No report was given to the teacher. To avoid the teacher's concern over the control or 'left-out' child, which could cause her to work harder with that child. The psychologist, when questioned, explained the report was not yet complete. The teachers knew the time factor the psychologist was working under and it was assumed they would surmise the psychologist just ran out of time before completion of all the reports.

These reports, consultation and reports, or no reports were given to the teachers at the beginning of the second semester of the school year. At the end of the second semester all the subjects were administered the Metropolitan Achievement Tests--Elementary, Form F. Data for 38 of the 39 subjects were obtained.

A complete psychological report, including recommendations, for each of the 39 students was left with the Superintendent of this school system at the end of the diagnostic testing. These reports were available to each principal upon demand in case a crisis situation developed

with any subject in the study and the report would be needed. None of the reports were needed.

After the Metropolitan Achievement Tests had been administered to each subject the teachers were asked to complete a questionnaire (Appendix F) concerning their perception of their students' problems, the students' achievement, their own service and training, and their perception of the study. When this had been completed every teacher received a complete report on all the referred students. Therefore, at the end of the study a complete diagnostic report, with recommendations, was available for each subject in the study.

An outline of the written psychological report used in Treatment 1 can be found in Appendix B. The consultation process involved in Treatment 2 was a face-to-face discussion between the psychologist and the teacher. This was done in a positive manner in which the teacher was given supportive statements about her work. Curriculum and/or behavioral guidelines were worked out jointly, as well as terminal behaviors for the student. Step by step expectations of student behavior, including choices he could make and ways the teacher could give feedback as to his progress were delineated in this teacher-psychologist consultation process. The focus of each meeting was to establish various ways to help the student to be as independent and self-approving as possible. An outline of the consultation session is found in Appendix E.

Since no two student referrals are identical neither is the diagnosis and recommendation. Each student's tests had differing variations which in turn caused the reports to vary. The psychologist used several approaches in the recommendations.

Some of the kinds of differing recommendations were charting assignment completion with contingent rewards, changes in curriculum level assignment, specialized instructional materials for specific problem areas, use of special service personnel for specific tutoring, parent-teacher conferences to enlist parental aid in some areas, and specific teacher behaviors that would aid the child's feeling of self-worth and autonomy. All recommendations used one or more of these procedures, none used all of them.

In a one conference situation, as this study used, it is difficult to do more than suggest the use of the recommended procedures. These were modified in conference by the teacher's feeling of competency with the suggested procedures. Those teachers interested in learning new techniques were given a brief summary, some teachers were quite familiar with all the procedures suggested.

Type of Data Analysis

The results were analyzed by a one-way analysis of covariance to see if there was a significant difference among treatments. The design used the full scale I.Q. score obtained by the Wechsler Intelligence Scale for Children as the covariate. The two dependent achievement variables were the total reading raw score and the total mathematics raw score as obtained on the Metropolitan Achievement Tests-Elementary, Form F. The use of the intelligence covariate makes the design more sensitive to actual achievement increases. The randomization of students to treatments should randomize the intelligence factor, however, it is known there is a common or shared variance between what our tests measure as intelligence and what our tests measure as achievement. By

holding constant this common variance it will indicate more subtle achievement changes.

Hypotheses

1. It is hypothesized there is no significant difference, at the .05 level of confidence, among the students' reading achievement for treatment 1, in which teachers are given a written psychological report of student characteristics as defined by test scores, and students' reading achievement in treatment 2, in which teachers are given a written psychological report of the students' learning functions and educational prescriptions discussed in consultation, and students' reading achievement in treatment 3, in which no report of any kind is given the teacher.

2. It is hypothesized there is no significant difference, at the .05 level of confidence, among the students' mathematics achievements for treatment 1, in which teachers are given a written psychological report of student characteristics as defined by test scores, and students' mathematics achievement in treatment 2, in which teachers are given a written psychological report of the student's learning functions and educational prescriptions discussed in consultation, and students' mathematics achievement in treatment 3, in which no report of any kind is given the teacher.

CHAPTER IV

RESULTS

Experimental Aims

The aim of this study is to investigate the effect of psychological reports given to teachers upon the academic achievement of the referred students. The students were referred to the school psychologist by the teacher. Since testing and report writing consume much of the psychologists time, this study investigates the types of reports and manner of report dissemination in terms of student achievement.

Procedure

Every third grade teacher in one school district in Alaska referred three children to the psychologist for evaluation and recommendation. (Form in Appendix A.) There were thirteen teachers from three elementary schools yielding thirty-nine students for this study. The referrals and student testing for evaluation was done at the end of the first semester of the school year.

The three students from each teacher were randomly assigned to one of three groups. The groups were then randomly assigned to treatments. Hence each teacher had all three treatment levels.

Each of the thirty-nine students were administered a battery of tests. These tests were the Wechsler Intelligence Scale for Children,

Goodenough-Harris Draw-A-Man, Bender Visual-Motor Gestalt Test, Frostig: Developmental Test of Visual Perception, Illinois Test of Psycholinguistic Abilities, Wepman Auditory Discrimination Test, and an informal assessment of lateral dominance.

Psychological reports were written for each student. For those in Treatment 1, the report was a reporting of performance and scores with interpretation couched in psychological terminology (Appendix B). These reports were given to each teacher via the school mail system. The reports were sent to the principal, who called each teacher in to read the reports, which were then filed. She has access to these files at all times.

For the students in Treatment 2, the reports were similar except for the addition of a recommendation section which delineated activities that could be done either in classroom, via outside specialists or in the home, or any combination of the three (Appendix C). These reports were written but a personal conference was also held with each teacher in which the test results as well as teacher observations were discussed and the final decisions were the result of joint effort. An outline of the general nature of these conferences is found in Appendix D.

For students in Treatment 3, the control group, no feedback at all was given to the teachers until after the administration of the Metropolitan Achievement Tests the first week of May, near the end of the second semester. At this time complete reports, including recommendations in educationally relevant terms, were mailed to the teachers for these students. Also included was the recommendation section to be added to the reports for those students in Treatment 1.

The first week in May, thirty-eight students were administered the Metropolitan Achievement Tests--Elementary, Form F. One student had transferred out of the state during the semester and was unavailable for testing. The Metropolitan Achievement Tests are a battery of seven tests with a summation score for total reading and total mathematics. The seven tests are:

1. Word Knowledge
2. Reading
Total Reading (1 + 2)
3. Language
4. Spelling
5. Mathematic Computation
6. Mathematic Concepts
7. Mathematic Problem Solving
Total Mathematics (5 + 6 + 7).

These are group tests and are administered in several sessions over a period of a few days. Scores are obtained by transmuting the raw score to standard scores, percentiles, grade equivalents or stanines.

The MAT are designed to evaluate what is being taught in today's schools. Therefore, the development of content for the tests depended upon analysis of current curricular materials. The tests were standardized on representative national samples. The split-half reliability coefficients for the beginning of grade 4 are as follows: Word Knowledge .94, Reading .96, Total Reading .96, Language .93, Spelling .96, Mathematic Computation .88, Mathematic Concepts .90, Mathematic Problem Solving .91, Total Mathematics .96 (Metropolitan Achievement Tests, Teachers Handbook).

Statistics

Table I lists the student's full scale I.Q. scores as obtained by the Wechsler Intelligence Scale for Children and the raw scores for Total Reading and Total Mathematics as obtained by the Metropolitan Achievement Tests.

The Analyses of Covariance were computed using the I.Q. score as the covariate and the total reading raw score as one dependent variable and the total mathematic raw score as the other dependent variable. Analysis of Covariance was the statistic used because even though the I.Q. means for each group are nearly identical, there is a correlation between intelligence and achievement, hence the within-groups variance of the adjusted measures is less than that of the unadjusted measures so the precision of the experiment is increased. The .05 level of probability was used to judge the statistic associated with each hypothesis. Because the hypotheses were not directed, the two-tailed test of significance was employed.

Null Hypothesis Number 1. It is hypothesized there is no significant difference among students' reading achievement for treatment 1, in which teachers are given a written psychological report of student characteristics as defined by test scores, and students' reading achievement in treatment 2, in which teachers are given a written psychological report of the students' learning functions and educational prescriptions discussed in consultation, and students' reading achievement in treatment 3, in which no report of any kind is given the teacher.

Table II shows the Analysis of Covariance with regard to reading scores. There was no significant difference found among treatments for

TABLE I
INDIVIDUAL DATA

School	Teacher	Treatment	I.Q.	Total Reading	Total Mathematics
1	1	1	98	--	--
1	1	2	100	28	39
1	1	3	88	71	34
1	2	1	118	52	53
1	2	2	95	61	61
1	2	3	96	57	39
1	3	1	88	37	37
1	3	2	107	62	54
1	3	3	106	26	59
1	4	1	101	31	50
1	4	2	89	22	38
1	4	3	93	43	57
1	5	1	104	32	49
1	5	2	91	45	56
1	5	3	115	51	60
2	6	1	96	34	29
2	6	2	112	36	51
2	6	3	91	43	42
2	7	1	93	18	26
2	7	2	102	36	34
2	7	3	109	33	40
2	8	1	95	23	37
2	8	2	69	25	27
2	8	3	90	41	68
3	9	1	98	34	50
3	9	2	99	39	39
3	9	3	98	01	17
3	10	1	110	80	74
3	10	2	108	51	52
3	10	3	80	22	28
3	11	1	99	41	62
3	11	2	93	40	23
3	11	3	105	25	18
3	12	1	93	38	31
3	12	2	93	64	53
3	12	3	98	34	36
3	13	1	102	69	75
3	13	2	120	71	90
3	13	3	93	34	33

Means :		I.Q.	Reading	Mathematics
	Treatment 1,	99.7500	40.7500	47.7500
	Treatment 2.	98.3077	44.6154	47.4615
	Treatment 3.	97.0769	37.0000	40.8461

TABLE II
ANALYSIS OF COVARIANCE--READING

Sources of Variation	df	YY	Sum of Squares Due to Regression	Sum of Squares About Regression	df	Mean Sum of Squares	F
Treatment (between)	2	376.9883					
Error (within)	35	10299.3281	1106.3879	9192.9375	34	270.3804	
Treatment + Error (Total)	37	10676.3164	1158.7107	9517.6055	36		
Difference for Testing Adjusted Means				324.6680	2	162.3340	0.600

$$F_{(\text{Calculated}, 2, 34)} = 0.600 < F_{(\text{Tabulated}, p .05, 2, 34)} = 3.28$$

This Analysis of Covariance was done by an IBM 360 Computer at the Oklahoma State University Computer Center using the BMDO4V program.

reading achievement, hence the null hypothesis is accepted.

Null Hypothesis Number 2. It is hypothesized there is no significant difference among the students' mathematics achievement for treatment 1, in which teachers are given a written psychological report of student characteristics as defined by test scores, and students' mathematics achievement in treatment 2, in which teachers are given a written psychological report of the students' learning functions and educational prescriptions discussed in consultation, and students' mathematics achievement in treatment 3, in which no report of any kind is given the teacher.

Table III gives the Analysis of Covariance with regard to the mathematics scores. There was no significant difference found among treatments for mathematics achievement, hence the null hypothesis is accepted.

Table IV shows the treatment means, adjusted means and adjusted standard error for both dependent variables investigated.

Table V shows the table of coefficients for both dependent variables. The t-values were significant at the .001 level indicating the existence of a linear relationship between Intelligence and Reading and Intelligence and Mathematics.

It was found there was no significant difference among treatments for reading achievement. Also no significant difference was found among treatments for mathematics achievement. Due to non-significant results no post hoc comparisons were made.

TABLE III
ANALYSIS OF COVARIANCE--MATHEMATICS

Source of Variation	df	YY	Sum of Squares Due to Regression	Sum of Squares About Regression	df	Mean Sum of Squares	F
Treatment (between)	2	390.6875					
Error (within)	35	9701.1875	2320.9780	7380.2070	34	217.0649	
Treatment + Error (Total)	37	10091.8750	2473.8728	7618.0000	36		
Difference for Testing Adjusted Treatment Means				237.7930	2	118.8965	0.548

$$F_{(\text{Calculated}, 2, 34)} = 0.548 < F_{(\text{Tabulated}, p .05, 2, 34)} = 3.28$$

TABLE IV
MEANS, ADJUSTED MEANS, AND STANDARD ERRORS

<u>Reading</u>			
Treatment Number	Treatment Mean	Adjusted Mean	Standard Error Adjusted
1	40.7500	39.9848	4.7618
2	44.6154	44.6340	4.5605
3	37.0000	37.6876	4.5732
<u>Mathematics</u>			
Treatment Number	Treatment Mean	Adjusted Mean	Standard Error Adjusted
1	47.7500	46.6418	4.2666
2	47.4615	47.4886	4.0862
3	40.8461	41.8420	4.0976

TABLE V
COEFFICIENTS FOR READING AND MATHEMATICS

<u>Reading</u>			
Source	Coefficients	Standard Error	t-value
Treatment (between)	1,3450		
Error (within)	0.5435	0,2687	2.0229
Treatment + Error (total)	0,5529	0,2641	2,0935
<u>Mathematics</u>			
Source	Coefficients	Standard Error	t-value
Treatment (between)	2.5498		
Error (within)	0.7871	0.2407	3.2699
Treatment + Error (total)	0.8079	0.2363	3.4192

CHAPTER V

SUMMARY, CONCLUSIONS AND DISCUSSION

Summary

The primary purpose of this research was to investigate the effectiveness of different types of psychological reports and the manner of communicating the reports to teachers upon student achievement.

The three experimental treatments were:

1. A written psychological report couched in psychological terminology sent to the teachers through the school mail system.
2. A written psychological report with educationally relevant recommendations given to teachers in personal consultation.
3. No report given to teachers.

Thirty-nine students were referred to the psychologist by thirteen third grade teachers. The thirteen teachers comprised the total third grade teacher population of this school system. Each teacher selected three students each, which were randomly assigned to one of three groups and then the groups were randomly assigned to treatments. The thirty-nine subjects were administered a battery of diagnostic tests. The diagnostic work-ups were summarized in a psychological report. This was done at the beginning of the second semester of the school year.

The treatments were then applied, that is, the feedback was given to the teacher in the three forms stated above. No further contact was

made with these students or teachers until the end of the semester. At that time the subjects, thirty-eight instead of thirty-nine because of the transfer of one subject, were administered the Metropolitan Achievement Tests battery.

The independent variable in this study was the type and method of dissemination of psychological reports which was applied once at the beginning of the second semester. The dependent variables were the raw scores in reading and mathematics obtained on a standardized achievement test at the end of the semester. The covariate used was the student's I.Q. as determined by the full scale score on the WISC. This was used to hold constant the intelligence factor which is known to vary with achievement.

A one-way Analysis of Covariance was the statistical treatment used to compare the three treatment groups to determine if there was a significant difference among them.

Conclusions

On the basis of this research and subject to the specified limitations, the first null hypothesis stated in Chapter III was accepted. That is, there was no significant difference, at the .05 level of confidence, among the students' reading achievement for treatment 1, in which teachers were mailed a written psychological report, and students' reading achievement in treatment 2, in which teachers were consulted on an educational prescriptive report, and students' reading achievement in treatment 3, in which no feedback about the student was given.

The second null hypothesis stated in Chapter III was also accepted. There was no significant difference, at the .05 level of confidence, among the students' mathematics achievement for treatment 1, in which teachers are given a written psychological report of student characteristics as defined by test scores, and students' mathematics achievement in treatment 2, in which teachers are given a written psychological report of the students' learning functions and educational prescriptions discussed in consultation, and students' mathematics achievement in treatment 3, in which no report of any kind is given the teacher.

The two hypotheses were accepted as a result of the F statistics obtained by two one-way Analysis of Covariance and the adjusted achievement means of the three treatment groups.

Discussion

The inability to find statistical differences among treatments in this study does not rule out the possibility that the school psychologist can influence academic achievement indirectly through the teacher. However, with this experimental design it was not evident. The study was designed to replicate as closely as possible the usual working practices of the majority of school psychologists.

Another reason for no significant difference is the degree of similarity among the treatments with regard to actual time spent with the teacher by the psychologist. This time factor varied only one hour. In Treatment 1 no personal time was given to the teacher. In Treatment 1 communication was limited to reading a psychological report. With Treatment 2 the personal communication was restricted to a one-hour, one time conference. In Treatment 3 there was no communication between

the teacher and the psychologist. It is possible that a greater time differential might have been effective in producing differences.

Verdun Trione (1967) found he could influence not only teacher behavior change but through the teacher secure an increase in reading achievement for her students. However, he had an average of 15.5 consultation sessions with each teacher over a full school year.

Another reason for the possible lack of significant differences among treatments is the measurement instrument for the dependent variables, the Metropolitan Achievement Tests. These are standardized tests, using national norms, and as such are gross screening devices. They would not indicate subtle changes in achievement. The MAT are highly reliable instruments constructed to tap general curriculum skills. Perhaps a more sensitive instrument would be one designed especially for the particular school system in which it is used. This instrument would contain more items based on local objectives and curriculum content and not include those items on the MAT which are not covered locally and do not discriminate. This would increase raw score differences among individuals and thus be more sensitive to small achievement changes. At present a reliable local test of this type does not exist.

After the data were in it was felt it might be interesting to obtain the teachers' subjective assessment of the students' progress. The teachers reported on the progress of only 29 of the 38 subjects. The students were categorized into one of three levels, (1) great improvement, (2) some improvement, and (3) little improvement. These results, obtained from the questionnaire (Appendix F), are tabulated

in Table VI. The numbers represent the total of the referred students the teachers felt merited that evaluation.

TABLE VI
TEACHER APPRAISAL OF STUDENT PROGRESS

Treatment Level	Great Improvement	Some Improvement	Little Improvement
1	2	4	3
2	4	5	2
3	3	3	3

A Chi Square test of significance of difference ($p < .05$) was done. The calculated $\chi^2 (.05) = 1.0$ and was less than the tabulated $\chi^2 (.05, 4df) = 9.488$. There was found to be no significant difference among assessments by the teachers.

It was also questioned whether the selection of one of the teacher's students for the subject of a conference and the lesser treatment of the other two referred students would cause her to perceive that student as having a more severe problem than the others. In other words, would the attention of the psychologist to one student affect her perception of that student? The teacher responses to the questionnaire (Appendix F) of their perception of the thirteen students in Treatment 2, only four were perceived to have the most severe problem.

The teacher's perception of the students having the most severe problem of the three students referred is in Table VII,

TABLE VII
TEACHERS' PERCEPTION OF THE MOST SEVERE PROBLEM

Treatment 1	Treatment 2	Treatment 3
4	4	5

It would appear the psychologist did not affect the teachers' perception of the severity of the child's problem by the experimental conditions.

The teachers were also asked how they felt about the kinds of information they received during this study. Ten responded. Two felt they needed additional follow-up and assistance, four felt there was not enough discussion of the students' problems, two felt they had gained insight into their students and two wanted the information given earlier in the year with more individual help for the students.

This testing, diagnosing and reporting model of the school psychologist is more child-oriented than teacher-oriented. With each child in this study the writer spent about 3½ to 4 hours in actual interviewing and testing. The test scoring, data compiling and report writing consumed another 3 to 4 hours for each child. Since each teacher referred

three children approximately 273 hours were spent with or for the children in comparison to the one-hour conference held with each of the 13 teachers, totalling only 13 hours. This is a 21:1 ratio of time for students to teachers. Perhaps turning the time proportion around, that is, spending more time with teachers than students may have more influence upon ultimate student achievement even though it is more indirect.

Therefore, it is recommended for further study of this problem that the consultation time with teachers be increased. As a result the student diagnosis time would be decreased. It is believed that student diagnosis is necessary but has been overvalued in bringing about behavior changes. If increased consultations with teachers is employed in a future study, it is recommended that the treatments be separated by schools to avoid the risk of inter-teacher communication contamination.

It is also recommended the consultation treatment rely heavily on behavior modification techniques. Many such techniques have proven to be effective change agents. Many studies using these techniques appear in the Journal of Applied Behavior Analysis which demonstrate that children with special problems could increase academic response rates (Lovitt and Curtiss, 1969), talking (Reynolds and Risley, 1968), descriptive adjectives in spontaneous speech (Hart and Risley, 1968), following instructions (Zimmermann, Zimmermann, and Russell, 1969), prosocial interaction (O'Connor, 1969) and attendance and achievement test scores (O'Leary, Becker, Evans and Saudargas, 1969). Studies, reported in other journals, using these techniques have focused directly on increasing academic behaviors such as correct answers (Birnbauer,

Wolf, Kidder, and Tague, 1965) and grades (Wolf, Giles, and Hall, 1968). There is the Engelmann-Becker Follow-Through Model which is heavily based on a combination of curriculum development and behavior modification. Its effectiveness has been demonstrated in teaching disadvantaged children language and reading skills (Bereiter and Engelmann, unpublished, McDonald and Soeffing, 1971).

Behavior analysts have been involved with academic achievement as well as other behavior changes. Ayllon (1970, 1971) addressed himself to this problem in papers presented to Kansas Symposia on Behavior Analysis in Education. This is a relatively new approach to effect school achievement directly through behavior modification and needs to be researched as a possible avenue of increased effectiveness.

Although the effects of behavior modification is well documented in the literature, testing its effects on academic test scores is relatively rare. Because the literature, outside behavior modification, is inconclusive about how to affect academic achievement, recommending the investigation of behavior modification techniques seems overdue. Studies of this type should investigate direct relationships between behavior modification techniques and achievement test measures.

This recommendation, however, could include analysis of attention time, study time, assignment completion, number of correct answers, number of words read correctly, or whatever behavior needs a frequency change. It is felt these changes might also bring about improved academic achievement. Identification of these specific relationships seem essential for further insight into educational processes and achievement.

Results of investigations of this kind are needed for school psychologists to play a significant part as change agents for both students and teachers. Therefore, continual search and research of their techniques and methodology is required to determine the most efficient use of their time for the welfare of students.

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APPENDIX A

PUPIL PERSONNEL SERVICES

REFERRAL FORM

(Name of the school system)
 PUPIL PERSONNEL SERVICES
 DATA REFERRAL SHEET

Soc. Sec. # _____

Student's Name _____ Birthdate _____ Race _____ Sex _____

Father's Name _____ Mother's Name _____

Address _____ Telephone _____

School _____ Grade _____ Room _____

Teacher _____ Date of Referral _____

I. SPECIFIC PROBLEM(S) (Answer the following as best you can)

1. Reading (indicate level) _____
2. Arithmetic (indicate level) _____
3. Spelling (indicate level) _____
4. Fails to complete assignment(s) _____
5. Temper tantrums _____
6. Lacks motivation _____
7. Fails to cooperate with teacher _____
8. Talks back _____
9. Quarrels or fights _____
10. Talks without permission _____
11. Short attention span _____
12. Doesn't communicate with peers _____
13. Doesn't associate with peers _____
14. Other (specify) _____
15. Other (specify) _____

COMMENTS _____

II. RANK THE PROBLEMS IN ORDER OF IMPORTANCE (USE NUMBERS)

1. _____ 2. _____ 3. _____ 4. _____

III. DESCRIBE THE GOAL FOR THE FIRST PROBLEM:

1. The goal is to: _____ reduce: _____ eliminate: _____ increase:
 _____ replace current behavior.

2. Give an example showing how the student should behave while
 engaging in the desired future behavior.

IV. THE PRESENT SITUATION

1. Give an actual example of this problem occurring. _____

2. Describe by giving an example any conditions in the classroom you have identified that lead up to the problem. _____

3. Give examples of current attempts to solve this problem. _____

V. TO BE FILLED IN BY THE SCHOOL NURSE

Vision _____ Hearing _____

Comments pertinent to the student's problem. _____

I have had a conference with this student's parents and they are willing to have him studied for special help. They are aware that additional conferences may be necessary.

Signature of Teacher Making Referral

Signature of Principal

APPENDIX B

OUTLINE OF PSYCHOLOGICAL REPORT

FOR TREATMENT I

TREATMENT I

PSYCHOLOGICAL REPORT

Student's name	Name of the school
Student's birthdate	Principal's name
Chronological age	Teacher's name
Grade in school	Date of report

REASON FOR REFERRAL:

Summary of referral form.

BACKGROUND, DESCRIPTION AND BEHAVIOR OF SUBJECT:

1. Family description and the student's position among siblings.
2. Activities liked and disliked in and out of school.
3. Wishes
4. Past educational history from records and interview.
5. Personal description and behavior during testing.

TEST RESULTS:

1. Wechsler Intelligence Scale for Children:
Summary of sub-test variation and scale scores with strengths and weaknesses noted.
2. Bender Visual-Motor Gestalt Test:
Description of presentation, placement, order, sizing, orientation and accuracy. Koppitz age scale used.
3. Goodenough-Harris Draw-a-Man Test:
Description, sizing and exceptional features. Age level given,
4. Wepman Auditory Discrimination Test:
X and Y errors indicated with sound problems noted.
A general statement about the adequacy of discrimination was given.
5. Frostig: Developmental Test of Visual Perception:
Age scale was given for the sub-tests found to be over one year below chronological age.
6. Illinois Test of Psycholinguistic Abilities:
Total Psycholinguistic Age given with areas noted that were over or under the chronological age by two years.
7. Dominance noted.

APPENDIX C

OUTLINE OF PSYCHOLOGICAL REPORT
FOR TREATMENT II

TREATMENT II

PSYCHOLOGICAL REPORT

Student's name	Name of the school
Student's birthdate	Principal's name
Grade in school	Teacher's name
Chronological age	Date of report

REASON FOR REFERRAL:

Summary of the referral form

BACKGROUND, DESCRIPTION AND BEHAVIOR OF SUBJECT:

1. Family description and the student's position among siblings.
2. Activities liked and disliked in and out of school.
3. Wishes.
4. Past educational history from records and interview.
5. Personal description and behavior during testing.

TEST RESULTS:

1. Wechsler Intelligence Scale for Children:
Summary of sub-test variation and scale scores with strengths and weaknesses noted.
2. Bender Visual-Motor Gestalt Test;
Description of presentation, placement, order, sizing, orientation and accuracy. Koppitz age scale used.
3. Goodenough-Harris Draw-a-Man Test:
Description, sizing and exceptional features. Age level given.
4. Wepman Auditory Discrimination Test:
X and Y errors indicated with sound problems noted. A general statement about the adequacy of discrimination was given.
5. Frostig: Developmental Test of Visual Perception:
Age scale was given for the sub-tests found to be over one year below chronological age.
6. Illinois Test of Psycholinguistic Abilities:
Total Psycholinguistic Age given with areas noted that were over or under the chronological age by two years.
7. Dominance noted.

RECOMMENDATIONS:

In this section an over-all summary of the student's learning functions was given with strengths and weaknesses noted.

When indicated the following were noted in this section:

1. Instructional materials and their classroom use with this student.
2. Classroom activities to aid learning areas.
3. Curriculum level needed.
4. Charting of assignments or other behaviors for either increasing or decreasing with suggested reinforcers.
5. Recommendations for indicated medical check-up, i.e., vision, hearing, organicity, etc.
6. Specific persons who could work with the teacher or student on a tutorial basis such as the reading or speech specialist.
7. Directions for enlisting parental aid in some areas such as coordination activities.

APPENDIX D

LETTER FORM SENT TO TEACHERS

(return address)

Dear (teacher's name),

Mr. Bryant has graciously allowed me to return to (school system) to collect data. My area of interest is Psychological Services and I would like to use three of your students.

I know that you may have referred some students already. I will not be concerned with them. However, I would like you to choose three other students whom you think will benefit from psychological evaluation.

Please list the names of these three students at the bottom of this letter and give it to your principal. I will start testing on January 2nd, right after the holidays, and will be in your building as soon as possible. I would also like for you to fill out the standard referral form for each, as you normally do. Give those forms to the principal also.

Thank you very much for your cooperation. I'm looking forward to visiting with you again.

See you soon,

(signed by psychologist)

Students:

APPENDIX E

OUTLINE OF CONSULTATION
PROCESS

TEACHER-PSYCHOLOGIST
CONSULTATION

The consultation was a joint effort by the psychologist and the teacher done in a positive non-threatening manner.

In general the following points were covered and in this order:

1. A review of the information in the psychological report by the psychologist with elaborations as a result of teacher questions.
2. The teacher's view of the student in the classroom and expectations.
3. Terminal behaviors that can be expected by the teacher, worked out by the teacher as a result of the psychologist's questions.
4. Options she could give the student within the class framework and the value of options were worked out jointly.
5. Scheduling of feedback to the child on his progress.

Where applicable the following were covered:

1. Sources of special instructional material.
2. How to obtain specialist for either long or short term service.
3. Route to obtain services outside school such as a medical referral.
4. Directions for parent conference and how to obtain materials to give them if needed.
5. Specific behavior modification techniques for use with the child.
6. How to handle individual instruction within a classroom setting.

APPENDIX F

TEACHER QUESTIONNAIRE FORM

Dear (teacher's name)

You referred (student's names) to me for diagnosis.

Would you rank them in the order of severity of their problem as you see it in the classroom?

_____ most severe

_____ moderate severe

_____ least severe

How do you assess their improvement this year? Are you satisfied with their progress? Do you feel they have done as well as expected? Please comment on your feelings about each student in the space below. Use the back of the page for additional comments if necessary.

I need some personal information from you. This will only be used in summary form in the thesis (i.e., the teacher of the students in this study average 8 years of experience and Master Degree level). I am not studying teacher practice or ability.

Personal Information:

Number years of teaching experience _____

Number years experience in teaching 3rd grade _____

Highest degree _____ Credit hours past highest degree _____

Comments on your feelings about this study _____

Thank you for your cooperation,

(signed by psychologist)

VITA

Margery LeVern Robinson

Candidate for the Degree of

Doctor of Education

Thesis: PSYCHOLOGICAL INFORMATION TO TEACHERS AND ITS EFFECT ON
STUDENT ACHIEVEMENT

Major Field: Educational Psychology

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma, December 12, 1924, the daughter of Albert G. and Esther R. LeVern; four children--sons, Robert W. Robinson II and Rand W. Robinson, daughters, Suzanne Robinson Cunningham and Vicki Lee Robinson.

Education: Attended elementary school in Oklahoma City, junior and senior high schools in Muskogee, Oklahoma, Albuquerque, New Mexico, and Oklahoma City; graduated from Capitol Hill High School, Oklahoma City, in 1941; attended Oklahoma Agricultural and Mechanical College, Texas Technological College, and received the Bachelor of Science degree from Oklahoma City University, with a major in Chemistry in August, 1951; received the Master of Science degree from Fort Hays Kansas State College in August, 1964, with a major in Guidance and Counseling; completed requirements for the Doctor of Education degree at Oklahoma State University in July, 1973.

Professional Experience: Taught elementary schools in Malaga, California, Oklahoma City, and Liberal, Kansas, for a total of five years; taught junior high science in Liberal and Oklahoma City one year each; taught high school Chemistry and Physiology one year in Oklahoma City; the past five years employed as a counselor and school psychologist by State-Operated-Schools in Anchorage, Alaska.

Professional Organizations: National Association of School Psychologists, Alaska Psychological Association, Alaska State Personnel and Guidance Association, Children Have A Potential (Air Force organization for handicapped children),

National Education Association, Alaska Education Association,
District One Education Association, Council for Exceptional
Children, Association for Children with Learning Disabilities.