The Influence of Perceived Teachers' and Parents' Expectations on Student Achievement

William Zollweg
Western Michigan University

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THE INFLUENCE OF PERCEIVED TEACHERS' AND PARENTS' EXPECTATIONS ON STUDENT ACHIEVEMENT

by

William Zollweg

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THE INFLUENCE OF PERCEIVED TEACHERS' AND PARENTS' EXPECTATIONS ON STUDENT ACHIEVEMENT

William Zollweg, Ph. D.
Western Michigan University, 1984

This study investigates the influence of perceived teacher and parent expectations on student achievement. Additionally, variations in perceived expectations were measured for students with different sex, race, and socioeconomic background. The sample population consisted of 283 tenth-grade students in a large midwestern school district. Results indicate that students with higher teacher and parent perceived expectations score higher on standardized tests of reading achievement. Furthermore, student perception of teacher and parent expectation varied directly with socioeconomic status.
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THE INFLUENCE OF PERCEIVED TEACHERS' AND PARENTS' EXPECTATIONS ON STUDENT ACHIEVEMENT

Western Michigan University

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William Zollweg
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CHAPTER I

INTRODUCTION

Purpose

There is a wide variation in the achievement levels of children involved in the American educational system. The degree of this variation has been attributed to a variety of cultural forces. This study examines the relative influence of perceived teacher and parent expectations on student achievement. Additionally, variations in teacher and parent expectations for students with different racial backgrounds, gender, and socioeconomic status (hereafter SES) will be studied. As will be shown in Chapter II, much research has been done to support the contention of importance for one or the other of the variables in this study. Yet few researchers have examined the relative influence of teachers, parents, race, sex, and SES in combination. This research investigates the simultaneous influence of these variables on student achievement.

Problem

Obviously there are a multitude of problems that parents, educators, administrators, and social scientists have in understanding the factors influencing student achievement. This research will address three critical problems. The first problem to be
addressed in this research deals with the state of current theories on student achievement. The theoretical issues in the achievement area of educational research center on the variable considered to be of greatest importance for explaining variations in student achievement. The variables of teacher and parent expectations, student race, sex, and SES have been considered important by most of the researchers investigating student achievement (see Chapter II). In spite of this commonality in research efforts, the evidence pertaining to the specific influence of each variable is confusing.

What is lacking in this area of educational research is a composite picture of the relative influence of these variables on student achievement. Such a model should fulfill three essential criteria: 1) delineate the relative and mutual influence of perceived teacher and parent expectations on student achievement; 2) illustrate how perceived teacher and parent expectations vary for students of different race, sex, and SES backgrounds; and 3) indicate how teacher and parent expectations influence student achievement.

Obviously a model as detailed as that required by parents, educators, and social scientists cannot evolve out of one research effort. The development of such a model requires consistent effort along a focused line of inquiry, but unless many of the theoretical and methodological problems contained within recent research studies in this area are alleviated, models attempting to explain student achievement will remain confusing. Many of the methods used emphasize the teacher as the variable of greatest importance for
understanding variations in student achievement. Other methods emphasize the parents of the student as the essential variable associated with achievement. Still other methods focus on the students' racial background, or sex, or SES as the variable(s) which have the most influence on student achievement.

The second problem to be addressed in this research deals with the methods used in student achievement research. Most of the methods used in student achievement research neglects the importance of student perception of teacher or parent expectations. The focus of survey, interview, and observational methods has been the teacher or parent of students without the appropriate emphasis on student perception.

Researchers are faced with many problems in collecting educational research data. Oftentimes access to appropriate data on the variables of interest is not available. Furthermore, researchers use a variety of methods to gather data: records, surveys, or unobtrusive. The variation in methods is one reason for the contradictory findings which characterize the literature.

The third problem to be addressed in this research deals with the statistical issue of causal inference. Much of the current research literature infers causation, without the appropriate use of statistical controls. As a result, an accurate measurement of variable interaction has yet to be achieved.
Theoretical Issues

What makes the research pertaining to the influence of teacher expectations on student achievement confusing is the contradictory findings of other researchers. Critics of the teacher expectation variable contend that it is pure conjecture to assume that artificially manipulated teacher expectations are conveyed to the students under investigation (Claiborne, 1969, p. 382). From this perspective, the importance of teachers in relation to student achievement lies in the teacher's teaching ability. Thus, teacher expectations do little to improve our understanding of variations in student achievement.

Other researchers regard parents as an essential variable for understanding variations in student achievement. These researchers have used variables intended to measure parental expectations ranging from parental educational encouragement (Sewell, Haller & Porter, 1969; Duncan, Featherman & Duncan, 1972) to aspirations for educational attainment (Kandel, 1970). Hess and Shipman (1965, p. 883) have shown the importance training at home has for educational success. Presumably the more time parents take in teaching their children at home (to read or write, etc.) the greater the educational success the student enjoys. Mendelsohn et al. (1972) have evidence that suggests the greater the parental involvement in school activities, the greater the academic success of their children. When parents are involved in Parent Teacher Associations, or when parents attend school conferences, the children of those parents tend to be higher-achieving students.
Part of the contradictory research regarding parents as the essential variable for understanding variations in student achievement can be illustrated by the work of Schachter (1963). This research argues that family structure and birth order are family variables that are essential for understanding variations in achievement. The evidence here suggests that whether a student comes from a one-parent or two-parent household has a strong influence on the student's achievement. Furthermore, the rank of the student in the birth order of the family also affects the level of academic success attained by the student. Thus, parental training at home, or parental involvement in school activities may be by-products of family structure and the birth order of the children.

The evidence concerning the association between race and achievement is as confusing as that related to teachers' and parents' involvement in student achievement. Some research contends that non-white achievement is inversely related to the racial composition of the school (Coleman, et al., 1966, p. 331; Moynihan & Mostellu, 1972, p. 41). The main argument of this research is that when a few non-white students are found in a predominately white school, the achievement of the non-white students is high. The ramifications of this research led to the establishment of busing programs throughout the American educational system in an attempt to equalize the educational opportunities between white and non-white students.

Other research argues that differences in achievement between white and non-white students can be attributed to cultural factors (Lewis, 1966, p. 23). From this perspective, non-white students are
raised in subcultures which shape the development of abilities, aspirations, and motivation. This subculture shaping sets limits on the educational achievement of non-white students.

There is also a great deal of controversy regarding the relationship between a student's sex and achievement in school. Some research indicates that schools not only socialize children in a general way, but also exert a powerful and limiting influence on the development of sex role behavior. In essence, the schools serve to limit the choices to each sex, as well as contributing to a sense of inadequacy when individuals do not, or cannot live up to the stringently defined modes of behavior (Britton, 1973, p. 146; Saarion, Jacklin, and Tittle, 1973, p. 399). As elaborated in Chapter II, the specific details on how this limiting process takes place will be delineated in the review of the literature. At this point it is important to note that these authors have evidence to support the notion that differences in achievement between males and females is induced by the schools, as well as peers and parents.

Other research regarding the relationship between student sex and achievement contends that while some differences may exist between the attained achievement of males and females, those differences cannot be simply explained by the notion of different sex-role orientation. Rather, the history of sex discrimination which allowed fewer females into the areas of science and medicine accounts for the current over-representation of males in those fields. From the historical perspective, educational opportunities are no longer
refused females, nor is the education females receive different from that given to males (Howell & Frese, 1979, p. 40).

Unfortunately, the discrepant findings are no less for the literature investigating the relationship between SES and achievement. Some research suggests that there is a positive relationship between SES and student achievement (Kahl, 1953; Kroger & Louttit, 1935; Sewell & Shah, 1967; Bowles & Gintis, 1972). In general these researchers support the notion that students from high SES levels not only have higher levels of educational and occupational aspirations, but also higher levels of achievement.

The counter argument maintains that the apparent effects of SES on achievement are due to the common relationship between SES and intelligence (Hess & Shipman, 1965, p. 883). That is, the occupation of a student's father or mother, and the education of a student's father or mother, and the income of a student's family are all variables which are equally affected by the intelligence of a student's father or mother. Thus parent intelligence is the variable which simultaneously affects SES and achievement. The contention is that the apparent relationship between SES and achievement is actually only a spurious one.

Methodological Issues

The contradictory nature of the findings pertaining to these variables may stem, in part, from the differences in methods used to examine the relationships. For example, both teacher and parent expectations have been examined by observing the behaviors of
teachers and parents with their students and children. This approach neglects the importance of the child's perception of those respective expectations. A more appropriate methodology would use perceived expectations both conceptually and operationally as the predictor variables because expectations held by teachers and parents which are not perceived by the students can have no effect on behavior. This approach to examining the influence of expectations on achievement will remove the criticism regarding whether expectations held by teachers or parents are actually conveyed to students.

Furthermore, the influence of teachers and parents has to date been examined separately. This approach is understandable since in the past it was the teachers and parents themselves which functioned as the source of data. By examining these variables separately, researchers have overlooked the possibility of mutual influence between teacher and parent expectations on student achievement. This approach has also neglected the importance of the student's cognitive process of weighing, evaluating, and organizing the input from teachers and parents. A more appropriate methodology would recognize the potential cognitive interaction which takes place within the student, between perceived teacher and parent expectations. This method will allow the influence of teacher and parent expectations to be examined simultaneously. This study will examine both the relative influence of perceived expectations and the mutual effects of perceived teacher and parent expectations on student achievement.

Similarly, the variables of race, sex, and SES have been investigated using different methods, and only rarely simultaneously.
This study will investigate the differences which exist in perceived teacher and parent expectations on the basis of race, sex or SES. If differences in the student's perception of expectations are associated with race, sex, or SES, do these differences lead to variations in the subsequent achievement of students? This study will examine these variables simultaneously to determine both differences in perceived expectations and the achievement of students. This approach will allow for the analysis of the relative and mutual influence of race, sex, and SES on perceived expectations and achievement.

Statistical Issues

Part of the statistical issue in this area of educational research deals with the interaction between variables which in turn influences achievement. While some researchers have inferred the interactive effects of teacher and parent expectations, race, sex, and SES with the use of regression analysis, a more utilitarian measure can be generated by log-linear analysis. While the use of log-linear analysis in the study of educational issues is not new (see Haller and Davis, 1981), the specific interaction between perceived teacher and parent expectations, race, sex and SES has not been investigated. This study will help clarify the relative and mutual influences on student achievement by applying log-linear analysis to investigate the simultaneous effects of perceived teacher and parent expectations, race, sex, and SES on student achievement.
Study Objectives

The objective of this study is to test several hypotheses (see Chapter II). Additionally, this study involves an attempt to clarify and alleviate the problems in this area of educational research. This effort will illustrate the relative and mutual influence of race, sex, socioeconomic status, teacher and parent expectation on student achievement. It will clarify how these variables influence student achievement, and show how teacher and parent expectations differ for the variables of race, sex, and socioeconomic status.

The theoretical and methodological problems which complicate the understanding of variations in student achievement will be alleviated to some extent. In order to accomplish these objectives, three factors are essential. First, the accurate measurement of variables must be accomplished. Second, the use of the appropriate statistical procedures must be employed. Third, a method of analysis that simultaneously explores the influence of the variables of importance must be present.

To accomplish these objectives, six basic research questions will be explored.

1. Do students who perceive higher teacher expectations for educational attainment achieve higher than students who perceive lower teacher expectations?
2. Do students who perceive higher parent expectations for educational attainment achieve higher than students who perceive lower parent expectations?
3. Do white students perceive higher teacher and parent expectations than non-white students?

4. Do male students perceive higher teacher and parent expectations than female students?

5. Do higher SES students perceive higher teacher and parent expectations than lower SES students.

6. What are the relative and mutual effects of perceived expectations, race, sex, and SES on student achievement?

These questions will be investigated using a more appropriate measurement of teacher and parent expectations than has been used in past research efforts. As will be elaborated in chapter II, the students' perception of expectations is essential to the accurate measurement of expectation variables.

Furthermore, the investigation of the relative and mutual influences of these variables is crucial to the questions concerning how these variables affect achievement. To investigate this interactive influence, multiple statistical techniques will be used (crosstabulation, multiple classification analysis, automatic interaction detection, and log-linear analysis) to interpret the combined effects on student achievement.
CHAPTER II

THEORETICAL BACKGROUND AND REVIEW OF THE LITERATURE:
IMPORTANT FACTORS IN ACHIEVEMENT

Few debates within American education have been advanced with more passion and intensity than those which posit a causal explanation for success or failure in school. One explanation which has had considerable support, as well as opposition, especially since the publication of Pygmalion in the Classroom by Rosenthal and Jacobson (1968), has been that of the influence of teacher expectations on student achievement. Numerous published studies have attempted to delineate the mechanisms by which the teacher comes to hold certain expectations, for both educational attainment and achievement for students and how these expectations are operationalized within the school setting so as to produce the result initially assumed. The origins of teacher expectations have been attributed to such diverse variables such as socioeconomic status, physical appearance, test scores, sex, race, language patterns, and school records. A hiatus seems to have arisen between this body of data and a larger theoretical framework in the sense that the influence of teacher expectations has remained at the conceptual level of theoretical development.

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Ray C. Rist (1970, p. 412) has suggested that there is a theoretical perspective existing in social science which can bridge the hiatus between the body of data and a theoretical framework.
According to Rist, labeling theory as an explanatory tool for the study of deviance is also applicable to the study of education. The suggestion proposed by Rist to use labeling theory in the study of education has contributed greatly to the development of a legitimate framework within which to analyze the influence of teacher expectations on the educational experience of students. Processes influencing success or failure in school have yet to be fully investigated, but a viable interactionist perspective has been applied by Rist and others (Rist, 1970; Edgar, 1981; Slavin & Oicle, 1981; Haller & Davis, 1981). The labeling framework suggested by Rist can be said to counter both biological and cultural determinist theories of educational outcomes. The latter two positions generally place the ultimate causality for success or failure outside the school setting. The labeling framework, on the other hand, allows for an examination of what happens within the school setting since it calls attention to the various evaluative mechanisms (both formal and informal) which operate within schools. Moreover, it also provides the means for examining the ways in which the school system nurtures and supports such mechanisms, what the outcomes are for interpersonal interaction, and most importantly for this study, how students react and are influenced by the evaluative labels assigned to them by teachers.

Conceptually, the labeling process exists on two levels: the primary and the secondary. In addition, the process also operates through a formal and informal network of interactive communication. Primary labeling refers to that level of the process whereby some
significant other(s) place a positive or negative label on an individual (student). Through both formal (test scores and student records) and informal (teacher interaction dynamics) processes, this evaluative level is communicated to the individual student. Communication is a necessary precursor to the secondary level of labeling, because the secondary level occurs when the individual (student) accepts the label communicated by significant others.

Once the individual has perceived the behavior expectations held for him or her, by the significant other(s), the individual accepts and internalizes that perceived expectation into the conception of self. That is, the perceived expectation becomes part of the self definition. This allows the individual to have a self-definition which is consistent with the objective facts (grades and teacher behavior toward the student in class).

In many cases, perhaps most cases, the expectation held by the teacher about a student's ability to attain in education is accurately communicated to the student. In these cases, the student's perception of the expectation held for him or her by the teacher is accurate. However, it seems likely that in some cases, perhaps many cases, there exists a discrepancy between what the teacher contends to be the expectation held for a particular student and what the student perceives that expectation to be. This is an important distinction because in order for labeling theory to be applied as Rist has suggested, researchers must examine the student's perception of teacher expectations, since it is this perception which forms the bridge between primary and secondary labeling.
If labeling theory is to significantly advance our understanding of the process of student achievement, we must shift our attention from the lower achieving, or deviant student, to the teachers and parents that evaluate, and the factors that affect their judgment. The judgments teachers make about students are crucial for a recurrent decision made in all school settings in that the student has, or has not, the capacity to master some body of information. In the present context, these evaluations are made as students move through the educational institutions.

Advancing in school provides an option to the student for mastering yet another body of information, and to be certified as having done so. Ivan Illich (1971, p. 35) has noted that it is in industrial societies that being perceived as a legitimate judge of such mastery has become restricted to those who carry the occupational role of teacher. One of the major consequences of the professionalization of teaching is the authority to claim exclusively whether mastery of information has occurred. Such exclusionary decision-making enhances those in the role of teacher, as they alone come to possess the authority to provide certification for credentials.

The wisdom of assuming that because of professionalization, teachers have a special expertise has been called into question by some researchers. The findings of Popham (1971, p. 116), Moody and Bausell (1971, 1973), and Dembo and Jennings (1973) suggest that certified teachers have no more impact on students than practitioners who have knowledge of the field but no special expertise in teaching.
Although such data are disturbing, the methods used in these studies hold up to question their generalizability to the natural classroom. Glass (1974, p. 16) has criticized the methods used by Popham and his associates on several grounds. In particular, he objects to the use of a standardized test as the measure of teacher success, favoring instead observations and ratings of teacher behavior and student evaluations of teachers.

The use of student perceptions and evaluations as a method of measuring teacher success has become a widely accepted, albeit criticized, policy in higher education today. While labeling theory must shift our attention from the student to the teacher who judges him or her, educational researchers should use the suggestion offered by Glass and use student perception as a measure of not only teacher success, but influence as well.

In spite of the use of student perceptions in classrooms, the notion of using the student's perception of teacher expectation as a measure of actual teacher expectation has not been widely applied in educational research. The Sewell-Haller-Ohlendorf model of educational and occupational attainment (hereafter the SHO model) does employ student perception of teachers' encouragement to attend college (1970). Some researchers have asked whether a student's report on such a variable merely indicates "that adolescents tend to project their own goals onto their significant others" (Kerckhoff, 1976, p. 370; Kerckhoff & Huff, 1974, p. 308). However, these studies have not distinguished the contamination of perceptions of others' goals by ones' own goals, and as such, the original question...
It is the contention of this writer that the student's perception of other's goals influences the behavior and achievement of that student, even if it is discrepant from the teacher's actual goal for student attainment.

The SHO includes a path coefficient (.261) for the student's perception of teacher expectation and educational attainment. The influence of perceived teacher expectations on student achievement has yet to be fully assessed.

Generally, the review of the literature indicates that research on the influence of teacher expectations on student achievement has taken a much different approach. Rosenthal and Jacobson (1968), and other researchers, have captured much interest by their attempt to provide empirical justification for a view considered self-evident by many in education: school achievement is not merely a matter of a child's innate ability, but involves directly and inescapably the teacher as well. On the basis of this perception, much of the research on teacher expectations has sought to measure and/or manipulate the teacher's reported expectations for certain students and then measure the association between that reported expectation and student achievement. It is this writer's contention that while the measurement of the association between the teacher's reported expectation for certain students and that student's achievement is important, a stronger influence on student behavior and achievement is the student's perception of teacher expectations.

The emphasis on student perception of teacher expectations brings to light the student's definition of the situation. The
student's definition of the situation brings labeling theory one step closer to realization in the "self-fulfilling prophecy" research. The exclusion of student perception from teacher expectation research encourages the vision of students as reactionary mechanisms who simply respond, as rats would, to the stimuli provided by teachers. Indeed, this viewpoint seems to have been captured perfectly when Rosenthal and Jacobson said:

> From the outset the rats believed to have higher potential proved to be the better performers. The rats thought to be dull made poor progress and sometimes would not even budge from the starting position in the maze. A questionnaire given after the experiment showed that the students with the allegedly brighter rats ranked their subjects as brighter, more pleasant and more likeable than did the students who had allegedly duller rats. Asked about their methods of dealing with the rats, the students with the "bright" group turned out to have been friendlier, more enthusiastic and talkative with the animals than the students with the "dull" group had been. The students with the "bright" rats also said they handled their animals more, as well as more gently, than the students expecting poor performance did.

Our task was to establish similar conditions in the classroom situation (1968, p.37).

This approach to the assessment of teacher expectations for student achievement leaves out the vital link of the student's perception of those reported expectations, as though the expectations held by teachers for certain students influence the behavior of students regardless of the students' awareness of those expectations. The case can be made that when teachers hold certain expectations for student performance, the teachers tend to look on those students' efforts with a concomitant bias. This may indeed be happening and it may have an influence on student grades, but when standardized tests are used as a measurement of achievement, it is the student's
behavior that is being measured. It follows, therefore, that in order to assess the influence of teacher expectations on student achievement, researchers must measure the students' perception of teacher expectations since it is the perception and definition of the situation by individuals which encourage certain behaviors.

The influence of perception on behavior has not been entirely overlooked by those who research teacher expectations. It is with this in mind that many researchers (Deutsch, Fishman, Kogan, North & Whiteman, 1964; Gibson, 1965) have demonstrated the influence of standardized tests of intelligence and achievement on teachers' expectations. It can be seen here that researchers are attempting to identify the signs teachers use to define the situation and develop certain expectations with regard to student behavior. Goldman, in a review of the literature on the use of tests as a second-hand source of information for teachers, noted that: "although some of the researchers have been challenged, there is a basis for the belief that teachers at all levels are prejudiced by information they received about students' ability or character" (1971, p. 506).

Other research on teacher expectations has also sought to identify the signs teachers use in developing expectations for behavior. Characteristics of children such as sex and race are immediately apparent to teachers. Likewise, indications of socioeconomic status can be quickly inferred from grooming, style of dress, discussions of family activities by children and visits to the school by parents.

Clifford and Walster (1973) have investigated the affects of physical attractiveness on teacher expectations. Based on the
responses of fifth-grade teachers in the state of Missouri, Clifford and Walster conclude that:

there is little question but that the physical appearance of a student affected the expectations of the teachers we studied. Regardless of whether the pupil is a boy or a girl, the child's physical attractiveness has an equally strong association with the teacher's reaction to him (1973, p. 255).

The ongoing academic and interpersonal performance of students may also serve as a potential source of expectations for teachers. Rowe (1972) found that teachers would wait longer for an answer from a student they believed to be a high achiever than for one from a student they believed to be a low achiever. Similarly, Brophy and Good (1974, p. 36) found that teachers were more likely to give a second chance to respond to perceived high achievers, and that high achievers were praised more frequently for success and criticized less for failure.

Taken together, these studies suggest that the concept of teacher expectation is a multi-faceted and multi-dimensional phenomenon. It appears that when teachers generate expectations about their students, they do so not only for reasons relating to academic or cognitive training, but also for their classroom interaction patterns. The use of different interaction strategies for different students, both formal and informal, is the medium by which messages are conveyed from teacher to student. Furthermore, the differing interaction patterns lead ultimately to the student's perception of positive or negative teacher expectations.
Parent Expectations and Achievement

In general, the focus of research on parental expectations has relied on the role of the parent and the conditions within the home that affect student achievement in school. In many studies, the variables used to measure parental expectations range from parental educational encouragement (Sewell, Haller & Porter, 1969; Duncan, Featherman & Duncan, 1972; Alexander, Eckland & Griffin, 1975) to aspirations for educational attainment (Kandel, 1970).

The way in which parents communicate educational expectations to their children varies across families. In some families it may be communicated through educational expectations expressed directly from the parent to their child, neighbors, relatives, and friends. Financial decisions may be the focal point of other parents' expression of educational expectations.

Regardless of the media of communication, in one way or another, the child perceives the parents' expectations for educational attainment. When researchers have measured parental expectations, they have operationalized it as though it occurred as a consequence of external factors affecting the parental expectation and educational achievement association. Hess and Shipman (1965, p. 883) have illustrated the importance training at home has for educational achievement. Mendelsohn et al. (1972) have shown that greater parental involvement has a strong association to student achievement.

There is also research that indicates a relationship between the presence or absence of parents in the home and achievement in school.
(Despres, 1970). As Brookover and Erickson (1975, p. 313) contended, it seems likely that the overall climate of norms and values are more easily communicated by two parents than one. What is communicated and how it is communicated from the parent to the child has also generated much research. The effect of home climate on achievement has been emphasized by Oscar Lewis (1966). Lewis maintains that there exists a "culture of poverty" which creates a certain environment or climate within the lower-class family that acts as a depressor on academic achievement. The major problem, according to Lewis, is the climate itself, which de-emphasizes the importance of school achievement. Consequently, lower-class parents socialize their children toward "dysfunctional value patterns." For students, dysfunctional value patterns tend to lower aspirations, expectations, and efforts to achieve in school.

Other more recent research has attempted to delineate the specific variables within the family which act to influence a child toward academic achievement. Much of this research has focused on the work founded by Benjamin Bloom (1964, p. 78). Bloom has assessed the importance of "press variables" which he defines as a "... directional tendency in an object or situation that facilitates or impedes the efforts of an individual to obtain a particular goal." According to Bloom, the environment of the home depends on the type and direction of presses within the home.

In many attempts to identify "press variables," the role of parental aspirations and expectations has been dominant. Numerous studies have shown that parental aspirations and expectations for
their children are related to school achievement (Banks, 1971, p. 147). Many studies have focused on the differences between aspirations and expectations (Evans & Anderson, 1973; Sewell, Haller & Straus, 1957). Some authors have denied the notion that the working classes value success any less than middle classes and claim that the difference lies chiefly in the expectations of achieving it. For example, parents may desire that their child become a university professor, but expect that their child will become a skilled laborer. Kahl, 1953, p. 198) maintains that in both Britain and the United States, the working-class students' expectations are more likely to be lower than their aspirations. More significantly, low parental expectations depress the aspirational levels of the child.

The work of Sewell, Haller and Ohlendorf (1970, p. 1019) has shown the influence parental expectations have on student educational and occupational aspirations, as well as educational attainment. Their research used three measures of "significant others' influence" to show the relationship between parents', teachers', and friends' expectations and educational attainment, and occupational and educational aspirations for students. The conclusion reached in this study supports the evidence that lower parental expectations not only lead to lower aspiration levels for students, but lower educational attainment as well.

A synthesis of the literature presented in this section suggests that the research on the relationship between parental expectations and academic achievement has emphasized the means of communication by which parents convey their expectations to their children. Only the
research of Sewell, Haller and Ohlendorf (1970) has attempted to measure the direct influence of perceived parental expectations and educational attainment. While many have called attention to the importance of perceived expectations for influencing academic achievement (Sewell, et al., 1970; Alexander, Eckland & Griffin, 1975), the direct relationship has yet to be investigated.

Ethnic Forces, Race and Achievement

The bulk of the research on the effects of desegregation has been concerned with scores on achievement tests. Most measure the impact over a single year and by far the majority of the research was completed during the first year of desegregation when relations are most unsettled. This approach was no doubt derived from a once widely-held assumption that the quality of education was markedly different in predominantly black and predominantly white schools and consequently minority students would respond quickly to this change in school quality. There has been a large-scale debate over the effects of desegregation, fueled by Armor's (1972) negative synthesis of several studies. The two major reviews of the desegregation-achievement literature are by Weinberg (1977, p. 22) and St. John (1975). Weinberg writes, "Among the studies . . . 29 found definite achievement effect by minority students in a desegregated setting; 19 reported no effect" (1977, p. 22). Crain (1976, p. 346), summarizing St. John, writes: ". . . of 64 studies, four show some negative effects, 37 show some positive effects, 15 show no statistically significant effects, and 7 show a mixture of positive and negative
effects" (1976, p. 346). The 37 studies finding positive effects are often not unequivocal; they frequently show positive effects in one grade but not in another. Only one of the studies cited by St. John analyzes desegregation in more than one community, so none of them represent an aggregate evaluation on desegregation's effects on student achievement.

Thus, the most important studies of the relationship between race and achievement remain the large-scale cross-sectional surveys. The two most important are Equality of Educational Opportunity (Coleman et al., 1966) and the Evaluation of ESAP in the South (National Opinion Research Center, 1973).

When the Coleman report was done in 1966, almost all southern black students were in segregated schools and the analysis of the impact of desegregation was limited to the northeast. After controlling for family background, the study found a positive relationship between the percentage of white students in the classroom and non-white achievement. Re-analysis of these data produced similar results (U.S. Civil Rights Commission, 1967; Moynihan & Mostellu, 1972). The general conclusion is that the differences in achievement between black students in white schools and those in black schools was less than one-fifth of a standard deviation. However, there is little agreement among analysts about how to interpret this. Many argue that the problem in the low reliability of social class measurement, coupled with the self-selection of high ability non-white students into white schools, might explain the difference.
The National Opinion Research Center (NORC) analysis of 200 southern biracial high schools found relatively weak effects of school racial composition. Furthermore, non-white females in white schools scored somewhat higher in achievement than those in black schools, and non-white males performed poorly in schools which were overwhelmingly white. The findings of NORC and Coleman are, for the most part, contradictory.

Fortunately, not all of the research in this area has made the spurious and theoretically naive contention that the percentage mixture of white and non-white students in a school acts as an independent variable affecting achievement. Interest in how ascriptive mechanisms serve to structure the formation of achievement has led researchers to evaluate social psychological models of achievement process across racial subgroups (Carter, Picou, Curry & Tracy, 1972; Porter, 1974; Evans & Anderson, 1973). The evaluation of social psychological models has taken researchers through a maze of independent variables ranging from genetics and culture (Jensen, 1973; Lewis, 1966, respectively), to teacher and parental expectations (Dusek, 1975; Porter, 1965, respectively).

A number of scholars (Rist, 1970; Bowles & Gintis, 1976), have argued that schools play a major role in perpetuating the existing social stratification system, in part because teachers assume that children with certain ascribed characteristics can learn more and faster than children with other ascribed characteristics.

Others, like John Porter (1965, p. 68), argue that ethnicity has been a principle cause of class structures, and there are a number of
ways that ethnicity could either hinder or facilitate academic achievement. Indeed, Wong (1980, p. 244) found that teachers held higher expectations for their Asian students than for their white students.

The most common theme has been that ethnic subculture may shape the development of abilities, aspirations, and motivation in order to preserve culture-specific values and attitudes. Children socialized within ethnic subcultures have developed abilities, aspirations, and motivations which match certain occupational status positions within society. In turn, the shaping of abilities, aspirations, and motivations within ethnic subcultures could set limits on educational achievement which could further limit occupational achievement (Brenton & Rosenborough, 1968).

Together, all of the research on the relationship between race and achievement seems to involve the effects of either family or school in shaping the abilities, aspirations, and motivation. Whether this is done to preserve cultural-specific values, or to perpetuate the existing stratification system, is the focal point of contention.

If we accept the argument that the family and school do shape the development of student abilities, aspirations and motivation to the point where students internalize the expectations of others, then it becomes important to know if non-white students actually perceived different expectations for achievement, from either the family or the school, than their white counterparts.
Sex and Achievement

As E. C. Hughes (1945) noted, public image or stereotypes have arisen concerning appropriate personal characteristics of people in certain occupations. Often these stereotypes have no relation to the work performed, but have become embedded in popular images of the kind of people who do particular kinds of work. As Hughes observed, "people carry in their minds a set of expectations concerning the personal traits properly associated with . . . specific positions" (1945, p. 354). The incumbent's sex is among the most prevalent traits in achievement stereotyping. Yet on scores of standardized intelligence tests, like the Stanford-Binet, little difference could be seen between male and female.

For many years, it was assumed that there were practically no sex differences in intelligence. It had somehow been forgotten that, in standardizing this test, items which revealed consistent sex differences were discarded so that the scores of males and females could be evaluated against the same norms. During more recent years, tests were constructed to measure different dimensions of intellectual ability and consistent sex differences emerged (Maccoby, 1963).

These differences may be summarized as follows: females talk at younger ages, put words together into sentences somewhat sooner, and learn to read more easily than males. After fifth or sixth grade, however, males do as well as females in reading comprehension, though females show greater verbal influence. In mathematic skills there are no sex differences during the early school years, but during high
school, males begin to excel, and by the time they take the Scholastic Aptitude Test, the males score about 50 points higher on the verbal portion.

Thus, females develop cognitive abilities along different lines than males. Much of the research on the relationship between sex and achievement has concentrated on how the family or schools operate to shape a student's goals for academic and occupational success. For example, Bing (1963, p. 638) found that high verbal ability is fostered by a close relationship with a demanding mother, while high mathematic ability was fostered by the parent allowing the child the freedom to experiment.

In the school setting, sex stereotyping and sex-role identification have received dominant attention from scholars. Maccoby (1972, p. 38) contends that high academic achievement is associated with cross-sex typing, in that the males who are high achievers are more feminine than their lower achieving counterparts. Consistent with the cross-sex typing hypothesis, females who are high achievers are more masculine than their lower achieving counterparts.

Others, like Horner (1972, p. 62), contend that in achievement situations such as school, females students may possess a "motive to avoid success" because they anticipate or expect negative consequences because of high achievement oriented behavior (Saario, Jacklin & Tittle, 1973, p. 399).

Many researchers have strongly suggested the pervasiveness of sex-role stereotyping in early education readers (Potter, 1972; Graebner, 1972; Blom, et al., 1972; U'Ren, 1971). The contention of
these researchers is that by the time males and females enter high school they have been conditioned to accept and reject certain behaviors based on sex-role stereotyping. This in turn leads to the expectation of negative consequences for high achievement in females.

In spite of the range and scope of research relating, and attempting to relate, sex differences to achievement in school, educators have little solid evidence upon which to implement programs designed to eliminate achievement differences between males and females. The social psychological processes whereby females perceive negative consequences for high achievement have yet to be investigated. The evidence that females do, in fact, perceive lower expectations for academic attainment than males from parents and teachers is lacking.

Socioeconomic Status and Achievement

Many researchers have shown that the social class of parents correlates modestly with the academic achievement of their children: the higher the SES, the higher the achievement. This correlation has been documented in many studies (Sewell, Haller & Ohlendorf, 1970; Kerckhoff, 1972; Jencks, et al., 1972). But the explanations offered for this correlation vary.

Some, including Herrnstein (1973) argue that the explanation is primarily genetic. In order to attain a high SES position, the student has to be a high achiever. Furthermore, because of assortive mating, you are likely to marry a person with similar achievement potential, and then you and your spouse transmit your achievement
potential genetically to your children. A similar process takes place for each SES level, producing the correlation between parental SES and student achievement.

Others espouse an environmental interpretation. They believe that the environment associated with the different social classes vary in the degree to which they foster the development of achievement potential. Jencks et al. (1972, p. 70), for example, estimate that about 70 percent of the relationships between parental occupational status and children's achievement is due to environment, leaving 30 percent to be accounted for by genes. Different authors have suggested different environmental factors as mediating the effects of SES on student achievement (Lewis, 1966; Leiter, 1976; Guterman, 1979).

Some, like Bowles and Gintis (1976, p. 9), attribute the relationship between parents' SES level and student achievement to class bias in the educational system. Others, like Alexander, Cook, and McDill (1978, p. 62) conclude that the relationship arises because of the home influence on other variables such as motivation and aspirations. The dispute over whether it is the family or the school which accounts for the 70 percent of the SES and achievement relationship has yet to be settled. Rist (1970, pp. 441-451) argues that teachers group students according to their perception of how closely each student approximates the teacher's image of an "ideal student." The attributes of this image are derived from middle-class
criteria and, therefore, lower SES level children are rapidly segregated. Teachers differentially allocate their instructional time, so that the highest groups receive more of the teacher's efforts than do the lower groups. This process communicates a low expectation for achievement from the teacher to the student.

On the other hand, Silva and Fergusson (1976) argue that the differences in early child experience account for the SES and achievement relationship. This argument maintains that children from lower SES levels show a cultural deficit as a result of an impoverished environment. Parental expectations for their children are low and this fosters lower achievement and lower occupational aspirations.

Hypotheses and Research Questions

Although much research has been done attempting to identify what variables influence student achievement, there are many questions educators cannot confidently answer about the achievement process. Do students who perceive higher teacher and/or parent expectations for educational attainment actually achieve at higher levels than students who perceive lower expectations? Do females perceive lower teacher and parent expectations for educational attainment than males? Do non-white students perceive lower teacher and parent expectations for educational attainment than white students? Do lower socioeconomic status level students perceive lower expectations
for educational achievement than do higher socioeconomic status level students?

Much of the literature presented in this chapter suggests that parent and teacher expectations influence student achievement. Furthermore, a student's sex, race, and socioeconomic status all influence student achievement. These variables can act independently or in combination.

Rosenthal and Jacobson (1968), Rist (1970), and Eder (1981) have suggested that a student's sex, race, and socioeconomic status are the basic information teachers use to develop expectations about a student's academic achievement. Teachers glean clues from a student's conduct and appearance which allow them to apply their previous experience from individuals with roughly similar characteristics, and, more importantly, to apply untested stereotypes to the student. In this sense, categorical information about individual students helps teachers generate in advance what levels of achievement can be expected from specific students.

As McCall and Simmons have shown (1978, p. 78), stereotypes have the utilitarian effect of providing lead-time. Teachers become tacitly involved in this implicit labeling process to identify students in terms of their social characteristics, thus affording the teacher with lead-time in coping with individual students. The influence and interaction between even the most obvious variables providing stereotyping information, or what Goffman (1959, p. 107) calls "sign-vehicles," has yet to be fully investigated.
Consequently, the main hypotheses will be that:

H1: The higher the perceived teacher expectations for educational attainment, the higher the achievement of students.

H2: The higher the perceived parent expectations for educational attainment, the higher the achievement of students.

To test the interactive influence of the independent variables, three sub-hypotheses will also be tested:

H3: White students perceive higher teacher and parent expectations for educational attainment than non-white students.

H4: Male students perceive higher teacher and parent expectations for educational attainment than female students.

H5: Students from higher SES backgrounds perceive higher teacher and parent expectations for educational attainment than students from lower SES backgrounds.
CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Population

The data for this study came from tenth-grade youths enrolled in regular classrooms (not seriously impaired students) of a large Midwestern public school system. Questionnaires administered during regular school sessions were used to collect the data. Questionnaires were administered to all tenth-grade students within this public school system.

The sample population is composed of those subjects in the tenth-grades who completed all questions pertinent to the variables of interest in this research. That is, students in this study are those who took the CAT (California Achievement Test) at the end of the tenth grade, and answered those questionnaire items in reference to race, sex, SES, teacher and parent expectations.

Variables

The dependent variable in this study is reading achievement. Reading scores were chosen as the dependent variable for two reasons. First, this variable was consistently available to the researcher. Second, and more importantly, reading ability is one of the basic skills which is necessary for the acquisition of other higher academic skills.
In this study, reading achievement will be operationally defined as students' performance on the California Achievement Test (CAT). On the CAT, student ability in reading is measured by standardized tests. Student scores are then compared to test scores from other students throughout the U.S. This allows the calculation of an average score for tenth-grade students, and individual students can then be ranked according to their specific grade level ability.

Reading achievement, as measured by the CAT, ranged from a low of 2.0 (second grade level), to a high of 12.0 (freshman in college). The mean score of 9.0 was chosen as the dividing point between low and high achievers (required for crosstabulation). This split generated 139 students in the lower reading achievement group, and 144 students in the higher reading achievement group.

Perceived teacher expectations will be operationally defined as the student's self-report regarding how far his or her favorite teacher really thinks he or she will go in school. This question appears at the end of a funnel sequence of questions which leads the student respondent from a broad, general question in reference to teacher expectations to the final, very specific question regarding the student's favorite teacher's expectation. "How far in school does your favorite teacher think you really will go?" Students had a choice of seven categorized answers for this question:

1. quit now
2. go to high school for a while
3. graduate from high school
4. go to school to be a secretary or learn a trade

low
5. go to college for a little while
   high 6. graduate from college
   7. more than four years of college

This variable was grouped using the expectation to attend college as the dividing point between low and high perceived expectations. This split generated 112 students in the low perceived teacher expectation group, and 171 students in the high perceived teacher expectation group.

Perceived parent expectations will be operationally defined as the student's self-report regarding how far his or her parents think he or she will really go in school. This question too appears at the end of a funnel sequence of questions which lead the student respondent from the broad questions in reference to parent expectations to the specific question regarding how far the student's parents really think they will go in school.

Perceived parent expectation was measured by the student's response to the following questionnaire item: "How far in school do your parents think you really will go?" As with perceived teacher expectations, students had a choice of seven categorical answers for this question:

1. quit now
2. go to high school for a while
   low 3. graduate from high school
   4. go to school to be a secretary or learn a trade
5. go to college for a little while

6. graduate from college

7. more than four years of college

The same dividing criterion of college attendance was used for grouping. This generated 113 students in the low perceived parental expectation group, and 170 students in the high perceived parental expectation group.

Socioeconomic status (SES) will be operationally defined as the student's self report to a question which asks what kind of work their parents (father and mother) do. These responses were then classified according to the Duncan scale of socioeconomic status. Because of the relative nature of SES, grouping was achieved by dividing the sample population into subgroups of high and low SES so as to match the SES divisions of the overall community.

The SES of students was determined by student response to the question: "If your parents work, what kind of jobs do they have? Tell us what kind of work they do rather than what company they work for."

For this question, students were provided with an opportunity to list the type of work done by both parents.

Father: ______________________________

Mother: ______________________________

Their responses were then categorized in accordance with the Duncan scale of socioeconomic status (Reiss, 1961, p. 7). Categories range from 1 to 99 and 56 was used as an arbitrary point for
grouping. This division generated 217 students in the lower SES group and 66 students in the higher SES group.

The term race will be generally applied to reference a student's skin color. The operational definition for sub-group categories relies on the division of students into one group of white students and one group of non-white students. The categorization of each student will be done on the basis of that student's self report to the question: "What is your race or ethnic background?" The categories which will be condensed to form the non-white subgroup are Black, Hispanic, Oriental, Native American and other.

1. White
2. Black
3. Hispanic (Puerto Rican, Mexican-American)
4. Oriental
5. Native American (Indian)
6. Other ________________

The criterion for grouping generated a white student population and a non-white student population. This sample contained a white student group of 160 and a non-white student group of 123.

Sex will be operationally defined as the student's self report to the question: "Are you a boy or a girl?" No regrouping will be performed on this variable and the student's self report will be assumed accurate and final.

1. Male
2. Female

The sample contained 137 males and 146 females.
Statistical Procedures

In sociology, the researcher is often faced with trying to analyze complicated phenomena with multiple determinants. More often than not, statistical techniques which are well suited for more simple problems, such as physical causation (i.e., one billiard ball striking another), are not sufficient tools for sociological research where one is trying to explain complicated, interactive determinants. Since the latter is true of this study, four statistical procedures will be utilized in analyzing the data with the intention of providing a solid foundation for theoretical inference. The four procedures to be applied are crosstabulation, multiple classification analysis (MCA), automatic interaction detection (AID), and log-linear analysis (ECTA). Each of these procedures will be performed using reading achievement as the dependent variable and race, sex, SES, perceived teacher, and perceived parent expectations (separately and interactively) as independent or predictor variables. Because of this complicated approach to statistical analysis, each procedure and its function in this study needs to be explained.

Crosstabulation or contingency table analysis is a procedure whereby univariate frequency distributions are "crosstabulated" with each other. With dichotomous variables, this allows the investigator to examine all possible combinations (low and high) of observed responses for both variables. By applying Chi-square tests of significance to these bivariate frequency distributions, the researcher can determine the degree to which the actual observations
depart from the expected model represented by the normal bell curve (Young, 1966).

When actual observations depart from the expected observation, covariation is present between the two variables comprising the contingency table. The presence of covariation satisfies one of the criteria which allows an investigator the assumption of causality (Young, 1966, p. 487).

In order to determine the extent and direction of causal influence between a predictor variable and dependent variable, the writer will utilize multiple classification analysis. MCA employs the use of dummy variable regression analysis* to identify the variation in achievement for each category of a predictor variable. The basic difference between dummy variable analysis and MCA is that, in place of the standard prediction equation of \( Y = (A+b)x_1b_{xz}.b_{xn} \), it replaces the constant \( A \) with the grand mean of the dependent variable. In other words, the writer will be able to determine what the mean achievement level is for each category of the predictor variable. Assumptions can then be made regarding the type of relationship (direct or inverse) that exists between any given predictor variable and one, or both, dependent variables.

*Dummy variables are dichotomized variables whose respective categories are coded "0" and "1." Multiplying the values of two dummy variables results in an interaction term, where a value of "1" represents the unique presence of simultaneous "high" values on both variables, and a "0" value on the interaction item represents all other possible combinations.
The next step in the statistical analysis is to determine which subgroups of the predictor variables interact to influence the dependent variable. To this end, automatic interaction detection (AID) will be utilized. AID is a stepwise cluster analysis procedure which examines the interactions of a set of predictor variables and one (at a time) dependent variable. This procedure is accomplished by successive application of one-way analysis of variance techniques.

More specifically, the AID procedure is employed to determine which subgroups of the various predictor variables are most related to both lower and higher reading achievement. This can be accomplished because AID employs a non-symmetrical branching process based on the significance tests of one-way analysis of variance. The procedure analyzes the total number of subjects and then splits the sample into two groups. The split is made on the predictor variable at a point that will minimize the within-group sum of squared deviations for the dependent variable. Having made that decision for dichotomization of the sample, the AID procedure examines all eligible, unsplit groups, takes the one which has the largest within-group sum of squared deviations for the dependent variable and splits it in an identical manner. The procedure is applied interactively until a "tree structure" of final subgroups is generated (Nie, et al., 1975, p. 260).

Finally, a determination must be made regarding whether the mutual (additive) influence of two or more predictor variables explains the observed data better than any one predictor variable individually. For this purpose, log-linear analysis will be
utilized. Log-linear analysis employs the use of a model which represents a statement of the expected frequencies of a cross-tabulation as functions of parameter characteristics of the variables and their relationship with each other (Knoke & Burke, 1980, p. 11). The parameters are related to the odds and odds ratio of the distributions. In assessing how well a model explains, or fits the data, emphasis is placed on the extent to which the frequencies expected under the model approximate (or fit) the frequencies actually observed.

In this study, the logit model (where the writer selects the dependent variables) of log-linear analysis will be utilized. Logit models are categorical variable analogs to ordinary linear regression models for continuous dependent variables. Indeed, Goodman (1972, p. 36) referred to the logit model as a series of increasingly complex contingency table analyses. The goal of this approach is to find the hypothesized model that best fits (most simply explains) the observed data. Obviously, if one predictor variable explains the variation in the observed data more simply and to an equal extent than the mutual influence of two or more predictor variables, the simplest model allows for a more parsimonious explanation of the data. Therefore, the logit model of log-linear analysis in conjunction with the previously discussed statistical procedures will contribute to the development of a comprehensive model. Chapter IV will further discuss the logit model used in this study.
CHAPTER IV

FINDINGS AND INTERPRETATION OF HYPOTHESES

Findings

This study is investigating different achievement levels among secondary school students. Many variables have been shown to be associated with various achievement levels. Parent and teacher expectations have been investigated by Rosenthal and Jacobson (1968), Rist (1970), and Edgar (1974) among others.

The current investigation focuses on further establishing the association between parent and teacher expectation levels and student achievement. Expectation levels are being measured by reported student perceptions; an effort to remove the question of accuracy in communication between teacher, parent, student and children. The main hypotheses are concerned with whether different levels of expectations communicated to students from parents and teachers can be associated with different achievement levels.

The sub-hypotheses of this study are concerned with the association between student characteristics (sex, race, SES) and different levels of expectations perceived by students to be held for them by teachers and parents. The sub-hypotheses test the question concerned with which student characteristics are associated with higher or lower levels of expectations.

Of further consideration is the unresolved question concerned with which variables interact to mutually or multiplicatively
influence student achievement. To what extent do teacher and parent expectations interact to influence student achievement? The sub-hypotheses investigate interaction between parent and teacher expectations and student sex, race, and socioeconomic status.

Hypothesis 1

The higher the perceived teacher expectation for educational attainment, the higher the achievement of students.

The results of crosstabulation of the variables, perceived teachers expectations and reading achievement (Table 1), suggest significant association. While most students perceive high teacher expectations, a large minority of students perceive lower teacher expectations. Approximately 66 percent of the students who perceive high teacher expectations also rank high in reading achievement.

It is interesting to note that approximately 28 percent of those who perceive lower teacher expectations managed to rank high in reading achievement. Thus, the majority of students who perceive high teacher expectations rank high in reading achievement. Conversely, the majority (72 percent) of students who perceive low teacher expectations rank low in reading achievement.

Crosstabulation is limited to establishing association between variables. The causal, or path influence cannot be determined at this point in the analysis. However, one plausible explanation is that most students who are high reading achievers would also evoke higher expectations from their favorite teachers. Likewise, students
who are low reading achievers evoke lower expectations from their favorite teachers.

Table 1
Crosstabulation
Reading Achievement with Teacher Expectation

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Teacher Expectation</th>
<th>Group</th>
<th>Code</th>
<th>Reading Achievement</th>
<th>Low 1</th>
<th>High 2</th>
<th>chi² = 38.4</th>
</tr>
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<td></td>
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<td>Sig &lt; .000</td>
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<td>Teacher Expectation</td>
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</tbody>
</table>

As noted earlier, another explanation supports the causal interpretation that students who perceive higher teacher expectations are encouraged, motivated, or pressed into higher achievement levels. Similarly, students who perceive lower teacher expectations are discouraged from exerting the effort required to become high achieving readers.
Further analysis will lead to a more concrete interpretation of the causal association between teacher expectations and reading achievement. At this point in the analysis, there is a significant association between teacher expectations and reading achievement.

This association is supported by the evidence generated from the multiple classification analysis (MCA). The MCA results indicate that those students who perceive high teacher expectations achieve reading scores which are higher than the grand mean of all students sampled (grand mean = 1.51, see Table 2). Conversely, those students who perceive low teacher expectations achieve reading scores which are lower than the grand mean of all students sampled.

Those who perceive high teacher expectations attained a mean reading score of .095 points higher than the grand mean for all students (1.51). Those who perceived low teacher expectations attained a mean reading score -.145 points lower than the grand mean for all students sampled controlling for variations in all other variables.

In spite of the fact that some of the students who perceive low teacher expectations actually scored high on reading achievement (see Table 1), as a group, those who perceived low teacher expectations achieved reading scores lower than the average for all students sampled. Similarly, while not all students who perceive high teacher expectations achieved high reading scores, as a group, those with high teacher expectations achieved reading scores higher than the average for all students sampled.
Table 2

Multiple Classification Analysis
Differences in Reading Achievement by Selected Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Coded</th>
<th>N</th>
<th>Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>1</td>
<td>137</td>
<td>-.017</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>146</td>
<td>+.016</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>1</td>
<td>160</td>
<td>+.173</td>
</tr>
<tr>
<td></td>
<td>Non-white</td>
<td>2</td>
<td>123</td>
<td>-.224</td>
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<tr>
<td>SES</td>
<td>Low</td>
<td>1</td>
<td>217</td>
<td>-.026</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>66</td>
<td>+.084</td>
</tr>
<tr>
<td>Parent Expectations</td>
<td>Low</td>
<td>1</td>
<td>113</td>
<td>-.061</td>
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<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>170</td>
<td>+.040</td>
</tr>
<tr>
<td>Teacher Expectations</td>
<td>Low</td>
<td>1</td>
<td>112</td>
<td>-.145</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>171</td>
<td>+.095</td>
</tr>
</tbody>
</table>

Table shows deviation from the grand mean (1.51)* controlling for other variables in the table. N = 283.

*Reading Achievement was measured by the California Achievement Test. All students below 9th grade level were coded 1, those above 9th grade level were coded 2. Mean = 1.51.

These findings are clarified further by automatic interaction detection (AID) analysis. One of the important functions of AID is the dividing of the sample into smaller subsample groups based on significant between group differences. In this study, the smallest
number of students that could constitute a group was 30, and a significance level (as measured by T-test) of 2.0 was required before dividing into sub-groups.

The AID results presented in Figure 1 suggest some interaction between a student's race and perceived teacher expectations which significantly influences reading achievement. The sample population used to generate the AID analysis consisted of all those students who have a reading achievement score (dependent variable) and had all of the independent variables recorded. The mean reading score for the AID population (\(N = 283\)) is 1.51 (\(\bar{X} = 1.51\)).

There is a significant difference in mean reading achievement level (for both white and non-white students) between those who perceive high and those who perceive low teacher expectations. White students who perceive high teacher expectations achieve a mean reading score of 1.83, which is 0.32 above the mean for all students sampled.

On the other hand, white students who perceive low teacher expectations achieve a mean reading score of 1.47, which is 0.04 below the mean for all students sampled. Thus, white students with low teacher expectations achieve readings scores which are below the mean for all students sampled. As a group, white students with low teacher expectations achieve a higher mean reading score than non-white students with high teacher expectations.
Figure 1. Automatic Interaction Detection
Reading Achievement by Selected Student Characteristics

N = Sample size
x̄ = Mean score
* = Deviation from grand mean
Non-white students who perceive high teacher expectations achieve a mean reading score of 1.40, which is \(-0.11\) below the mean for all students sampled and \(-0.07\) below the mean of white students with low teacher expectations (1.47). Furthermore, non-white students who perceive low teacher expectations achieved the lowest mean reading score, as a group. Non-white students with low teacher expectations achieve a mean reading score of 1.07, which is \(-0.44\) below the mean for all students sampled.

The AID analysis shows that perceived teacher expectations is an important influence on reading achievement. For white students high teacher expectations make a difference of 0.12 points on reading achievement. For non-white students, high expectations make a difference of 0.15 points on reading achievement. Thus, while teacher expectations are an important influence on reading achievement, they cannot compensate fully for the apparent influence of race on reading achievement.

Non-white students who perceive high teacher expectations achieve lower in reading achievement than do white students who perceive low teacher expectations. As a group, non-white students achieve a mean reading score of 1.25 and white students achieve a mean reading score of 1.71. Thus, discounting the influence of teacher expectations, non-white students achieve \(-0.46\) points below white students in reading achievement.

Another way of interpreting the results of the AID analysis is to compare the percentage of each group who are high achieving...
readers. In this way it is possible to understand the effects of the predictors contained within the tree structure presented in Figure 1.

Eighty-three percent of the white students with high teacher expectations achieved high in reading achievement. This compares with only 47 percent of the white students with low teacher expectations achieving high in reading. Of the non-white students who perceive high teacher expectations, only 49 percent achieved high in reading. This compares with only seven percent of the non-white students with low teacher expectations achieving high in reading.

To interpret the interactive influence of perceived teacher expectation and the other independent variables on reading achievement, a log-linear analysis was performed. Many hypotheses about the effects of teacher expectations, parent expectations, sex, race, and socioeconomic status on achievement use models, generally causal, to present the various relationships. In substantive research, the choice of models to investigate will typically be guided by theory and previous empirical findings. In the absence of explicit hypotheses concerning the relationships among variables, researchers can still design a strategy model, testing to locate the best fit to the observed data.

Model testing in this study was accomplished by log-linear analysis. Table 3 presents the results of analyses for all one-way (models 3-7), two-way (models 8-13), multiple-two-way (models 14-17), three-way (models 19-23), and four-way (models 24-27) interaction models. In order to identify the model which best fits the observed
data, statistical selection criterion will be employed. That is, there must be a decrease in $L^2$ of 3.0 for every 1 degree of freedom lost and a $P$ value of .200 or greater. This selection criterion was chosen to avoid potential Type I errors.

Beginning with the baseline model (1), and the relevant comparison to model 2, it can be seen that the difference between the $L^2$ of these two models is 192.52 for a decrease of 26 degrees of freedom. Thus, there is a significant reduction of the $L^2$ value relative to the loss of degrees of freedom. Model 1 is rejected and it can be concluded that achievement is indeed related to one or more of the independent variables.

The next set of models to be examined each adds a single bivariate relationship involving achievement. Models 3, 4, 5, 6 and 7 are compared to model 2 to decide whether sex, race, SES, teacher expectation and parent expectation, respectively, have significant effects on achievement. As before, the selection criterion is whether the decrease in $L^2$ relative to the loss of degrees of freedom is significant ($P$-value = .200).

Even if none of these one-way interaction models fits the six-variable table at an acceptable level, it can still be determined whether specific two-variable effects must be included in the subsequent models. An acceptable model is one whose expected cell frequencies do not significantly differ from the observed data.
Table 3
Log-Linear Analysis Models
Independent and Interactive Relationships Between Reading Achievement and Selected Student Characteristics*

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Variable Relationship</th>
<th>$L^2$</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>1,2,3,4,5,6**</td>
<td>290.59</td>
<td>57</td>
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<td>2</td>
<td>23456, 1</td>
<td>98.07</td>
<td>31</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>23456, 12</td>
<td>96.57</td>
<td>30</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>23456, 13</td>
<td>51.01</td>
<td>30</td>
<td>0.010</td>
</tr>
<tr>
<td>5</td>
<td>23456, 14</td>
<td>85.62</td>
<td>30</td>
<td>0.000</td>
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<td>6</td>
<td>23456, 15</td>
<td>78.01</td>
<td>30</td>
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</tr>
<tr>
<td>7</td>
<td>23456, 16</td>
<td>76.91</td>
<td>30</td>
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<td>22.33</td>
<td>24</td>
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<tr>
<td>27</td>
<td>23456, 1456</td>
<td>61.98</td>
<td>24</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*Selected Student Characteristics:
1 - Reading Achievement
2 - Sex
3 - Race
4 - SES
5 - Parent Expectations
6 - Teacher Expectations

**Baseline model illustrates independence

Note: Variable 1 is dependent in Models 2 through 27.
Models 4, 5, 6 and 7 (race, SES, teacher expectations and parent expectations) subsequently reduce the $L^2$ relative to the lost degree of freedom, although none of the one-way interaction models yields an acceptably high P-value. In spite of the lack of an acceptably fitting model, it is possible to show the rank of fit for each variable. The most substantial drop in $L^2$ is obtained with the variable race. In terms of one-way interaction with reading achievement, the variable race provides the best fit (model 4). Race is followed in closeness of fit by teacher expectation (model 7), parent expectation (model 6), socioeconomic status (model 5), and lastly, by sex (model 3). It is important to note, however, that the variable sex in model 3 reduces the $L^2$ by 1.50 with a loss of one degree of freedom, not a significant improvement in fit. It can be concluded that sex is unrelated to reading achievement. For this reason, the variable sex will not be included in subsequent models to be tested.

The search for the best fitting model continues with models 8 to 13, each of which includes a different model of two-way interaction. The amount of improvement in fit, or decrease in $L^2$ relative to the loss of degrees of freedom for these models is determined by comparison to the preceding best fitting model ($M^4$) of one-way interaction. With a P-value of .010, model 4, which indicates a relationship between race and achievement, will be the model of comparison.

Model 4 has an $L^2$ of 51.01 with 30 degrees of freedom which can be compared to models 8 to 13. From this comparison, models 11, 12 and 13 do not reduce the $L^2$. These models can now be rejected because they do not offer an improvement in fit over model 4. In
comparison, models 8, 9 and 10 all produce a substantial reduction of $L^2$ relative to the loss of degrees of freedom. Model 8 represents the model of two-way interaction between race and achievement, and SES and achievement. Model 8 reduces the $L^2$ of model 4 by 4.59 with a loss of one degree of freedom. The model which most substantially reduces the $L^2$ relative to lost degrees of freedom represents the best fit to the observed data. Model 9 represents the model of two-way interaction between race and achievement, and parent expectations and achievement. Model 9 reduces the $L^2$ of model 4 by 14.64 with a loss one one degree of freedom. Model 9 suggests that there is an independent influence on student achievement from race and parent expectations. But model 9 is not the best fitting model of two-way interaction.

Model 10 represents the two-way interaction between race and achievement, and teacher expectations and achievement. Of all the two-way interaction models ($\#8-\#13$), model 10 produces the best fit to the observed data. Model 10 reduces the $L^2$ of model 4 by 18.12 for a loss of one degree of freedom. Furthermore, model 10 meets the requirement of the selection criterion by generating a P-value of .282. Model 10 now becomes the model of comparison for the subsequent models to be tested.

The next comparison is between model 10 and the multiple-two-way interaction models (14-17). Model 14, which represents the interaction between race and achievement, SES and achievement, and parent expectations and achievement, can be rejected since it does not reduce the $L^2$ of the previous best fitting model ($\#10$). Likewise,
model 16, which represents the interaction between SES and achievement, parent expectations and achievement, and teacher expectations and achievement, can also be rejected because it does not reduce the $L^2$ of model 10.

Model 15, representing the interaction between race and achievement, SES and achievement, parent expectations and achievement, and teacher expectations and achievement, reduces the $L^2$ of model 10 by 1.87 for a loss of two degrees of freedom. Therefore, while model 17 does reduce the $L^2$ of model 10, that reduction is not significant relative to the lost degrees of freedom. Model 17 can be rejected because it does not improve the fit offered by model 10.

Comparisons now move to the models of three-way interaction, models 18 to 23. Models 18, 19, 21, 22, and 23 can all be rejected because they do not reduce the $L^2$ generated by model 10. Only model 20 of the three-way interaction models reduces the $L^2$ offered by model 10. Model 20 reduces the $L^2$ of model 10 by 1.74 for a one degree loss of freedom. Applying the selection criterion, model 20 can be rejected because it does not offer a significant reduction in $L^2$ relative to lost degrees of freedom.

The final comparisons involve the models of four-way interaction, models 24 to 27. Model 27 can be rejected since it does not reduce the $L^2$ of the previous best fitting model ($#10$). Models 24, 25, and 26 all reduce the $L^2$ generated by model 10 and thus must be considered for selection.

Model 24 reduces the $L^2$ of model 10 by 1.50 for a loss of five degrees of freedom. Model 24 does not significantly reduce the $L^2$
relative to the loss in degrees of freedom. Because model 24 does not meet the selection criterion, it can be rejected.

Model 25 reduces the $L^2$ of model 10 by 4.20 for a loss of five degrees of freedom. While model 25 improves the fit offered by model 24, it does not significantly reduce the $L^2$ generated by model 10, relative to lost degrees of freedom. Model 25 can also be rejected because it does not improve the fit offered by model 10.

Model 26 reduces the $L^2$ of model 10 by 10.56 for a loss of five degrees of freedom. The selection criterion requires a reduction in $L^2$ of 15.00 (or more) in order to represent an improvement in fit generated by the more parsimonious model 10. Therefore, model 26 can also be rejected as not significantly improving the fit found in model 10. Model 10 represents the most parsimonious presentation of the observed data. Model 10 best fits the observed data and is chosen as the explanatory model of achievement.

Analysis of model 10, with respect to hypothesis H1, suggests that perceived teacher expectation for educational attainment does have an independent influence on student achievement. Each statistical analysis (crosstabulation, MCA, AID, and log-linear, respectively) of the data suggests an association between teacher expectations and the level of student achievement. The higher the teacher expectations for educational attainment, the higher the student achievement.

Model 10 further suggests that there is also an independent influence by race on student achievement. This finding was also supported by the findings of the AID analysis. The specific
influence of race will be explored further during the testing of the specific sub-hypothesis involving race. At this point, testing and analysis of the second main hypothesis of this study will be the focus of attention.

Hypothesis 2

The higher the perceived parent expectation for educational attainment, the higher the achievement of students.

The results of the crosstabulation of the variables perceived parent expectation and reading achievement (Table 4) suggest a significant association. While most students perceive high parent expectations, a large minority of students perceive lower parent expectations. Approximately 80 percent of the students who perceive high parent expectations also rank high in reading achievement.

Interestingly, 28 percent of those who perceive low parent expectations managed to rank high in reading achievement. Additionally, 34 percent of those who perceive high parent expectations managed to rank low in reading achievement. Conversely, 72 percent of those perceiving low parent expectations are lower achieving readers, and 66 percent of those perceiving high parent expectations are high achieving readers.

As with the association between teacher expectations and reading achievement, there are at least two plausible explanations for the empirical evidence supporting the association between parent expectations and achievement.
Table 4
Crosstabulation
Reading Achievement with Parent Expectation

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Parent Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Low</td>
</tr>
<tr>
<td>Code</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Group</th>
<th>Code</th>
<th>1</th>
<th>2</th>
<th>139</th>
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<td>81</td>
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<td></td>
<td></td>
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<td>72%</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>32</td>
<td>112</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28%</td>
<td>66%</td>
<td></td>
</tr>
</tbody>
</table>

chi^2 = 36.8
Sig < .000

One explanation maintains that students who are high achieving readers naturally evoke high expectations for educational attainment from their parents. Similarly, students who are lower achieving readers evoke low expectations for educational attainment from their parents. A second explanation contends that students who perceive high parent expectations are encouraged, motivated or pressed into higher achievement. On the other hand, students who perceive low parent
expectations are discouraged from exerting the effort required to become high achieving readers.

The association between parent expectations and reading achievement is further supported by multiple classification analysis (MCA). The MCA result (Table 5) indicate that those students who perceive high parent expectations achieve reading scores which are higher than the grand mean of all students sampled (grand mean = 1.51; see Table 5). Conversely, those students who perceive low parent expectations achieve reading scores which are lower than the grand mean of all students sampled.

Table 5

Multiple Classification Analysis
Differences in Reading Achievement by Selected Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Coded</th>
<th>N</th>
<th>Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Expectation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1</td>
<td>113</td>
<td></td>
<td>-.061</td>
</tr>
<tr>
<td>High</td>
<td>2</td>
<td>170</td>
<td></td>
<td>+.040</td>
</tr>
<tr>
<td>Teacher Expectation</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Low</td>
<td>1</td>
<td>112</td>
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<td>-.145</td>
</tr>
<tr>
<td>High</td>
<td>2</td>
<td>171</td>
<td></td>
<td>+.095</td>
</tr>
</tbody>
</table>

Note: Reading Achievement was measured by the California Achievement All students scoring below 9th grade were coded 1, those above 9th grade were coded 2.

Those who perceive high parent expectations attained a mean reading score .041 points higher than the grand mean for all students.
of 1.51. Those who perceived low parent expectations attained a mean reading score -0.061 points lower than the grand mean for all students sampled, controlling for the variations in all other variables.

Crosstabulation of parent expectations and reading achievement has shown that many students who perceive low parent expectations scored on reading achievement (Table 4), but as a class, those who perceive low parent expectations achieved a mean reading score lower than the average for all students sampled (Table 5). Furthermore, while not all students who perceive high parent expectations achieved high reading scores, as a group, those who perceived high parent expectations achieved a mean reading score higher than the average for all students sampled.

The association between parent expectations and reading achievement is supported by both the crosstabulation and MCA analysis. The findings from AID and log-linear analysis show that parent expectations are not as important an influence on reading achievement as teacher expectations.

The AID analysis (Figure 1) shows that parent expectations are not as influential for reading achievement as are teacher expectations. The difference between the mean reading scores of high and low parent expectation groups was not great enough to produce a significant split. This indicates that teachers' expectations have a stronger association to reading achievement than do parent expectations.
The greater strength of the teacher expectation and reading achievement association is also supported by log-linear analysis (Table 3). The one-way interaction models (φ and θ) show that teacher expectation (model 7) generates a better fit to the observed data than does parent expectation (model 6).

It can be concluded then, that while parent expectations are associated with reading achievement, a better predictor of reading achievement is teacher expectations. Nonetheless, parent expectations are an important variable associated with reading achievement.

Hypothesis 3

White students perceive higher teacher and parent expectations for educational attainment than non-white students.

The results of crosstabulation of the variables race and teacher expectations (Table 6) suggest that 64 percent of the white students perceive high teacher expectations. This compares with 55 percent of the non-white students who perceive high teacher expectations. While this finding is not statistically significant, it is interesting to note that a higher percentage of white students perceive high expectations from their teachers than do non-white students.
Table 6
Crosstabulation
Teacher Expectation with Race

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<th>Dependent Variable</th>
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</thead>
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<td></td>
<td></td>
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<td>36%</td>
<td>45%</td>
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<td>103</td>
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</table>

Chi² = 2.04  
Sig < .153

Similarly, Table 7 indicates that 66 percent of the white students perceive high parental expectation and 53 percent of the non-white students perceive high expectations from parents. This finding is statistically significant at the .05 level of confidence, but further analysis may indicate the underlying nature of this relationship.
Table 7

Crosstabulation

Parent Expectation with Race

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<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>105</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>66%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Chi² = 4.21
Sig < .04

Tables 8 and 9 illustrate what happens when race is cross-tabulated with teacher and parent expectations controlling for the students' socioeconomic status. Table 8 suggests that when SES is controlled, there is virtually no difference in perceived teacher expectations according to the race of students.
Table 8
Crosstabulation
Teacher Expectation with Race Controlling for SES

<table>
<thead>
<tr>
<th></th>
<th>Control Condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low SES</td>
<td>High SES</td>
</tr>
<tr>
<td>Independent Variable</td>
<td>Race</td>
<td>Race</td>
</tr>
<tr>
<td>Race</td>
<td>Group</td>
<td>Group</td>
</tr>
<tr>
<td>White</td>
<td>Low 1</td>
<td>1  2</td>
</tr>
<tr>
<td>1</td>
<td>49  54</td>
<td>103</td>
</tr>
<tr>
<td>46.7%  48.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-White</td>
<td>High 2</td>
<td>1  2</td>
</tr>
<tr>
<td>2</td>
<td>56  58</td>
<td>114</td>
</tr>
<tr>
<td>53.3%  52.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>105  112</td>
<td>55  11</td>
</tr>
</tbody>
</table>

Chi$^2$ = .05
Sig. < .82

Chi$^2$ = .000
Sig. < 1.0
Table 9
Crosstabulation
Parent Expectation with Race Controlling for SES

<table>
<thead>
<tr>
<th>Control Condition</th>
<th>Low SES</th>
<th>High SES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race Group Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-White</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Code 1</td>
<td>46</td>
<td>57</td>
</tr>
<tr>
<td><strong>Parent Expectations</strong></td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Group Code 2</td>
<td>59</td>
<td>55</td>
</tr>
<tr>
<td><strong>Chi^2 = .824</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. &lt; .363</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Code 1</td>
<td>46</td>
<td>10</td>
</tr>
<tr>
<td><strong>Chi^2 = .023</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. &lt; .878</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9
Crosstabulation
Parent Expectation with Race Controlling for SES

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Control Condition</th>
<th></th>
<th>Independent Variable</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low SES</td>
<td></td>
<td>High SES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Race</td>
<td></td>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group Code</td>
<td></td>
<td>Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>Non-White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low 1</td>
<td></td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>44%</td>
<td>51%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High 2</td>
<td></td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>114</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>56%</td>
<td>49%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>105</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi^2 = .824</td>
<td></td>
<td></td>
<td>Sig. &lt; .363</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. &lt; .878</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi^2 = .023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. &lt; .878</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Low SES students, whether white or non-white, have about a 50 percent probability of perceiving high teacher expectations. On the other hand, high SES students, whether white or non-white, have about a 90 percent probability of perceiving high teacher expectations.

Table 9 indicates that low SES students, regardless of race, have about an equal probability of perceiving high parent expectations. Conversely, high SES students regardless of race, have about a 90 percent probability of perceiving high parent expectations.

By controlling for SES, it is clear that the sample population has a disproportionate number of non-white students from low SES backgrounds. Clearly then, it is SES and not race that influences both teacher and parent expectations. Tables 8 and 9 indicate that non-white students from high SES families have a slightly higher probability of perceiving high teacher and parent expectations than do white students from high SES families. Therefore, it can be concluded that race is unrelated to both teacher and parent expectations.

Hypothesis 4

Male students perceive higher teacher and parent expectations for educational attainment than female students.

Crosstabulation of the variables sex and teacher expectations (see Table 10) indicates that 55 percent of the male students sampled perceived high teacher expectations. Interestingly, 66 percent of the females sampled perceived high teacher expectations. These
results suggest that female students have a higher probability of perceiving high teacher expectations than do male students. While this difference is not statistically significant, it may be suggestive in terms of hypothesis 4. It appears that more female students perceive high teacher expectations than male students. In this sample population, only 34 percent of the female students perceive low teacher expectations, while 45 percent of the male students perceive low teacher expectations. Males, then, are more likely than females to perceive low teacher expectations.

Table 10
Crosstabulation
Teacher Expectation with Sex

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Group Code</td>
<td>Code</td>
</tr>
<tr>
<td>Teacher Expectation</td>
<td>Low 1</td>
<td>62 50 112</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45% 34%</td>
</tr>
<tr>
<td></td>
<td>High 2</td>
<td>75 96 171</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55% 66%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>137 146</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 3.14 \]
\[ \text{Sig. < .07} \]
Table 11 illustrates the crosstabulation of sex and parent expectation. This table indicates a slight difference between males and females in the perception of parent expectations for educational attainment. As with teacher expectations, male students are less likely to perceive high parent expectations than female students.

Table 11
Crosstabulation
Parent Expectation with Sex

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Male Female</td>
</tr>
<tr>
<td>Code</td>
<td>1 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Group Code</th>
<th>1 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Expectation</td>
<td>Low 1</td>
<td>58 55 113</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42% 38%</td>
</tr>
<tr>
<td></td>
<td>High 2</td>
<td>79 91 170</td>
</tr>
<tr>
<td></td>
<td></td>
<td>58% 62%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>137 146</td>
</tr>
</tbody>
</table>

\[ \text{Chi}^2 = .461 \]

\[ \text{Sig.} < .497 \]
Hypothesis 5

Students from higher SES backgrounds perceive higher teacher and parent expectations for educational attainment than students from lower SES backgrounds.

Crosstabulation of SES and teacher expectation (Table 12) indicates that 52 percent of the low SES students perceive high teacher expectations, whereas 86 percent of the high SES students perceive high teacher expectation. This finding is statistically significant at the .001 level of probability. Only 14 percent of the high SES students perceive low teacher expectations. Students from low SES backgrounds have about a 50 percent chance of being in the high teacher expectations group. Conversely, students from high SES backgrounds have an 86 percent chance of perceiving high teacher expectations. Thus, students from high SES backgrounds are more likely to perceive high teacher expectations than students from low SES backgrounds.
Table 12
Crosstabulation
Teacher Expectation with SES

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>SES Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>103</td>
<td>9</td>
</tr>
<tr>
<td>High</td>
<td>114</td>
<td>57</td>
</tr>
</tbody>
</table>

\[
\text{Chi}^2 = 22.8 \\
\text{Sig.} < .000
\]

Table 13 illustrates the crosstabulation of SES and parent expectations. This table indicates that 52 percent of the low SES students perceive high parent expectations, but 85 percent of the high SES students perceive high parent expectations. Only 15 percent of the high SES students perceived low parent expectations. This finding is statistically significant at the .001 level of probability. Students from higher SES backgrounds are more likely to
perceive high teacher and parent expectations than are students from low SES backgrounds.

Table 13

crosstabulation

Parent Expectation with SES

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>SES</th>
<th>Group</th>
<th>Code</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Expectation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td>Low</td>
<td>1</td>
<td>103</td>
<td>10</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>48%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2</td>
<td>114</td>
<td>56</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>52%</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>217</td>
<td>66</td>
<td></td>
</tr>
</tbody>
</table>

$\text{Chi}^2 = 20.7$

$\text{Sig.} < .000$
CHAPTER V

CONCLUSIONS

Summary

This research has clarified a number of the theoretical and methodological issues in the area of educational research. A brief review of those points of clarification may help to highlight the interpretations contained in Chapter IV. This review will be followed by a discussion of the questions and problems raised by this research and their implications for future researchers.

Since Rosenthal and Jacobson's *Pygmalion in the Classroom* (1968), much of the research on achievement in schools has used a labeling theory approach in research efforts. At the heart of labeling theory is the emphasis on both the formal and informal mechanisms used in communication. This aspect of teacher-student interaction dynamics was brought to light by the work of Rosenthal and Jacobson.

Much of the research in recent years has focused on the various "sign-vehicles" teachers use which are unique to students of different achievement levels (Goffman, 1959, p. 107). This research has brought to light the influence teacher methods of communication can have on student achievement. Yet in the effort to identify the signs
teachers use to communicate expectations to students, W. I. Thomas' dictum seems to have been forgotten. Thomas believed that "If a man perceives something as real it is real" (W. I. Thomas, 1951, p. 5).

The importance of W. I. Thomas' statement should be clear. Instead of focusing on the signs teachers use to communicate expectations to students, research should concentrate on the signs students use to develop the perceived expectations from teachers. The difference between the students' perceptions of the expectation for him or her held by the teacher, and the actual expectation held by the teacher for the student should be assumed to be great. This assumption will lead researchers to the identification of the cues students use in the development of perceived expectations. It may be possible from this approach to pinpoint the crucial signs operating within teacher-student interaction dynamics.

This study has laid the groundwork for future research on the development of student perceptions of teacher expectations by empirically establishing the link between perceived expectations and achievement. The importance of both perceived teacher and parent expectations on student achievement was brought to light by crosstabulation, multiple classification analysis (MCA), automatic interaction detection (AID), and log-linear analysis.

Crosstabulation has shown that the majority (66 percent) of those students who perceive high teacher or parent expectations are also high achievers. Conversely, the majority of those students who perceive low teacher or parent expectations are also low achievers.
(72 percent). There is a strong association between the student's level of perceived expectation and the student's level of achievement.

MCA has shown that those students who perceive high teacher expectations achieved a mean score .095 points higher than the mean for all students. Students who perceive low teacher expectations achieved a mean score .146 points lower than the mean for all students. While these differences are less dramatic for the influence of parent expectations, the impact is important. Students' perception of teacher and parent expectations have an influence on their achievement.

The findings of AID have shown that the two strongest factors interacting to influence student achievement are race and perceived teacher expectations. White students were shown to have a higher mean achievement level than non-white students. The white student mean achievement score was 1.71, while the non-white achievement score was 1.25. Further AID analysis has shown that high perceived teacher expectations influence the achievement levels of both white and non-white students. White students with high perceived teacher expectations attained an achievement score of 1.83, while white students with low perceived teacher expectations achieved a score of 1.47. Non-white students who perceive high teacher expectations attained an achievement score of 1.40, while non-white students with low perceived teacher expectations achieved a score of 1.07.

These results emphasize the point that while perceived teacher expectations are important, they cannot fully compensate for other
factors influencing student achievement. A percentage analysis of the AID findings makes this point more understandable. The percentage analysis shows that 83 percent of the white students who perceive high teacher expectations are high achievers. This contrasts with only 40 percent of the non-white students who perceive high teacher expectations being high achievers. Therefore, while it is evident that perceived teacher expectations are an important influence on student achievement, other factors also present a strong impact.

The results of log-linear analysis have shown that students' race and the level of perceived teacher expectation each independently affect student achievement. Race and perceived teacher expectation each have a strong impact on student achievement, but there does not appear to be a significant interaction between these two variables that influences achievement. Instead, each variable tends to act independently of the other.

These log-linear findings have important ramifications for a comprehensive understanding of teacher-student interaction dynamics operating within the American school system. Many non-white students perceive high teacher expectations and yet in spite of this, their mean achievement level is lower than white students who perceive low teacher expectations. Teacher expectations do not exert as strong an influence on student achievement as racial factors.

The relationship between student race and teacher and parent expectations was tested with Hypothesis 3. This analysis revealed that while there appeared to be a difference between the perceived
teacher and parent expectations of white and non-white students, those differences were reduced to insignificance when SES was controlled. There does not appear to be a significant difference in perceived expectations between white and non-white students. There does appear to be a difference in perceived expectation for both teachers and parents on the basis of SES background.

The majority (86 percent) of the students from high SES backgrounds perceive high teacher expectation. This compares with 52 percent of the low SES students who perceive high expectations. As Porter (1965) once declared, race is still the principle cause of class differences in America. This study has found a high correlation of students from high SES backgrounds are white (55 out of 66), whereas the majority of low SES students are non-white (112 out of 217). Although there does not appear to be any difference in perceived teacher and parent expectations based on race, there is an important difference on the basis of SES. Thus, race seems not to be the factor most related to variations in perceived expectation. SES has a discriminatory influence on the student's perception of teacher and parent expectation.

Questions

Many questions have been raised by this study, but four areas of questions in particular seem to point out the weaknesses of this research and contribute suggestions for future research efforts. One area concerns the correlation between actual expectations held by the teacher and the expectations perceived by the student. A second area
concerns the correlation between the expectation held by parents and the expectations held by teachers for an individual student. A third area involves the specific sign vehicles used by students in developing a perceived expectation. The final area focuses questions on the relationship between perceived expectations and other academic skills such as math, science, and spelling.

For the purpose of this study, it was assumed that there could be differences between the teacher's actual expectations for a student's achievement and the perceived teacher expectation held by the student. One of the purposes of this study was to examine the influence of perceived expectations on student achievement. The question remains, however, regarding the correlation between the teacher's expectation and the student's perception of teacher expectation. To what degree are students' perceptions of teacher expectations accurate? The question concerning students' abilities to accurately perceive teacher expectation is vitally important to this area of educational research because without the answer to this question, educators will neither be able to improve the teacher's ability to adequately convey expectations, nor improve the student's ability to receive the actual teacher expectation. From this perspective, simply knowing that there is a strong relationship between perceived teacher expectation and student achievement does educators little, if any, good.

In this study, the student's perception of the teacher's and parent's expectations were considered independent variables. Another important question to rise out of this study concerns the relation—
ship between teacher expectations for a student's achievement and the parents' expectations for their child's achievement. It seems plausible to reason that for many subjects in school (i.e., algebra) parents may not have any first-hand information about their child's behavior to base the formation of an achievement expectation. In cases such as this, parents must rely on the teacher's evaluation of their child's behavior as the basis for developing achievement expectations. If this is indeed the case, parents' expectations are derivatives of teacher evaluations, and therefore teachers' expectations become doubly important since teachers' expectations not only influence the student's achievement, but the parents' expectations for student achievement as well.

This study has not focused on the important question concerning how students develop a perception of teacher or parent expectation for achievement. For research in this area to have important consequences for educators, it is essential that teachers be made aware of what mannerisms students are using to develop perceived expectations. What sign vehicles do students use to build perceived teacher expectations? The answer to this question is vital if educators are attempting to improve the communication of expectations from teachers to students.

Finally, this study has verified the relationship between perceived teacher expectations and student reading achievement, but the relationship between perceived expectations and other academic skills was not addressed. While a student's ability to read has been positively associated with academic skills in other areas, the
specific relationship (if any) between perceived expectations and other subjects has not been thoroughly explored. More specific and detailed information regarding other academic skills may shed light on the complex phenomenon generally referred to as student achievement.

Recommendations

There is much to be accomplished in this area of educational research in the future. If progress is to be made in either our scientific understanding or in the practical application of new teaching methods, the answers to the questions proposed in this study must be found. The communication of expectations for achievement from teachers to students, or from parent(s) to child is an area that can always stand improvement.

One recommendation involves the use of longitudinal data. Longitudinal data in this area of educational research are desperately needed. The use of longitudinal data would allow researchers to positively establish the cause and effect relationship between teacher or parent expectation and student achievement. For example, as students move through the educational system, their teachers and subjects change, and so too do the student's perceived teacher and parent expectations. Longitudinal data would allow researchers to measure perceived expectations at different points in time and to match different levels of perceived expectations to varying achievement levels.
Another recommendation involves the use of student grades or grade point average, rather than standardized test scores (in this study the California Achievement Test) as the dependent variable. In this study, no achievement differences were found to be dependent on the student's sex, but large differences were found to be dependent on the student's race and SES. It is understandable that no differences were found on the basis of sex since it is on the basis of sex that achievement tests have been standardized. Likewise, it is also reasonable that large differences in achievement were found on the basis of race and SES. The cultural bias of standardized tests has been well documented by other researchers. It is important, therefore, that future research concentrate on student grades within the school system as the dependent variable.

A final recommendation involves the investigation of the changes in importance between teacher and parent expectations over time. For example, it may be that in elementary school it is the parents' expectations which have the greatest influence on student achievement, but as students grow older, the teachers' expectations become dominant. The specific direction of change and the grade level at which changes occur are important considerations for future research.
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