

STUDENTS' ETHNICITY,  
TEACHERS' EXPECTATIONS,  
AND THEIR EFFECTS ON STUDENTS' PERFORMANCE

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by

Andrew L. Bursa

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## ABSTRACT

This study focussed on the relationships between ethnicity, teachers' expectations, and students' performances. Generally, the study was concerned with the extent to which teachers' expectations mediated between a number of background student characteristics, ethnicity, socioeconomic status, and academic aptitude, and such performances as overall grade averages and achievement test scores.

These theoretical linkages were arranged within a causal model which assumed that both normative and cognitive expectations caused three different types of achievement represented by overall grade averages, standardized achievement in English and standardized achievement in Mathematics. It also assumed that ethnicity had both direct and indirect effects on these achievement measures and that the expectations of teachers mediated the effects of ethnicity, and other ascribed factors, on the achievement measures.

Multiple regression analysis was used to examine the relationships between the total of thirteen independent, intervening, and dependent variables within the theoretical model.

The Carnegie Human Resources Data Bank (1959-1960) provided the sample of students who spoke either French or Yiddish as the main language in the home. This included 177 Yiddish-speaking students and 2,576 French-speaking students.

The study found Yiddish-speaking students to have an advantage over French-speaking students in all three measures of academic achievement. Moreover, the effects of ethnicity were mediated through the expectations of

teachers to a considerable degree for all three student achievement measures. Nevertheless, the overall effects of bias due to ethnicity were small.

While this study largely vindicated teachers from any gross bias based on ethnicity, it did show that ethnic favoritism continues to play a limited although significant role within the classroom.

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"Oft expectation fails, and most oft there  
Where most it promises; and of it hits,  
Where hope is coldest and despair most fits".

Shakespeare (1605)

All's Well That Ends Well

## CHAPTER 1

### INTRODUCTION TO THE STUDY

#### The Problem

This study proposes to examine the relationship between the ethnicity of students, the effects that this may have on the expectations of teachers, and the effect that expectations have as mediation variables upon the academic performances of students.

Specifically, the study proposes to examine data obtained from the Carnegie Human Resources Data Bank, a five year panel study of practically the total population of students (90,719) enrolled in the first year of high school, Grade 9, in the Province of Ontario at the beginning of the 1959-1960 academic year. The subjects for the present study represent the students who spoke either French or Yiddish as their main language at home. The total number of Yiddish-speaking students was 177. The total number of French-speaking students was 2,576.

The evidence that significant others, especially teachers, have important effects upon the performances and eventual achievements of students (Finn, 1972; Garner and Bing, 1973; Rosenthal, 1976; Williams, 1976) suggests that schools do play a major role in perpetuating the social stratification system, in part, because of the assumption by teachers that certain students learn, and their resulting fulfillment of this expectation and, at the same time, other children will not learn as the result of negative expectations.

#### Significance of the Study

Historically the role of educational institutions has been to allocate individuals to positions commensurate with their abilities, performances,

and their own educational plans. Since these positions are often of differential power, prestige, income, and satisfaction, the necessity that this allocation be congruent with appropriate criteria seems evident. Within the context of a largely pluralist Canadian society where many ethnic groups and both sexes are employed, vertical social stratification along the lines documented by Porter (1975) combined with horizontal mobility characteristics of runaway North American consumerism as suggested by Toffler (1970) may result in pressures leading to political secession along the most powerful ethnic lines (Laurin, 1978)

Despite the popular myth that Canada is an open society in which opportunity is available to all, empirical evidence on the ethnic stratification system in Canada indicates that various ethnic immigrant groups have unequal access to the occupational structure. There is considerable evidence of differences in the social stratification system in terms of inequalities in both opportunities and attainment (Porter, 1965: 60-103; Richmond, 1967; King, 1968; Anisef, 1975; Ashworth, 1975; Clement, 1975, 332-337; Denis, 1978; Li, 1978; Clifton, 1979a, 1979b). Despite some evidence that the pattern of occupational status positions among the larger ethnic and immigrant populations have systematically declined with time, (Royal Commission in Bilingualism and Biculturalism, 1967: vol.IV, 40-41; Kalbach and McVey, 1971: 209; Darroch, 1979) the overwhelming evidence indicates that in Canada, as in most culturally plural societies, ethnic identity is a determining factor with respect to one's position in the stratification hierarchy.

Since expectations for the behavior of others are an integral part of

social interaction, the link between teacher expectations within the school may play a major role in perpetuating the social stratification system (Rist, 1970; Katz, 1971; Carnoy, 1974; Bowles and Gintis, 1976). Often stratification is based on those ascribed characteristics of students that vary across subpopulation groups and are essentially irrelevant to student performance such as physical appearance, sex, skin color, clothing, dialect. Moreover, these factors often appear to influence through the medium of differential teacher expectations the characteristics that students take on as a result of their achievements within the school which also vary across subpopulation groups such as academic performance, educational ambitions, program of study, behavioral conformity, etc. The "reign of error" (Merton, 1957; 423) that resultingly begins the cycle conditions the nature of teacher student interaction in such a way that an initially false definition of the situation may become true.

Numerous and varied studies have been conducted on the effect of the self-fulfilling prophecy (Rosenthal, 1978). Most of these studies have dealt with research in the behavioral sciences (Rosenthal, 1976), some in the healing professions (Heller and Goldstein, 1961), and some studies in industrial and everyday life situations (Jastrow, 1900; Chapman and Chapman, 1967). The original "Oak School Experiment" (Rosenthal and Jacobson, 1968), later known as "The Pygmalion Experiment", prompted a number of subsequent replication studies dealing with the effect of teachers' expectations on the achievement of students (Jacobs, 1970; Brown, 1970). Most of this research dealt with contrived rather than natural classroom situations. Most often, deception was used to induce the Pygmalion effect. When there were naturalistic studies of actual classroom situations conducted (Brophy and Good, 1970;

Seaver, 1971), these were characterized by rather limited sample populations. A significant departure from the previous studies was in the work of Rosenthal and Rubin (1978) which combined the quantified results of the latest studies to measure the overall significance of the expectancy effect.

There appears, however, to be a paucity of empirical studies in a natural setting dealing with noncontrived school situations over complete school system populations (Williams, 1976; Clifton, 1979a, 1979b). In view of the pluralist composition of Canada and the problems inherent therein, a study examining the expectancy effects of teachers on the achievement of their pupils with respect to the variable of student ethnicity over a whole provincial cohort, should provide some valuable insights to a problem of considerable national importance. The need for extended studies upon the mediating effect of teachers' expectations through such variables as the ascribed characteristic of ethnicity upon the achievement of students is apparent. Furthermore, it is of considerable importance to discover the relative magnitudes of the various singular and combined effects so that the "vicious circle" (Brophy and Good, 1974; 129-160) of ethnicity, expectations, and performance limiting the achievement of some students may be broken.

#### Discussion of Fundamental Concepts

The concepts related to the proposed study have their antecedents in antiquity. Both ancient and modern literature contain literacy and theatrical works dealing with the effect of expectations upon the final outcome of a previously defined situation. Modern socio-philosophical works describe some of the principles defining situations and the connection of expectations to this definition. As well, the research literature of our own century has continued to be fascinated by the effect, in contemporary situations, of what

has come to be known as the self-fulfilling prophecy.

The self-fulfilling prophecy came to us in the legend of Pygmalion from the depths of Greek antiquity proclaiming through intuitive soundness that man imbues the object of his love with the qualities that he himself would desire to possess. One can well imagine the consternation in the court of King Pygmalion of Cyprus, the legendary son of Clix and the grandson of Agenor, when his previous aversion to women and dedication to art changed to unrequited passion for the ideal female whom he had masterfully carved in ivory and his subsequent desire for her as a beloved woman (NASO, C.AD.1). To his good fortune, "deus ex machina" was a favorite denouement of the ancient dramatists and Venus-Aphrodite, the presiding love deity, gave life to the object of Pygmalion's passion so that he could father Paphos, founder of the city of that name in Cyprus.

Nineteen centuries later, William S. Gilbert (1871) brought the story to public attention in his play, Pygmalion and Galatea. George Bernard Shaw (1916) interpreted Pygmalion as a masterpiece of theater. Eliza Doolittle, the Cockney flower-girl turned English grand dame through the semantic pre-occupation of Professor Henry Higgins, was the reincarnation of Galatea that eventually made a world musical career as My Fair Lady and through the medium of celluloid and eventually the cathode tube, has embedded herself in our contemporary collective consciousness.

In what appears to be a highly unethical way, placebo effects in medical treatment serve to underscore the role of the self-fulfilling prophecy in the medical sciences. "Undesire-side-effects" of medications have been investigated by Gregory Pincus (1966) of the Worcester Foundation for Experimental Biology. Here Pincus performed several experiments on the use of oral contraceptives

which led him to the conclusion that these reported side-effects were, in all likelihood, placebo effects. Pincus' study made use of three groups of women. The first group received the usual warnings that the contraceptive drug might cause undesirable side-effects. The second received a placebo instead of the real contraceptive but was told to watch out for side-effects. In the third group, the women received the real contraceptive without any warnings about possible side-effects. The test group that had received the actual medication but had not been led to expect side-effects reported nausea, vomiting, headache, vertigo, gastralgia, and general malaise in six percent of the cases. The two groups of women who had been warned about side-effects reported that these negative effects occurred about three times that often. The same degree of side-effects was shown by the women who had received the placebo with warning as occurred in the women who had received the real drug with warning. In considering the symptom of amenorrhea, the side effect was reported three times more often when the placebo was administered than when the drug itself was administered with the usual warning. Amenorrhea was not reported at all when the drug was administered without the usual cautions. It was the continued incidence of the Pygmalion effect, under a variety of forms and circumstances that led to continued studies of this phenomenon.

Within the present century, some sociologists have elevated the notion of the self-fulfilling prophecy to a central part of social reality: "If men define situations as real, they are real in their consequence". (W. I. Thomas, 1928: 527). This statement was further expanded upon by Florian Znaniecki (1952: 242-243) to encompass attitudes as well as behavior as definitions of situations. In this conception of a situation, the human

agent is seen as having defined it through some kind and degree of reflection and deliberate thinking. As such, the seeds of the self-fulfilling prophecy are found in the course of every conscious human action where thinking goes on. It is there that the values that the agent is using influence the changes he tends to initiate. It is in this deliberation that the purpose of the action is formed.

Within such a context that attitude may be considered as that reflection of the individual human consciousness which defines the situation. The defining quality of attitude is expanded to include unconscious evaluations and is limited to the universe of interpersonal relationships (Finn, 1972: 390). That this is more than "wishing can make it so", as has been suggested by some (Yunker, 1970), can be seen in the distinction between the concept of expectation and of such related concepts as aspirations, hopes, and desires. Accordingly, expectancy is defined as a conscious or unconscious evaluation which one person forms of another or of himself which leads the evaluator to treat the person evaluated in such a manner as though the assessment were correct. Furthermore, he will anticipate that the person evaluated will act in a manner consistent with the assessment. Here it is the anticipation that shapes the outcomes and distinguishes expectations from mere hopes and desires as well as from aspirations. In addition, while the concept of aspiration implies a desire for some goal, expectation incorporates the consideration and assessment of empirical factors. Thus, behavior resulting from given expectations reflects conscious or unconscious estimates of the achievement made under the circumstances given.

It is only when the agent halts his action in order to reflect upon the practical problems that he is facing that such deliberate thinking, in his



own experience, becomes separated from his effective performance. In the process of reflection, the agent does not try to introduce any changes in the empirical reality given him. The reflection generally consists of surveying the values which appear practically important to him and certain factual relationships between them. The agent anticipates the positive or negative possibilities which these factual relationships may involve and considers what should be done to actualize the positive possibilities and/or prevent the possibility of negative performance. It is this combination of interrelated values, with its inherent possibilities to be actualized or prevented that constitutes the definition of the situation with which the human agent at the end of his reflection has to deal.

That the effect of the final decision reached by such reflection is not trivial has been the conclusion of a study examining the results of the 345 latest studies of interpersonal self-fulfilling prophecies. Rosenthal and Rubin (1978) compared the magnitude of the expectancy effects obtained in the latest experiments, both positive and negative, and found that the net mean effect was highly significant. Furthermore, they showed that it was unlikely that there existed enough unretrieved studies to overwhelm the studies that were available. In order to have made the combined results of the available 345 studies insignificant, it would have been necessary for file drawers to have been crammed with the unpublished results of over 65,000 studies of interpersonal expectancy effects.

#### Advantages of the Study

Although the present study and its data source have a number of limitations that must be considered, there are at least four distinct advantages that this study provides with respect to its analysis of ethnicity, teachers'

expectations and academic achievement. In the first place, the data sample contains a variable which can be used to measure ethnicity. Other recent and extensive studies (Breton, 1972; Porter, Porter and Blishen, 1973) do not have a corresponding measure. Furthermore, because of the extensiveness of the Carnegie study, substantial numbers of students were included who were representative of different ethnic groups.

Secondly, despite the fact that these data were collected twenty years ago and it is not certain whether the results are applicable at the present time, it does possess distinct historical validity for the Province of Ontario where it was representative of the total population of students in Grade 9 during the 1959-1960 academic year. Furthermore, when more recent longitudinal data on sufficiently large ethnic subsamples are collected, the results of this study will have laid a historical foundation for further comparisons.

The third advantage is provided by the fact that the data of this study were collected over a number of years and the variables were measured at different periods during the students' academic careers. Thus, there is a rough correspondence between the time-ordered variables and the causal order of the theoretical model (See Figure 1).

#### Limitations of the Study

The limitations of this study deserve scrutiny.

There is a limit to the generalizability of effects from this data due to the fact that it was gathered more than twenty years ago. Although this should not detract from the historical significance of the study, conditions may have changed markedly since the original data was gathered. There is evidence that this change would have been fairly gradual (Darroch, 1979) in

the sense of the vertical ethnic stratification investigated by Porter (1975) while the horizontal mobility characterizing the age of Future Shock (Toffler, 1970) could have tended to diffuse the original effect of ethnicity. Thus, although the original data may be of historical significance, any accuracy in generalizability would necessarily await verification in future studies of more immediate data.

This study measures ethnicity in terms of language, a fact which may lessen the significance of the study. Although language has been considered as an essential expression of a culture and ethnicity by the Royal Commission on Bilingualism and Biculturalism (1967), original and distinctive cultural traits are retained by some groups despite their adoption of another language. Thus, some students whose main language in the home may have been designated as English may still have been viewed by their teachers as being either Jewish or French. This would, perhaps to some extent, limit the size of an otherwise greater original sample of Jewish and French students. In other words, students, according to the measure of ethnicity used in this study, may not be included within the sample of Yiddish-speaking and French-speaking students although teachers may still view them as being either French or Jewish despite their having adopted English as the language spoken in the home.

The fact that this is a secondary analysis of data limits this study to the extent that it does not allow for the custom tailoring of variables to fit broader models for the transmission of teacher expectancy effects such as that of Braun (1976). The secondary nature of the data limits this study, as well, to the record of teacher expectations for students as an aggregate consensus expression of the whole group after initial consultation. This may have resulted in the loss of what may have otherwise been recorded as

individual teacher expectations.

Insofar as achievement is limited to the effects on students' learning as expressed in overall student marks, and the results expressed in two standardized tests, one of English and the other of Mathematics achievement, there is no way of extracting the effect of previous teacher expectations that may have affected these results. In addition, the vicious circle of negative teacher expectations and resulting student performances seem to have the greatest effect in the early elementary grades (Rosenthal and Jacobson, 1968). The data does not include elementary (Grades K-6) or some junior high (Grades 7-9) expectations. This limitation further affects the generalizability of any results in that the high school students studied may not be representative of the whole student population.

Since there are many more French-speaking students than Yiddish-speaking students, unequal cell sizes for statistical analysis will result. Also, the considerable differential in attrition rates between Yiddish-speaking and French-speaking students would seem to lessen the effect of any negative expectancies with respect to the remaining "superior" French-speaking students.

Since the data were collected over a number of years, there was only a rough correspondence between the time ordered variables and the causal order of the theoretical model. Thus, ethnicity was measured in the ninth grade while academic achievement was measured in the eleventh grade. This is another limitation of the data which does not correspond exactly to the purpose of this study.

This study made use of testing material that was administered in the English language. Many of the students whose main language was French may have attended French language schools. This may have been a limiting factor

as to the students' performances on these tests. Since there was no indication within the data as to which students attended the different kinds of schools existing within the province of Ontario at that time, a further limitation of the study is encountered.

#### Overview of the Study

Chapter 1 introduces the subject of the study and various contexts in which it becomes a problem. The historical, social, and individual significance of the study are discussed. The origins of the key concepts related to the study and their definition are presented. This is followed by a consideration of the most significant advantages and disadvantages of the study.

Chapter 2 is a review of the literature. Early evidence of the effects of the self-fulfilling prophecy is examined in the first part. The second part deals with the original Pygmalion in the classroom study. Observational studies of the expectation effects in the natural setting are reviewed in the third part. The fourth part is concerned with ascribed characteristics, different expectations, and different performances, and presents the theoretical model of the present research.

Chapter 3 is concerned with the methodology of the study. It presents the sample, the variables and the method of statistical analysis used.

Chapter 4 presents the findings of the study. These are divided into seven parts: zero-order correlation coefficients; relationships between four independent variables and teachers' expectations; relationships between four independent variables, two intervening variables, and teachers' expectations; relationships between four independent variables and the academic evaluations of students; relationships between four independent variables, two intervening

variables and academic evaluations of students; relationships between four independent variables, six intervening variables, and academic evaluations of students; and direct and indirect effects of ethnicity on performance.

Chapter 5 concerns itself with a summary of the study, a discussion of the findings, and the implications of this study for education.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

Apart from its origins in antiquity and its literacy, theatrical, screen, and television career, the Pygmalion effect of interpersonal expectancy has been found operative during the present century in situations involving the world of work, everyday life situations, psychological research, the medical sciences and teacher-student relationships. In a philosophical context, it is difficult to envision a situation where the effect of expectancy may not be found.

#### Early Evidence of the Effects of the Self-fulfilling Prophecy

Rosenthal and Jacobsen (1968) cite an instance exemplifying the importance of the self-fulfilling prophecy in every day life situations as well as instructional practices. In this case, James Sweeney, who taught industrial management and psychiatry at Tulane University where he was responsible for the operation of the Biomedical Computer Center. Sweeney held the expectation that a poorly educated Negro, George Johnson, could learn to be a computer operator. Johnson was a former hospital porter who became a janitor at the computer center where in the morning he swept and in the afternoon he learned about computers under Sweeney's tutelage. As he was progressing on his study of computer operations, it was brought to his attention that one had to have a particular score on an IQ test in order to be a computer operator. Johnson took the test and found that he should not even be able to learn to type, let alone operate a computer. Through Sweeney's conviction, persistence, and pressure on the university administration, both he and Johnson were allowed to run the computer center.

Johnson eventually came to run the main computer room, a position in which he was responsible for the training of new employees. This episode exemplifying the self-fulfilling prophecy came to be known as "Sweeney's Miracle" (Look Editorial Board, 1965).

Rosenthal and Jacobsen (1968) show the world of work to be a source of one well documented case of the self-fulfilling prophecy (Jastrow, 1900). The United States Census Bureau had installed the Hollerith tabulating machine. Hollerith, the inventor of the typewriter-like mechanism, saw the acquisition of the keypunch skill required of the clerks as quite demanding. His stated expectation was that a trained worker could punch 550 cards per day. After two weeks, when the workers were adequately trained, they began to produce 550 cards per day. Eventually, these clerks began to exceed the expected performance but only at great emotional cost. The Secretary of the Interior forbade the establishment of any minimum performance criterion in order to preserve the mental health of the establishment as a result of this worker anxiety.

Some time later, a new group of 200 clerks was brought in to augment the Hollerith machine work force. These new people knew nothing of the operation or of its problems. None of them were told about the upper limits of the production nor about the emotional cost that might be involved. It turned out that their lack of information was their greatest asset in terms of their performance on the job. Whereas the "properly indoctrinated" group took up to seven weeks to reach the 550 card per day level of production, the new clerks began to perform at this level in only three days. Eventually, the 200 members of the new group began to turn out three times the number of 700 cards per day that had proved to be the point of exhaustion for the initial



group. The new group exhibited no ill effects.

Placebo effects in medical treatment serve to underscore the role of the self-fulfilling prophecy in the medical sciences. "Undesirable side effects" of medications have been investigated by Gregory Pincus (1966) of the Worcester Foundation for Experimental Biology. Pincus performed experiments on the use of oral contraceptives which led him to the conclusion that the reported side effects were, in all likelihood, placebo effects. Pincus' study employed three groups of women. The first group received the usual warnings that the contraceptive drug might cause undesirable side effects. In the third group, the women received the real contraceptive without any warnings about possible side effects. The test group that had received the actual medication but had not been led to expect side effects reported nausea, vomiting, headache, vertigo, gastralgia, and general malaise in 6 percent of the cases. The two groups of women who had been warned about side effects reported that these negative effects occurred about three times that often. The same degree of side effects was shown by the women who received the placebo with warning as occurred in the women who received the real drug with warning. In considering the symptom of amenorrhea, the side effect was reported three times more often when the placebo was administered with the usual warning. Amenorrhea was not reported at all when the drug was administered without the usual cautions.

In considering the Pincus experiment, one may legitimately question the ethical sense of a doctor giving a placebo in place of a contraceptive to his female subjects. There was no record of any children that may have thus been conceived or what their ultimate fate may have been. In an ethical sense, the Pincus research may have been symptomatic of later Pygmalion studies

based on conscious deceit of subjects on the part of the experimenters.

### Pygmalion in the Classroom

The popularization of academic studies dealing with interpersonal expectancy effects is largely the result of the publication of Pygmalion in the Classroom (Rosenthal and Jacobson, 1968). After reviewing a great number of previous studies involving expectancy effects, Rosenthal and Jacobson proceeded with an experiment of their own design. "The Oak School Experiment" which later came to be known as "The Pygmalion Experiment". In essence, the experiment sought to induce differential expectation of teachers toward their students and to measure the effects of this differential expectation in terms of the students' academic progress and IQ.

Rosenthal and Jacobson selected an elementary school in a lower-class neighborhood and gave all the children a nonverbal IQ test at the beginning of the school year. The test was disguised as one that would predict "intellectual blooming". The school had 18 classrooms, three at each of the six grade levels. Each grade was separated into three tracks, one track for each room, for children with above-average ability, average ability, and below-average ability on the basis of the IQ test.

Following the test, 20 percent of the children in each room were randomly chosen and labeled "intellectual bloomers". This had nothing to do with the results of the test which served only to deceive the teachers into believing that the children labeled as "intellectual bloomers" could be expected to show remarkable gains during the coming year on the basis of their test scores. Any difference between these experimental children and the control group was only in the mind of the teacher since the children were randomly chosen.

The IQ measure was non-verbal, that is, it required no speaking, reading,

or writing on the part of the children. One part of the test was a picture vocabulary which did require a greater comprehension of English so it was called a verbal subtest. The second part was called a reasoning subtest since it required less ability to understand language but more ability to reason abstractly.

The children were retested after eight months. Over the whole school, it was found that the experimental children whose teachers had been led to expect "blooming" showed an excess in overall IQ gain of four points over the IQ gain of the control children. Though the excess gain was smaller in verbal ability, accounting for only two points, it was substantially greater in reasoning, where there was a gain of over seven points over the control children. Furthermore, there was no difference whether the child was in a high-ability or low-ability classroom. Children at all levels benefitted from positive teachers' expectations. The effect was found to be active, at least modestly, over such major variables as age, sex, and minority group status. Results tended to confirm a greater effect for the early grades, a more pronounced effect for girls than for boys, and a more pronounced effect for the children of minority group status.

Different methodologies have been used in inducing and measuring the expectation effect. In duplicating the original Pygmalion study, Meichenbaum, Bowers, and Ross (1969) introduced a number of modifications addressing some of the original's flaws. The experiment employed fourteen female adolescent offenders as subjects. The site of the experiment was in a training school where the girls had four teachers. The teachers all participated in evaluating the academic potential of their students. Three girls who had received uniformly low expectations and three girls who had received uniformly high

expectations were chosen by the experimenters. The experimenters described these girls as "late bloomers", which fact was hypothetically to be based on test scores. The experimenters showed surprise at the original choice that the teachers had made regarding the girls for whom low expectations were held. There was considerable "justification" on the part of the teachers in order to accommodate the late-bloomer information. After nine weeks, classrooms were observed and achievement tests were administered. It was found that "late blooming" girls significantly improved their performance on objectively graded tests in comparison to controls. In such subjective areas as essays, no differences were found and there appeared to be no effect on the basis of prior expectations.

That such research has scientific and social significance may have provided all the more impetus to the critics of the interpersonal expectancy effect. Rosenthal and Rubin (1978) reported that these critics tried to show that one or a number of these studies were in some way deficient (Thorndike, 1968; Jensen, 1969; Elashoff and Snow, 1971). Answer to these criticisms was given in later studies (Rosenthal, 1969a, 1969b, 1973, 1976; Rosenthal and Rubin, 1971).

R. L. Thorndike (1968) objected that the IQ test used in the Rosenthal and Jacobson "Pygmalion Experiment" was unreliable. Jensen (1969) said that if whole classrooms had been studied rather than individual students, only negligible IQ changes would have been noted. Secondly, Jensen argued that using the same IQ test twice might have allowed children to have learned the test by practice and that their scores might have improved as a result of this. Finally, Jensen objected to the tests being administered by the teachers which he felt might have added to the expectancy effect. Elashoff and Snow (1971)

transformed the original IQ measure of the "Pygmalion Experiment" into eight different forms, some of which were statistically biased in order to minimize any effects of teachers' expectations. Some later replication studies were not successful in finding a significant difference due to the teacher expectancy effect.

Thorndike's objection about the IQ test's basic unreliability still leaves the fundamental question unanswered. That is, why was there a significant improvement in the experimental children? If the measure was unreliable, it would have been more difficult to find differences between the two groups, not easier. Jensen, in his first criticism, apparently ignored the fact that the experimental children showed more of the "practice effects" than the control children who also took the test twice. The third objection Jensen raised, that the teachers themselves should not have administered the test, was accounted for by having people who knew nothing of the experiment retest the children. Upon retesting, the effects of teachers' expectations was found to actually increase. The Elashoff and Snow critique could not disprove the fact that the experimental children did gain more IQ points than the control children.

After having examined the results of the 345 latest studies of interpersonal self-fulfilling prophecies, Rosenthal and Rubin (1978) came to the conclusion that the reality of the phenomenon is beyond doubt and that the mean size of the effect is clearly not trivial. That is, they showed that it was unreasonable to suppose that there existed enough unretrieved studies to overwhelm the studies that were available. In order to have made the combined results of the available 345 studies insignificant, it would have been necessary for file drawers to have been crammed with the unpublished

results of over 65,000 studies of interpersonal expectancy effects, all showing no effects of interpersonal expectations.

Observational Studies of Expectancy Effects in the Natural Setting of the Classroom

In conducting a number of studies involving observations of interactions between teachers and pupils in natural classroom situations, a number of researchers have been able to observe, record, and analyze interpersonal expectancy effects in action. This naturalistic research may be categorized according to the four-factor typology proposed by Rosenthal (1974). This may be particularly useful in that the four elements of climate, input, output, and feedback may then be employed to test such theoretical causal models as proposed by Cooper (1979) or Braun (1976).

A number of studies were conducted that showed teachers create a warmer socioemotional atmosphere for brighter students (Chaikin, Sigler, and Derlaga, 1974; Page, 1971). The first of these studies consisted of the videotaping of simulated tutorial sessions in order to study nonverbal expectation variations. Results showed that teachers who believed that they were interacting with bright students smiled and nodded their heads more often than teachers who believed they were interacting with slow students. Teachers also tended to lean towards the students they perceived as bright and looked into their eyes more frequently. In addition to high expectations leading to more smiling, the second of these studies reported that the largest performance difference appeared between the high-expectation group that received the most smiles and the low-expectation group that received the least smiles. The final study induced expectations in professional teachers and observed actual classrooms. The results showed that classroom observers found teachers most supportive and friendly toward the bright students. Many behaviors

associated with positive emotional attraction appear, thus, to be displayed by teachers in interactions with students whom they consider to be bright.

Quantity and quality of teacher input in terms of novel instructions as well as general verbal teacher input to students appear also to be dependent on performance expectation. Students perceived to be slow have been found to receive fewer opportunities to learn new material than students labelled bright (Beez, 1970). Students labelled as slow receive less difficult instructional material (Cornbleth, Davis & Button, 1974). Labelling and teachers' expectations, thus, appear to prophesy what the differential mode of instruction for the student is likely to be. That the results of the students' academic progress should be biased accordingly.

Brophy and Good (1974) cited 20 studies based primarily on naturalistic observations in which the frequency of teacher-student academic interactions was assessed. In considering the output factor, these studies have shown that teachers are more willing to pursue an answer with students for whom they hold high expectations than for students for whom they hold low expectations. In addition, highs seem to create more output opportunities for themselves, while teachers vary in the way of accentuating and equalizing frequency differences.

An important study in the natural classroom setting of the effect of the self-fulfilling prophecy in ghetto education was performed by Rist (1970). This study attempted to explain exactly how the school helps to reinforce the class structure of the society. It was based on observations of one class of ghetto children during their kindergarten, first -and- second grades. The study showed how the kindergarten teacher placed the children in reading

groups which reflected the social class composition of the classroom, and the persistence of these groups throughout the first several years of elementary school. It demonstrated that the way in which the teacher behaved toward the different groups became an important influence on the children's achievement. The study closed the examination of the larger relationship between the "caste" system of the individual classroom and the class system of the larger society.

For the final factor of the Rosenthal (1974) typology, feedback or the use of teachers' praise and criticism after an academic exchange is considered. Brophy and Good (1974) found that teachers tended to praise high-expectation students more and proportionately more per correct response, while low expectation students were criticized more and proportionately more per incorrect response. These results were based on some studies which simply tallied positive vs. negative use of affect as well as some studies which adjusted praise and criticism use by the number of correct and incorrect responses so as to allow for greater opportunity for the teachers to be positive to those students for whom they had high expectations.

#### Ascribed Characteristics, Different Expectations, and Different Performances

Among the studies of the self-fulfilling prophecy based upon an analysis of secondary data, the study conducted by Trevor Williams (1976) suggests that teacher expectations affect not so much what is learned in school as in the certification of that learning. Thus, although teachers appear to base their expectations on the achievement of students, not on students' ascribed characteristics, there remains the effect of student conformity to classroom norms that has an impact on the evaluations they receive from teachers.

Williams argues that all effects of social origins on achievement are



mediated by the achieved characteristics of students. There is no apparent critical linkage of the three components of the students' social origins with their academic achievement. Although Williams argues that students' social class achievement relationship persists, this is because of social class differences in "merit", that is IQ. He absolves, thereby, the teachers from any social class discrimination within the context of any possible school implication resulting in the inheritance of inequality.

The study does find that teachers appear to engage in discrimination of another kind. Despite the minor effects, at best, of teacher prophecies for both cognitive and normative performances on what students actually learn, these same prophecies are fulfilled in teacher evaluations of their learning. The study suggests that teachers bring their evaluations of student performance, expressed in course grades, into line with their own expectations for this performance and, moreover, adjust these evaluations according to how well students conform to the behavioral norms of classrooms. Thus, some students can do well irrespective of what they actually learn simply by conforming to the norms expected of them by their teachers.

To find out if teachers hold differential expectations for pupils on the basis of sex, race, or ability, Finn (1972) chose a group of fifth-grade pupils to write two essays each on the topics "What I think about", and "My favorite school subject". These essays were arranged into four pairs which were used to represent different writing styles. Letters were then sent out to groups of fifth-grade teachers. Accompanying each essay pair was a covering letter providing systematic false information about the pupil who supposedly wrote both of the essays. The student was identified in terms of race (Negro - white), sex (male - female), IQ score, and past achievement.

Each essay was accompanied by a ten-point rating scale from very poor to very good for the categories of spelling and punctuation, grammar, sentence structure, organization, neatness, relevance of ideas, appropriate word usage, clarity, creativity and imagination, and completeness of thought. The 300 completed rating forms returned represented 63 or the 64 experimental conditions obtained by crossing the four essay pairs with sex, race, and ability levels of the pupils and with either urban or suburban school local.

The study presented evidence that in certain settings teachers do hold differential expectations for the achievement of student groups having common non-achievement characteristics. It was found that expectations for specific pupils were very pervasive, even where achievement was controlled from one individual to another. There was evidence for differential expectations being held for white males and females, while for Negroes, there was no evidence of sex differences.

In a study designed to assess the effects of ethnicity, dialect, and physical attractiveness on teachers' evaluations, DeMeis and Turner (1978) chose student subjects of two races, black and white; three physical attractiveness levels, high, middle, and low; and speaking one of two dialects, Black English or Standard English. A panel of sixty eight, white, elementary school teachers listened to each student's response and rated the student in terms of personality, quality of response, and current and future academic abilities. In analyzing the results, the experimenters found that all main effects and interactions were significant. There was generally a lower rating of black students, Black English-speaking students, and of students perceived to be of low physical attractiveness. It was also

revealed that teachers' ratings in the different areas were highly consistent with one another. These results supported the notion that perhaps childrens' academic failures were to some degree determined by differential teachers' expectations focussing on race and dialect rather than on actual performance.

A study examining the relationships between ethnicity and sex of students and the expectations of their teachers was conducted by Clifton (1979a). The study examined the material compiled in the Carnegie Human Resources Data Bank, a five year panel study of the total school population of Ontario during the early 1960's. The expectations of teachers for students from four groups designated according to the main language spoken in the home as Yiddish-speaking, German-speaking, French-speaking, and English-speaking were examined. The results indicated that there were strong relationships between ethnicity of students and the expectations of their teachers as well as marked effects between the sex of students and the expectations of their teachers even when the students' intellectual ability, academic performance, educational plans, father's education, and mother's education were controlled.

#### The Model

The present study is an extension of the above research insofar as it seeks to examine the relationship between the ethnicity of students, the effect that this may have on the expectations of teachers, and the effect that expectations have as mediation variables upon the academic performances of students. It makes use of the same data source and has as its subjects the students who spoke either French or Yiddish as their main language at home.

Since this study proposes to examine the relationship between the ethnicity of students, the effect that this may have on the expectations of teachers, and the effect that expectations have as mediation variables upon

the academic performance of students, it is necessary to construct a model of the proposed relationship and to test the strengths of the relationships presented therein.

As a result of the wealth of data available in the Carnegie Human Resources Data Bank, it is possible to expand the originally considered model by providing a number of important controlling and intervening variables (See Figure 1). Thus, the basic assumptions of the original thesis may be tested while the relative strengths of important control and intervening variables may also be determined.

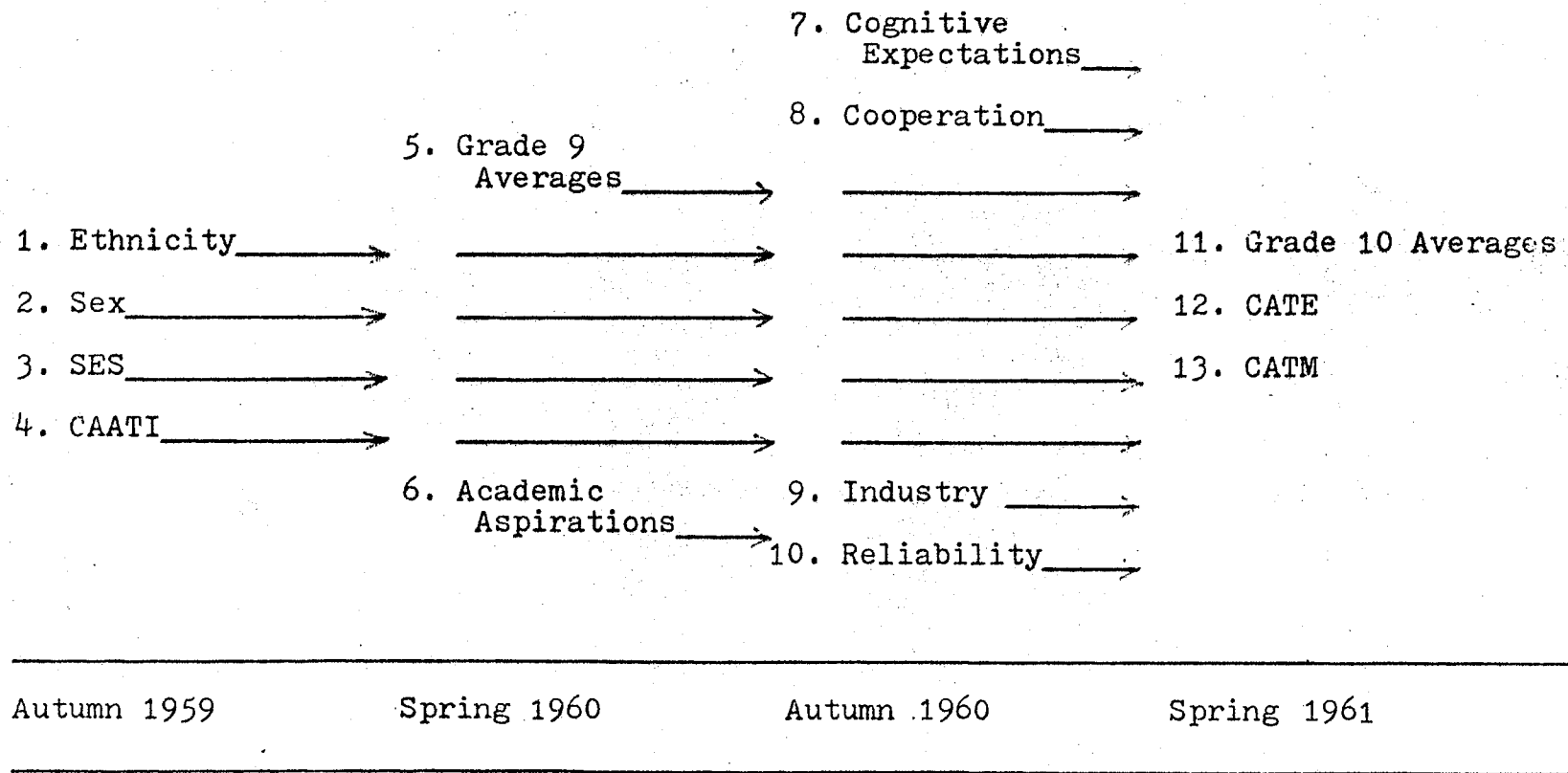


FIGURE 1  
THE THEORETICAL MODEL

## CHAPTER 3

### METHODOLOGY

This chapter presents a description of the sample, a description of the variables included in the study, a statement of the procedure used, and a short summary of the chapter.

#### The Sample

The subjects of this research were drawn from the Carnegie Human Resources Data Bank. The original study conducted during 1959-60 on 90,719 Grade 9 students from almost all of the secondary schools of Ontario, both public and private. Students and their teachers were administered a battery of tests and questionnaires intended to obtain estimates of the future human resources of Ontario as well as a measurement of students' aptitudes, interests, and personality characteristics. The pattern of testing was repeated in succeeding years until the students completed high school. The data is now available on a 12-tape data bank which contains a record of the progress of these 90,719 students over their high school careers.

From this data set, the French-speaking and Yiddish-speaking students were selected for further analyses in the present study. These particular students were chosen on the basis of the results of King's (1968) study of "Ethnicity and School Adjustment". The study by King employed student data that reflected academic aptitude, performance on achievement tests, teachers' ratings of adjustment, socioeconomic factors, grades, and yearly retention rates. King's (1968) study reports that while only 3.2 percent of the French-speaking group graduated from Grade 13, 40.6 percent of the Yiddish-

speaking group graduated from Grade 13. In addition, the study found that the Yiddish-speaking group was more superior than the other ethnolinguistic groups on the basis of standardized achievement tests while the French-speaking group's was inferior to the other ethnolinguistic groups. The distribution of French -and Yiddish- speaking students by sex is presented in Table 1. Ethnicity was determined from the question "What is the main language spoken in your home?"

TABLE 1  
SAMPLE BY ETHNICITY, SEX, AND GRADE

ETHNICITY	SEX	GRADE 9	GRADE 10	PERCENTAGE RETAINED
French	Males	2547	1268	49.78
	Females	2578	1385	53.72
Yiddish	Males	108	78	72.22
	Females	116	94	81.03
TOTALS		5349	2825	52.81

On this basis, 5,125 or 5 percent of the students in Grade 9, indicated that they were from French-speaking homes, while 224, or 0.25 percent of the Grade 9 students, indicated that they were from Yiddish-speaking homes. In Grade 9, there were 2,655 males and 2,694 females, for a total of 5,349 students. In Grade 10, 2,653 or 2.92 percent of the students indicated that they were from French-speaking homes while 172 or 0.20 percent of the students in Grade 10 reported that they were from Yiddish-speaking homes. In Grade 10, there were 1,346 males and 1,479 females for a total of 2,825 students.

It may be noted that the retention rates for Grades 9 through 10 reported in King (1968, p.88) approximates those of the present study. The latter study reports a retention rate for French-speaking students of 61.4 for both males and females combined while the present study reports a rate of 49.78 for the males and a rate of 53.72 for the females. Furthermore, King reports a retention rate of Yiddish-speaking students of 84.9 for both males and females combined, while the present study reports a rate of 72.22 for the males and of 81.03 for the females.

#### The Variables

This subsection describes the manner in which the variables used in the present study were measured. These variables are presented within the framework of the theoretical model presented in Figure 1.

Responses to questionnaire items reported in MacEachern (1960), Weisbrod and Brehaut (1963), D'Oyley (1964) and Brehaut (1964) formed the basis for the variables.

Ethnicity. This variable was created from the respondent's answer to a question about the major language spoken in their home. French-speaking students were coded as 1 and Yiddish-speaking students were coded as 2.

Sex. To create this variable, one of two possible responses, coded as 1 for male students and 2 for female students, was obtained from each respondent.

SES (Socioeconomic Status). To create this variable, three students reported measures were summed: father's occupation, and eight category scale based on Blishen and McRoberts (1976); together with father's education and mother's education, both based on five-point scales ranging from "no secondary school" to "university degree".



CAATI (Canadian Academic Aptitude Test I). This variable was created from the respondent's scores on the Canadian Academic Aptitude Test I which was considered to be a non-verbal reasoning test. It is of six-page format and requires the use of separate Digitek answer sheets. This non-verbal reasoning test is constructed of figure analogy items and matrix items using dominoes. No reliability or validity information are provided by the authors, however, Buros (1965: 446) reports corrected odd-even reliability coefficients of 0.88 and 0.90.

Grade 9 Averages. This variable is represented by the measure of the student's grade point average that was compiled in the Spring of his or her Grade 9 year.

Academic Aspirations. Each respondent's answer about his or her own educational and work plans provided the basis for this variable. Seven responses were provided; these ranged from "leave school as soon as possible to obtain a job" to "complete secondary school and enter university".

Cognitive Expectations. Teachers were requested to provide a rating of each student's chances of completing Grade 13 successfully. This was a consensus rating assigned by the teacher group. It employed a five-point scale which ranged from "much below average" to "much above average".

Cooperation. Within each school, teachers were requested to rate each student's cooperation with students and teachers. This represented a consensus rating assigned by the group of teachers on the basis of a five-point scale that ranged from "much below average" to "much above average".

Industry. This variable represents a consensus rating by the group of teachers of the individual student's industry in school work. It employed a five-point scale ranging from "much below average" to "much above average".

Reliability. Teachers within each school were asked to rate, according to a five-point scale ranging from "much below average" to "much above average", each student's reliability as indicated by performance on curricular and extra-curricular activities.

Grade 10 Averages. This variable was created from the average grades calculated from marks assigned by teachers in the Spring of 1961 on all relevant subjects.

CATE (Canadian Achievement Test in English). This variable is represented by each respondent's score on the Canadian Achievement Test in English.

This test of English achievement for Grade 10 students was specifically designed for use in the Carnegie Study. The test consists of 110 items; 43 of which test elementary editing ability, another 27 tested for the application of traditional grammatical terminology. Three items tested for prose comprehension, 2 items tested for punctuation and 5 items tested for sentence construction.

CATM (Canadian Achievement Test in Mathematics). This test of mathematics achievement in Grade 10 was developed specifically for the Carnegie Study. It consists of 30 items and is divided into 3 sections labelled Algebra (15 items), Geometry (12 items), and Mensuration (3 items). The parts were not timed separately and no part scores were obtained.

The 15 items in the Algebra section include 2 verbal problems; the remaining 13 problems were computational. The 12 items in the Geometry section included questions that involve numerical computation and statements concerning geometrical relationships based mainly on the properties of a triangle or of congruent triangles. The remaining 3 items dealt with the

measurement of lengths, areas, and volumes.

Table 2 presents the mean, standard deviation, skewness and kurtosis for all the variables used in this study other than the two nominal variables - Sex and Ethnicity.

In determining the degree to which a distribution of cases approximates a normal curve, it may be useful to examine skewness since it measures deviation from symmetry (Nie et.al., 1975: 184). Skewness takes on a value of zero when a distribution is completely symmetrical. Thus, when the skewness of the variables described in Table 2 is examined, it may be noted that the skewness varies from a distribution skewed slightly toward the right (skewness = 0.392) in the case of CATE and of a distribution skewed slightly to the left (skewness = 0.727) in the case o- CAATI.

The relative peakedness or flatness of a distribution is provided by the statistic called kurtosis (Nie et.al., 1975: 185). A value of zero describes a normal distribution. The range of kurtosis reported in Table 2 extends from a slightly negative kurtosis (-2.001) in the case of SES, which indicates a flattening of the distribution, to a slightly positive kurtosis (1.409) in the case of Grade 10 Averages which indicates a slightly more peaked curve of distribution.

With respect to both skewness and kurtosis, the distributions for the variables reported in Table 2 do not differ significantly from a normal curve. It should, therefore, be possible to determine the relationships between these variables by means of further parametric statistical analysis.

TABLE 2  
DESCRIPTIVE STATISTICS FOR THE VARIABLES\*

VARIABLE	MEANS	S.D.	SKEWNESS	KURTOSIS
SES	6,920	2,953	-0.015	-2.001
CAATI	26,900	8,665	-0.727	-0.304
Grade 9 Averages	59,256	14,286	-0.320	-0.103
Academic Aspirations	4.814	1.813	-0.278	-1.047
Cognitive Expectations	2.447	1.124	0.322	-0.738
Cooperation	3.285	0.839	0.065	0.160
Industry	3.151	0.922	0.006	-0.214
Reliability	3.194	0.875	-0.003	0.131
Grade 10 Averages	62.676	11.930	-0.580	1.409
CATE	56.207	12.976	0.392	-0.114
CATM	16.153	5.144	0.247	-0.492

\*This table does not include the nominal variables of Sex or Ethnicity which have been described in TABLE 1.

### Procedures

To test the strengths of the relationships expressed within the causal model presented in Figure 1, this study employs multiple regression. Multiple regression is a general statistical technique through which it is possible to analyze the relationship between a dependent or criterion variables and a set of independent or predictor variables. Thus, multiple regression may be considered as a tool by which the linear dependence of one variable on others is summarized and decomposed.

This study is concerned primarily with the use of multiple regression as an explanatory tool. This implies the use of multiple regression technique along with a causal theory. The emphasis in such an application is neither in the overall dependence of one variable on others nor the relationship between any particular pair of variables. Rather, multiple regression is used here to describe the entire structure of linkages between independent, intervening, and dependent variables and to assess the logical consequences of a structural model that is posited from a causal theory. In considering the causal theory of the model of this study, it is possible to discern an ordering among the variables that reflects a presumed structure of linkages. Multiple regression techniques are then used to determine the magnitude of direct and indirect influences that each variable has on other variables that follow it in the presumed causal order.

In multiple regression analyses, the effects of all independent variables upon each dependent variable is calculated. To standardize all variables within such an equation, so that their relationship may become meaningful, it is necessary to assume that the standard deviations of all the distributions represented by the variables are equal and that the distributions of all the variables are normal. The regression equations are not pictorially representable since they represent a kind of hypersurface along a number of dimension.

A number of statistical relationships can be derived through the procedure of multiple regression that allow the analyst to deduce some measure of relationship between the variables. For the purpose of this study, the following measures are reported:

- 1) Zero-order Pearson correlation coefficients
- 2) R squares, and
- 3) Standardized regression coefficients.

Pearson's R serves a dual purpose. Besides its role as an indicator of the goodness of fit of the linear regression, it is a measure of association indicating the strength of the relationship between two variables. To determine the strength and direction of a linear relationship, R is used. If the value of R is close to zero, it can be assumed that there is little or no relationship between the two variables. If the value of R approaches 1.0 or -1.0, it may be assumed that there is a strong relationship.

If Pearson's R is squared, another statistic denoted by  $R^2$  is obtained. This  $R^2$  is actually a more easily interpreted measure of association when the concern is for strength of relationship rather than the direction of relationship. The value of  $R^2$  ranges from a minimum of zero to a maximum of 1.0. Its usefulness derives from the fact that  $R^2$  is a measure of the proportion of variance in one variable measured by one or more other variables.

The standardized regression coefficient, or Beta, indicates how much change in the dependent variable is produced by a standardized change in one of the independent variables when the others are controlled. As a rule of thumb, coefficients of 0.250 or greater are generally considered to represent strong effects, coefficients of between 0.250 and 0.100 are considered to represent moderate effects, and coefficients of less than 0.100 weak effects.

The measure of statistical significance or p value indicates the probability that in a representative sample of a given size, the variables would exhibit a relationship as strong as the observed relationship. A test of statistical significance is thus based on the results of a hypothetical

experiment. It may be supposed that two variables are totally unrelated to each other in the universe, but are distributed exactly as they are in the observed sample. It may then be supposed that an infinite number of samples of the same size are drawn from the universe of cases. The probability of the observed relationship occurring by chance is equal to the proportion of the samples in which the relationship between the two variables is as strong or stronger than in the observed relationship. The social sciences have accepted as a convention that a relationship which has a probability of occurring by chance 5 percent of the time or less (i.e., in 5 out of 100 samples), is considered statistically significant.

#### Summary

This chapter has described the sample, the measurement of the variables, and the procedures used in the study. Data were collected from the Carnegie Human Resources Data Bank. This comprised the record of 90,719 Grade 9 students from almost all of the secondary schools of Ontario in 1959-1960. Multiple regression analysis was the procedure used to decompose and interpret the linear relationships among the variables. The findings of this multiple regression analysis are presented in the next chapter.

## CHAPTER 4

### FINDINGS OF THE STUDY

This chapter is concerned with the estimation of the direct effects of the independent variables, Ethnicity, Sex, Socioeconomic Status (SES) and CAATI, on four of the intervening variables, Cognitive Expectations, Reliability, Industry, and Cooperation. As well, the chapter deals with the effects of these four independent variables, together with Academic Aspirations and Grade 9 Averages, upon the teacher expectations. In addition, the effects of the four independent variables upon the dependent variables, Grade 10 Averages, CATE, and CATM are examined. Furthermore, the effects of the independent variables and of the intervening variables upon the dependent variables are estimated. Finally, the indirect effects of Ethnicity on student performances are calculated.

#### The Pearson Correlation Coefficient

In order to estimate the effect parameters of the models Pearson correlation coefficients were calculated among all the variables. These inter-correlations are presented in Table 3.

In considering the Pearson correlation coefficients, it is important to note that some of the intervening variables used in testing some of the relationships are highly intercorrelated. This introduces the problem of multicollinearity. Specifically, Cooperation and Reliability, are very highly intercorrelated. Multicollinearity refers to the situation in which some or all of the independent variables are very highly intercorrelated. This prevents the multiple regression procedure from accurately evaluating the relative importance of the independent variables (Nie et.al., 1975: 340).



TABLE 3  
INTERCORRELATIONS BETWEEN VARIABLES

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	1.000												
2.	.006	1.000											
3.	.116	-.002	1.000										
4.	.127	-.002	.155	1.000									
5.	.108	.203	.181	.403	1.000								
6.	.147	-.032	.259	.179	.278	1.000							
7.	.141	.051	.181	.296	.574	.301	1.000						
8.	.114	.026	.026	.140	.342	.098	.464	1.000					
9.	.129	.025	.025	.162	.414	.128	.583	.709	1.000				
10.	.112	.044	.044	.163	.390	.117	.555	.758	.740	1.000			
11.	.125	.153	.143	.304	.677	.230	.653	.425	.569	.502	1.000		
12.	.294	.182	.186	.388	.541	.296	.534	.253	.325	.284	.545	1.000	
13.	.229	.017	.140	.432	.474	.174	.421	.238	.294	.293	.495	.518	1.000

Variable identifications are: 1, Ethnicity; 2, Sex; 3, SES; 4, CAATI; 5, Grade 9 Averages; 6, Academic Aspirations; 7, Cognitive Expectations; 8, Cooperation; 9, Industry; 10, Reliability; 11, Grade 10 Averages; 12, CATE; 13, CATM.

In such a situation where the correlation between two variables is high the standard error is high. If the correlation is unity, the standard error is infinite (Blalock, 1963: 234).

In considering the severity of the problem caused by multicollinearity, Farrar and Glauber (1967: 98) indicate that econometricians have relied on the rule of thumb that one should not be concerned about the condition until the correlations between independent variables are around 0.8 or 0.9. The highest correlation (0.758) in this study is between the variables, Cooperation and Reliability. Thus, in later analyses, there may be some cause for concern. That is, the accuracy of the effects of these two variables may be subject to some doubt. This problem is not of the same severity with respect to other variables. Thus, multicollinearity will not interfere seriously with the accuracy of the effect parameters for any of the other variables.

Of greatest importance to this study are the effects of teachers' expectations represented by the variables of Cognitive Expectations, Reliability, Industry, and Cooperation on the dependent variables of Grade 10 Averages, CATE, and CATM. The highest correlation is between Cognitive Expectations and Grade 10 Averages (0.653).

Table 3 contains many other correlations but the major concern of this study is with the relationships between Ethnicity and the measures of teachers' expectations, Ethnicity and the measures of students' achievement in schools, and the effect of the measures of teachers' expectations on the measures of students' achievement in school as mediated by teachers' expectations.

Relationships between the Four Independent Variables and Teachers' Expectations

In considering the relationships between the four independent variables of Ethnicity, Sex, SES, and CAATI on Reliability, Cooperation, Industry, and Cognitive Expectations we may come to some appreciation of the effect of students' ethnicity on teachers' expectations when variables representing sex, socioeconomic rank, and general academic aptitude are controlled.

TABLE 4

RELATIONSHIPS BETWEEN FOUR INDEPENDENT VARIABLES AND RELIABILITY, COOPERATION, INDUSTRY, AND COGNITIVE EXPECTATIONS

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	RELIABILITY (Beta)	COOPERATION (Beta)	INDUSTRY (Beta)	COGNITIVE EXPECTATIONS (Beta)
Ethnicity	.091***	.097***	.110***	.092***
Sex	.090***	.100***	.141***	.054***
SES	.012	-.003	.008	.130***
CAATI	.149***	.129***	.150***	.264***
$R^2$	.043	.039	.058	.117

\*p .05; \*\*p .01; \*\*\*p .001.

Table 4 indicates that the most highly significant as well as by far the strongest effect is that of CAATI on Cognitive Expectations (0.264). The Effects of Ethnicity on the dependent variables are moderate, by comparison. They are, however, highly significant. Ethnicity has the greatest effect on the measure of Industry, then on Cooperation, Cognitive Expectations, and finally on Reliability. Clearly, though, the effect of CAATI is stronger

than any of the other independent variables. Sex effects, though generally weak, were highly significant and had generally more effect upon the dependent variables than did SES, with the exception of Cognitive Expectations (0.130).

The results of this analysis demonstrates that the general academic aptitude of students has the greatest influence on the expectations of teachers with respect to the future academic success of their students. Moreover, teachers view students of higher academic aptitude as somewhat more reliable and industrious. Girls are seen as being somewhat more industrious than boys. Teachers see students of higher socioeconomic status as being more likely to succeed in further academic endeavors. Teachers also consider, as more cooperative, those students who show higher general aptitude in academic subjects. Yiddish-speaking students are seen by their teachers as being slightly more cooperative than French-speaking students while they are also considered more likely to complete their Grade 13. In the case of reliability and likelihood of completing Grade 13, girls are seen by their teachers as having more likelihood of success.

Relationships between Four Independent Variables, Two Intervening Variables, and Teachers' Expectations

When the relationships between the four independent variables of Ethnicity, Sex, SES, and CAATI and the intervening variables of Academic Aspirations and Grade 9 Averages, and the dependent variables of Reliability, Cooperation, Industry, and Cognitive Expectations are considered, it is possible to appreciate more fully the sources of most ethnic sex biases demonstrated by teachers.

Table 5 illustrates that by far the greatest effect among the variables is the effect on Cognitive Expectations by Grade 9 Averages (0.513). It should be noted that the effect of Ethnicity is considerably smaller than

the previously mentioned effect. The effect of Grade 9 Averages on Industry, Reliability, and Cooperation follow, in magnitude, the effect of Cognitive Expectations. The significant results noted in Table 5 indicate that the greatest influence upon the expectations of teachers as to which of their students will graduate from Grade 13 is exerted by the students' previous performance not only that, performance also influence teachers' evaluations of industry, reliability, and cooperation to a considerably greater degree than do other factors.

Although Yiddish-speaking students receive consistently better evaluations than do their French-speaking classmates on all ratings of teachers' expectancy, this appears to be due largely to the previous year's grades and to a considerably lesser degree to other factors (Compare Table 4 and 5). It is also notable that teachers think girls to be slightly more industrious than boys and yet girls are thought to have a slightly less chance of completing Grade 13. It helps students' ratings more to be Yiddish-speaking than to be cooperative, industrious or reliable. It is only in the teacher rating of future academic success that average performance and academic aspirations are more influential than ethnicity. Nevertheless, it is notable that such a factor as academic aptitude (AATI) has less effect upon all ratings of teacher expectation than does the ascribed factor of ethnicity. Worthy of consideration, as well, is the indication that while children of less affluent backgrounds may be considered by their teachers to be more reliable, cooperative, and industrious than their more affluent classmates, they are thought to have less chance for completing Grade 13. The fact that ethnicity plays a greater role than socioeconomic status in determining all of the criteria of teacher expectancy is also noteworthy.

A comparison of Table 4 and Table 5 shows that after the variables of Grade 9 Averages and Academic Aspirations have been added to the analysis with Ethnicity, Sex, SES, and CAATI, there is 11.6 percent more variance explained for Reliability, 8.7 percent more for Cooperation, 12.7 percent more for Industry, and 24.5 percent more for Cognitive Expectations.

TABLE 5

RELATIONSHIPS BETWEEN FOUR INDEPENDENT VARIABLES, TWO INTERVENING VARIABLES, AND RELIABILITY, COOPERATION, INDUSTRY AND COGNITIVE EXPECTATIONS

INDEPENDENT VARIABLES	DEPENDENT VARIABLES			
	RELIABILITY	COOPERATION	INDUSTRY	COGNITIVE EXPECTATIONS
	(Beta)	(Beta)	(Beta)	(Beta)
Ethnicity	.073***	.082***	.089***	.055***
Sex	.011	.031	.060***	-.048***
SES	-.037*	-.045***	-.061***	.039***
CAATI	.003	.002	-.004	.053***
Academic Aspirations	.009	.006	.023	.130***
Grade 9 Averages	.383***	.332***	.398***	.513***
R <sup>2</sup>	.159	.126	.185	.362

\*p .05; \*\*p .01; \*\*\*p .001.

It appears significant that the addition of Grade 9 Averages and Academic Aspirations results in a "washing out" of 19.8 percent of Ethnicity's effect on Reliability, 15.5 percent of its effect on Cooperation, 19.0 percent of the effect it had on Industry, and 40.2 percent on Cognitive Expectations. The effect of Sex is also diminished considerably, 57.5 percent less on

Industry. It is also interesting to note that 79.9 percent of CAATI's effect on Cognitive Expectations is lost. Most of this is due to Grade 9 Averages. These results indicate that when teachers assessed Yiddish-speaking students to be more reliable, cooperative, and industrious, they did so to a considerable and very significant degree on the basis of the previous year's grades and to a smaller degree as a result of the higher academic aspirations of the students. That these two factors explained a large part of why teachers saw girls as being more industrious and why they viewed Yiddish-speaking students as being more likely to succeed in future academic endeavors is important. It is interesting that almost the total effect previously ascribed to academic aptitude upon the teacher expectation evaluations is reduced to insignificance when academic aspirations and Grade 9 Averages are added. Moreover, when these two variables are added to the analysis, a small effect is retained with respect to the students' likelihood of completing Grade 13. From this data, it appears that succeeding with the previous year's grades is the best way for students to influence positive expectations in their teachers. It also helps if students have higher academic aspirations, if they are girls when it comes to being evaluated for industry and if they are boys in the case of graduating from Grade 13, and if they are Yiddish-speaking rather than French-speaking.

#### Relationships between Four Independent Variables and Academic Evaluations of Students

In considering the data presented in Table 6, it is useful to note the relative effects of the four independent variables of Ethnicity, Sex, SES, and CAATI on the three dependent variables of Grade 10 Averages, CATE, and CATM. The  $R^2$  values indicate that the proportion of variance explained by these variables is quite large and ranging from 13.5 percent to 25.5 percent.

The largest effects are CAATI on CATM (0.401). This is followed by the effects of CAATI on CATE (0.341), and CAATI on Grade 10 Averages (0.280). It appears that the only effect on comparable magnitude is that of Ethnicity on CATE (0.236). These results are followed in a declining order of effects from Sex on CATE, Ethnicity on CATM, Sex on Grade 10 Averages, and finally of SES on CATE. Of somewhat lesser magnitude is the effect of Ethnicity on Grade 10 Averages, while the effect of SES on CATM is even weaker and less significant. It is notable that while CAATI's effects are greatest on all three achievement measures, Ethnicity has the second greatest effect on CATE AND CATM.

TABLE 6  
RELATIONSHIPS BETWEEN FOUR INDEPENDENT VARIABLES  
AND GRADE 10 AVERAGES, CATE, AND CATM

INDEPENDENT VARIABLES	DEPENDENT VARIABLES		
	GRADE 10 AVERAGES (Beta)	CATE (Beta)	CATM (Beta)
Ethnicity	.077***	.236***	.171***
Sex	.165***	.183***	-.017
SES	.094***	.110***	.057***
CAATI	.280***	.341***	.401***
R <sup>2</sup>	.135	.255	.220

\*p .05; \*\*p .01; \*\*\*p .001.

In considering the direct relationships between the four independent variables and the three measures of student achievement, it is notable that students who have higher general aptitude are favored in all three measures



but especially the standardized measures, and in particular Mathematics. Yiddish-speaking students have higher scores than their French-speaking classmates for all measures but most particularly those of English standardized achievement followed by Mathematics. In all of the measures for achievement, it is the standardized measures rather than the teacher assigned grades that indicate the strongest ethnic effects.

Relationships between Four Independent Variables, Two Intervening Variables, and Academic Evaluations of Students

Table 7 presents the data describing the relationships between the four independent variables of Ethnicity, Sex, SES, and CAATI, two intervening variables, Grade 9 Averages and Academic Aspirations, and the three dependent variables of Grade 10 Averages, CATE, and CATM. This presentation offers the advantage of systematically introducing the two control variables of Grade 9 Averages and Academic Aspirations into the general model. The fact that the  $R^2$  values in Table 7 are of a considerably greater magnitude than the  $R^2$  values in the preceding tables indicates that the proportion of variance explained by these relationships is correspondingly higher.

In Table 7, the effect by far of the greatest magnitude is that of Grade 9 Averages on Grade 10 Averages (0.640) which is followed by the effect that Grade 9 Averages have on CATE and CATM. Ethnicity has a comparatively stronger effect on the two standardized measures of achievement. These results tend to indicate that by far the greatest predictor of student success in Grade 10 is the student's marks from the previous year. It is notable that these marks should play a greater role in determining the teacher assigned marks for the Grade 10 year while the effect of all of the other factors is to influence the standardized achievement measures to a greater degree.

Furthermore, it is of considerable note that to be Yiddish-speaking is of more help to a student's achievement in English and Mathematics but not in teacher assigned marks in Grade 10, than it is to have higher academic aspirations and higher academic aptitude. Only in the case of teacher assigned marks in Grade 10 does the fact that a student is Yiddish-speaking rather than French-speaking play a less biasing role than does the academic ability of the student.

A comparison of Table 6 with Table 7 indicates that the increment in variance explained is 33.0 percent more for Grade 10 Averages, 14.6 percent more for CATE, and 10.5 percent more for CATM. This is the result of adding the two intervening variables of Grade 9 Averages and Academic Aspirations to the four independent variables of Ethnicity, Sex, SES, and CAATE and obtaining their effects on the dependent variables of Grade 10 Averages, CATE, and CATM.

It is also noteworthy to consider the effects that adding the variables of Grade 9 Averages and Academic Aspirations have on "washing out" the main effects noted in Table 6. In this way, the effect of CAATI on CATM has been reduced by 34.7 percent, CAATI on CATE by 47.2 percent, CAATI on Grade 10 Averages by 88.2 percent, Ethnicity on CATE by 12.3 percent, Sex on CATE by 41.5 percent, Ethnicity on CATM by 9.4 percent, Sex on Grade 10 Averages by 79.4 percent, and SES on CATE by 67.2 percent.

TABLE 7

RELATIONSHIPS BETWEEN FOUR INDEPENDENT VARIABLES, TWO INTERVENING VARIABLES, AND GRADE 10 AVERAGES, CATE AND CATM

INDEPENDENT VARIABLES	DEPENDENT VARIABLES		
	GRADE 10 AVERAGES (Beta)	CATE (Beta)	CATM (Beta)
Ethnicity	.044***	.207***	.155***
Sex	.034**	.107***	-.093***
SES	.008	.036**	.014
CAATI	.033*	.180***	.262***
Grade 9 Averages	.640***	.385***	.369***
Academic Aspirations	.039***	.121***	-.004
R <sup>2</sup>	.465	.401	.326

\*p .05; \*\*p .01; \*\*\*p .001.

Relationships between Four Independent Variables, Six Intervening Variables, and Academic Evaluations of Students

The relationship of the four independent variables of Ethnicity, Sex, SES, and CAATI, the six intervening variables of Grade 9 Averages, Academic Aspirations, Cognitive Expectations, Cooperation, Industry, on the academic performance of the students are presented in Table 8. The R<sup>2</sup> values in Table 8 are greater than those of the preceding tables indicating that the proportion of variance explained by these relationships is correspondingly greater as a result of adding the teachers' expectation variables. The greatest percentage, 13.6 percent, is for Grade 10 Averages.

In Table 8, the effect of greatest magnitude is that of Grade 9

Averages on Grade 10 Averages (0.047). Following this are the effects of Cognitive Expectations on CATE (0.314), Grade 9 Averages on CATM (0.270). Of comparable magnitude are the effects of Cognitive Expectations on Grade 10 Averages, CAATI on CATM, and Grade 9 Averages on CATE. These are followed in a declining order of magnitude of Industry on Grade 10 Averages, Ethnicity on CATE, CAATI on CATE, Cognitive Expectations on CATM, Ethnicity on CATM, Sex on CATE, and Sex on CATM.

These data indicate that the most significant way in which students may affect their next year's marks is by doing well in the preceding year's teacher assigned evaluations. It is notable that both measures of standardized achievement are considerably less affected by grades from the previous year. Teachers' expectations of the student's ability to succeed in graduating from Grade 13 have a considerable effect on standardized English achievement and a somewhat lesser effect on the final year's marks. It is highly significant that students who are Yiddish-speaking gain an advantage in standardized Mathematics achievement which is almost equal to the higher academic aspirations. Within the scope of such effects there appears to be some evidence of ethnic bias perhaps resulting from teachers' expectations.

The effects of teachers' cognitive expectations appear to have the second strongest effect on Grade 10 averages, the strongest effect on standardized English achievement, and the third strongest effect on standardized Mathematics achievement. When it comes to the matter of teacher-assigned grades, however, it is the normative expectation of industry that appears to have a considerable effect. These effects tend to indicate that while the previous year's grades play an important role in determining

TABLE 8

RELATIONSHIPS BETWEEN FOUR INDEPENDENT VARIABLES, SIX INTERVENING VARIABLES, AND GRADE 10 AVERAGES, CATE, AND CATM

INDEPENDENT VARIABLES	DEPENDENT VARIABLES		
	GRADE 10 AVERAGES (Beta)	CATE (Beta)	CATM (Beta)
Ethnicity	.009	.193***	.142***
Sex	.034***	.123***	-.087***
SES	.011	.022	.011
CAATI	.019	.163***	.254***
Grade 9 Averages	.407***	.244***	.270***
Academic Aspirations	-.001	.080***	-.024
Cognitive Expectations	.267***	.314***	.143***
Cooperation	-.050***	-.004	-.030
Industry	.231***	.006	.031
Reliability	.055***	-.057***	.061**
R <sup>2</sup>	.601	.455	.349

\*p .05; \*\*p .01; \*\*\*p .001.

teacher assigned marks, the effect of teachers' expectancies especially as regards cognitive factors and the normative factor of industriousness also play a considerable role. The role of teachers' expectations with respect to determining students' standardized English achievement is highly significant in that it is the main effect and appears to have considerably more weight than even the past year's average grades. Although the effect of

cognitive teachers' expectations is considerably less powerful in determining standardized Mathematics achievement than the previous two measures of student achievement, it follows third after the influences of the previous year's grades and the academic aptitude of students. Here, the effect of ethnicity is only slightly less than the effect of teachers' cognitive expectations.

In comparing the ranking of achieved over-ascribed effects on teacher assigned final grades, it is notable that the five most powerful effects are all achieved factors. In the case of standardized English and Mathematics achievement, the ascribed effect of sex, however, appears as more powerful than the achieved criteria of academic aptitude and academic aspirations of students. In the evaluations for standardized English achievement, however, it is notable that only three achieved criteria have greater effects than ascribed criteria based on ethnicity and sex. Standardized Mathematics achievement is most affected by three achieved factors, however, ethnicity has more influence than the factors of reliability, industry, cooperation, or academic aspirations. Socio-economic status appears to have the least effect of all on standardized Mathematics achievement of students.

In comparing the data of Table 7 and Table 8, it is possible to determine that there is 13.6 percent more variance explained for Grade 10 Averages, 5.4 percent more for CATE, and 2.3 percent more for CATM. This is the result of adding the four intervening variables of Cognitive Expectations, Cooperation, Industry, and Reliability to the four independent variables of Ethnicity, Sex, SES, and CAATI and the intervening variables of Grade 9 Averages and Academic Aspirations. Their impact is to decrease

the effects of Ethnicity on CATM by 8.4 percent, those of Ethnicity on CATE by 6.8 percent, the effect of Sex on CATM by 6.5 percent, the effect of CAATI on CATE by 9.4 percent and the effect of CAATI on CATM by 3.1 percent.

In comparing the effects of independent variables and dependent variables between the different tables, it is possible to determine how much effect the addition of the control variables has on the relationship between the independent and dependent variables. For the purposes of these comparisons, the effects related to ethnicity, teachers' expectations, and students' performances were calculated. These are reported in the next section.

#### Direct and Indirect Effects of Ethnicity on Performances

Table 9 contains the measures of the relationships important for the central thesis of this study. This was to examine the relationship between the ethnicity of students, the effect this may have on the expectations of teachers, and the effect that teachers' expectations have, as mediation variables, upon the academic performances of students.

This table lists the values of the direct effects of Ethnicity upon Grade 10 Averages, CATE, and CATM and allows for comparisons to be made between these and the indirect effects via Cognitive Expectations, Cooperation, Industry and Reliability.

Although the overall indirect effects are very small, this data indicates that 87 percent of the total effect of Ethnicity on Grade 10 Averages is mediated through Cognitive Expectations, Cooperation, Industry, and Reliability. Moreover, while the largest total effect of Ethnicity was on CATE followed by CATM and then Grade 9 Averages, the mediating effects

through teachers' expectations were less of the total effect in the cases of CATM and CATE than for Grade 10 Averages.

TABLE 9

DIRECT AND INDIRECT EFFECTS OF ETHNICITY ON GRADE 10  
AVERAGES, CATE, AND CATM

DEPENDENT VARIBALES	DIRECT EFFECTS	INDIRECT EFFECTS VIA:				TOTAL EFFECTS*
		COG. EXPS.	COOP.	INDY.	RELTY.	
Grade 10 Averages	.009	.025	/-.005/*	.025	.005	.069
CATE	.193	.029	/-.004/*	.001	-.006/*	.233
CATM	.142	.013	/-.003/*	.003	.006	.167

\*Total Effects are calculated on the basis of absolute values.

In comparing the effects of the individual measures of teachers' expectations, it is notable that in terms of the percent of the total effects due to Ethnicity, the greatest effect, by far, is exerted equally through the normative expectations of Cooperation and Industry that each account for 36.2 percent of the total Ethnicity effect on Grade 10 Averages. Cooperation mediates 7.8 percent of the Ethnicity effect on CATM while the greatest percentage of the total Ethnicity effect on CATE is mediated by Reliability (2.6 percent).

These data indicate that Yiddish-speaking students receive the greatest part of their advantage over French-speaking students in teacher assigned grades as the result of being seen by their teachers as being more likely to succeed in Grade 13 and as being more industrious. Both standardized



measures favor Yiddish-speaking students as being more likely to succeed in Grade 13.

It is notable that the least influence in terms of the total effects due to Ethnicity is exerted through the normative expectations of Industry in the case of CATE. In the case of CATM, the least effect due to Ethnicity is mediated through Cooperation and Industry. Apparently, Yiddish-speaking students, although they are seen as being more industrious gain less advantage from this than as the result of other factors of teachers' expectation that affect standardized English achievement.

## CHAPTER 5

### CONCLUSION

The present chapter concerns itself with a summary of the study which will focus on the problem, the theoretical model, the sample, the variables, and the methods used in analyzing the data. It will then discuss the findings in light of the past literature. Finally, it will examine some implications for educational theory and practice and offer some suggestions for further research.

#### Summary

The main focus of the present study is on the relationships between ethnicity, teachers' expectations, and student performances. Generally, the study is concerned with the extent to which teachers' expectations mediate between background student characteristics, ethnicity, socioeconomic status, and academic aptitude, and such performances as overall grade averages and achievement test scores.

The causal model is illustrated in Figure 1. It includes the previously discussed theoretical linkages. This schema assumes that both normative and cognitive expectations cause three different types of achievement represented by overall grade averages, standardized achievement in English and standardized achievement in Mathematics. It also assumes that ethnicity has both direct and indirect effects on these achievement measures and that the expectations of teachers mediate the effects of ethnicity, and other ascribed factors, on the achievement measures.

This study assumes that thirteen variables are representative of the relationships embodied in the main thesis. Ethnicity, Sex, SES (Socio-

economic Status), CAATI (Canadian Academic Test 1), Grade 9 Averages, Academic Aspirations, Cognitive Expectations, Cooperation, Industry, Reliability, Grade 10 Averages, CATE (Canadian Achievement Test in English), and CATM (Canadian Achievement Test in Mathematics) were created from the answers to questionnaires and tests described in Mac Eachern (1960), Weisbrod and Brehaut (1963), D'Oyley (1964), and Brehaut (1964).

The Carnegie Human Resources Data Bank (1959-1960) provided the sample of students who spoke either French or Yiddish as the main language in the home. This included 172 Yiddish-speaking students and 2,825 French-speaking students.

Multiple regression analysis was used to analyze the relationships between independent, intervening, and dependent variables within the theoretical model.

#### Discussion of the Findings

This study has found Yiddish-speaking students to have an advantage over French-speaking students in all three measures of academic achievement. Moreover, the effects of ethnicity were mediated through the expectations of teachers to a considerable degree for all three student achievement measures. Nevertheless, the overall effects of bias due to ethnicity have been small. This concurs with previous research that the transmission of expectancy effects is a subtle process in all but the most repressive situations. Rosenthal (1976) noted that most often neither those communicating the expectations nor those who receive them are consciously aware of the process that affects their behavior. When they have looked at the question more closely, researchers have found both verbal and non-verbal

means have been used to transmit this interpersonal expectancy effect (Rosenthal and Rubin, 1978; Feldman and Orchowsky, 1979; Rosenthal and De Paulo, 1979). This study, however, dealt with openly stated teachers' expectations. To the degree, then, that ethnic bias is transmitted through these expectations, along with other ascribed factors, this study offers an extension of previous findings.

The findings of this study show that the advantage that Yiddish-speaking students enjoy as a result of their ethnicity to be more powerful than the effect of as many as seven out of ten other factors affecting standardized English achievement and that almost one third of this ethnic bias was transmitted through the expectations of teachers. Since as many as five of these factors are legitimate criteria for student evaluation (academic aptitude, high academic aspirations, reliability, industriousness, and cooperation) something other than the meritocratic process suggested by Williams (1976) is indicated. Thus, ethnic bias appears to continue as a legitimate source of concern for educators.

To a somewhat lesser extent, standardized Mathematics achievement also reflects this phenomenon. Thus, it is more advantageous to be from a Yiddish-speaking home than it is to be seen by one's teachers as more reliable, industrious, or cooperative, or to have higher academic aspirations.

A number of further comparisons indicating the relative position of ethnicity with respect to other student achievement evaluations based on ascribed criteria and recognized as educational and social problems may be instructive. Within this context, it appears that ethnicity plays a greater direct role in determining standardized English as well as Mathematics achievement than does even sex or socioeconomic status. In view of the fact

that these were both standardized and not teacher-constructed and evaluated measures and that, furthermore, nearly one third of these effects were transmitted through teachers' expectancies, the subtle nature of the expectancy effect is further verified.

Something quite different appears to be happening with respect to ethnic effects on teacher-assigned marks in Grade 10. Here it is apparent that the effect directly attributable to ethnicity is minimal. Furthermore, it appears that the only achieved measure which falls behind that of ascribed factors is that of academic aspirations. Teachers appear to grade students' performances largely on legitimate criteria. In order of greatest effect, these criteria are: the past year's teacher-assigned grade averages, the teacher expectation that students are likely to graduate from Grade 13, how industrious the students are seen to be by their teachers, how reliable teachers view students to be, how cooperative teachers rate students to be, how well students score on aptitude tests, and the academic aspirations of students. It is also notable that sex should have a greater biasing effect favoring girls. There appear to be somewhat different processes in operation between the two standardized measures, English Achievement and Mathematics achievement, and the teacher-assigned final grades. While both standardized measures appear to be more affected by students' ethnicity, it is the teacher-assigned grades that are affected more through ethnicity mediated by the expectations of teachers. This is indicated by data comparing the direct and indirect effects of ethnicity on teacher-assigned grades and the two standardized achievement measures. These data show that a greater percentage of the total ethnicity effect is mediated through teachers' expectations for teacher-assigned grades than for both standardized

measures of students' achievement. Although there is a larger direct effect of ethnicity on both standardized measures and the direct effect of ethnicity on teacher-assigned grades is smaller, the mediating effect through teachers' expectations was a greater part of the teacher-assigned grades than it was for both standardized measures of achievement. This is in keeping with Cooper's (1979) study which indicates that teachers' expectations have a greater effect upon grades which have been assigned by the teachers than upon achievement tests that have been evaluated independently. Clifton (1980) reports a similar finding on a study with German-speaking and French-speaking students.

In considering the process of mutual causation existing between expectations and achievement (Brophy and Good, 1974) it may be important to consider how it is possible that Yiddish-speaking students might come to gain an ethnic advantage over their French-speaking classmates in tests of standardized achievement. Although the percentage of the total effect of ethnicity mediated through teachers' expectations is greater within teacher-assigned grades, there still remains the question of how more than thirty percent of the total ethnicity effect is transmitted in the case of both standardized achievement in English and Mathematics. At the same time, it must be remembered that of the overall small direct effects of ethnicity, the effect on standardized English achievement is the largest followed by that of standardized achievement in Mathematics.

In considering similar questions, some researchers have suggested that there is an overall climate established within a classroom between teacher and students through which the expectation process manifests itself (Brophy and Good, 1970; Rosenthal, 1976). Although this process may be so subtle

as to go unnoticed by its participants, a detached observer may observe the linkages responsible for the transmission of expectancy effects and posit them within an overall theoretical framework (Clifton, 1980). Within such a classroom climate, both teacher and student come to accept as normal and proper that certain class members be accorded differential expectations and consequent treatment (Brophy and Good, 1974; Bossert, 1979). As a result of such differential treatment, individual students tend to demonstrate behavior which verifies the original expectations of the teacher. Accordingly, preferred students are given more time and attention as well as more opportunities to answer questions (Bossert, 1979). As a result of such differential treatment, individual students tend to demonstrate behavior which verifies the original expectations of the teacher. As well, teachers have been found to create a warmer affective atmosphere for preferred students (Page, 1971; Chaikin, Sigler, and Derlega, 1974). Other researchers found that quantity and quality of teacher input in terms of novel instructions as well as general verbal teacher input to students appear also to be dependent on performance expectations (Rist, 1970; Beez, 1970; Cornbleth, Davis, and Button, 1974). After some time within such a general classroom climate, both the achievement levels of the students as well as the social organization of the classroom begin to reflect, to a certain extent, differences in the expectations of the teacher. Most conclusively, these differential expectations are verified in the results of achievement tests given at the end of the year.

The present study also shows that a similar process favoring those students viewed by their teachers as more industrious and more likely to succeed in Grade 13 is also working within the scope of mediating the effects

of ethnicity through teachers' expectations upon teacher-assigned grades. Reliability has the greatest effect in mediating ethnicity on standardized English achievement. The greatest effect of ethnicity on standardized Mathematics achievement is mediated through the expectation of the students' success in Grade 13. From this data, it would appear that while Yiddish-speaking students receive the greatest total advantage, they do so largely as a result of being perceived as likely to succeed in Grade 13 and as being more industrious in the case of teacher-assigned grades, as a result of being perceived as more likely to succeed in Grade 13 in the case of standardized Mathematics and English achievement.

Apart from the direct and mediated effects of ethnicity, this study concerned itself with a number of other important relationships. In this regard, past performances of students reflected in teacher-assigned grades from the previous year appear to have the most powerful effect upon both normative and cognitive expectations of teachers. The effect of cognitive expectations is, however, substantially greater than that of any of the normative expectations. This indicates that a large part of the small effect that had previously been ascribed to ethnic bias on the part of teachers, is, to a considerable degree, the effects of previous achievement by students together with their academic aspirations.

This leads to a further consideration of how the previous year's teacher-assigned grades affect those of the coming year as well as how much of the previous year's teachers' expectations do. The literature supports the notion that the elementary grades are largely responsible for transmitting the better part of teachers' expectancy effects to students' achievement (Rosenthal, 1976). Thus, the results of this study which report that



the previous year's grades are the most powerful effect influencing teacher-assigned grades in the coming year as well as being the most powerful effect in the whole study may well be indicative of the direction that further research should take. This is especially in view of the fact that within the sample of students investigated in the first year of this study, as many as over half are lost through attrition. How much of this loss was due to the effect of ethnicity or ethnicity mediated through teachers' expectations also awaits the work of later researchers. This study also shows that the greatest percentage of the total effect due to ethnicity is transmitted through teacher-assigned grades. Furthermore, most of the teacher-expectancy measures have a greater effect on teacher assigned grades than on standardized measures. Finally, this study supports that West and Anderson (1976) found in much of the literature, that the cyclical process of mutual causation existing between expectations and achievement is very much in evidence and that, in conclusion, it is found especially in the area of teacher-assigned grades.

In summary, the results of this study show that while there is little ethnic effect on teacher-assigned grades, there are moderate advantages that accrue to Yiddish-speaking students over French-speaking students in Mathematics and particularly in English achievement. This implies that while there is little evidence of ethnic bias on the part of the teachers in assigning grades, that there is some evidence to indicate a moderate and weak bias in the direction of raising the achievement levels of Yiddish-speaking students over those of French-speaking students. It is possible that a differential level of teaching somewhat favors Yiddish-speaking students. It has also been found that despite the considerably weaker

effect of ethnicity on teacher-assigned grades, that the indirect effect of ethnicity through teachers' expectations represents a greater part of the total effect of ethnicity.

The present data offers some moderate support for the argument suggesting that teachers' expectations have mediating effects between ascribed characteristics of students and their achievement. It has been found, as well, that these expectations do affect both assigned grades and standardized achievement measures. Other researchers have also reported this finding (Brophy and Good, 1974; Dusek, 1975; Cooper, 1979; Clifton, 1980). The present study extends past research by showing that the principal mediating effects is primarily from the past year's assigned grades and to a lesser degree as the result of ethnicity particularly in the case of English achievement. This data supports the argument that although teachers tend to base most of their expectations upon meritorious factors, that they tend, as well, to a significant degree, to bias their expectations as the result of ascribed factors.

#### Implications for Education

Since the effect of differential expectations is of definite social significance, it has been the concern of educational researchers and teachers that the performances of students may possibly be lowered rather than raised as the result of low expectations of performance (Finn, 1972). This concern is based on the premise that teachers' expectations should be founded on sound data that would not have the effect of negatively biasing students' education. When criteria for teacher expectations is grounded upon information irrelevant to academic endeavor, then the expectations of teachers may cause some students to be treated in ways contributing to poor performance.

While this study largely vindicates teachers from any gross bias based on ethnicity, it does show that ethnic favoritism does continue to play a limited though significant role within the classroom.

Teachers' expectations for the performances of students are an integral part of social interaction within the school system. As such, these expectations may be influenced by a number of student characteristics. Ascribed student characteristics such as ethnicity, sex, physical attractiveness, socioeconomic status, etc. appear to be irrelevant to student performances within the stated goals of the school system. Achieved characteristics such as academic aptitude, previous performances, academic aspirations, etc. appear to be criteria relevant to the formation of realistic expectations by teachers as to the future academic achievement of pupils. Despite such delineations of proper and improper criteria for the formation of teacher expectations, there is evidence, within the study, that social practice includes teachers' expectations formed on the basis of the irrelevant ascribed characteristics of students. This may be symptomatic of a cycle of error within which initially false definitions of the situation may, over time, become true (Merton, 1957: 423).

This would be in accord with the view suggested by a number of scholars (Rist, 1970; Katz, 1971; Carnoy, 1974; Bowles and Gintis, 1976) which sees one of the major roles of the school as perpetuating the social stratification system. It would coincide with the basic argument (Porter, 1975) that in Canadian society inequality is inherited, in part, through the existing stratification system. This system relies on the transmission of success and failure on the basis of ascribed characteristics of groups whose status in one generation is passed on to the next generation by means

of various social processes. If teachers assume that children with certain ascribed characteristics can learn more and faster than children with other ascribed characteristics, then the role of the school system may be other than the egalitarian one it professes.

Past research of teachers' expectancy effects in Canadian education has rarely examined the role of student ethnicity (Clifton, 1980). The present study extends the previous work by linking ethnicity and other student characteristics with the expectations of their teachers and finally these variables are linked with the academic achievement of students.

Future studies might also concern themselves with alternate hypotheses, that is, what this study may have overlooked was a disproportionate grouping of Yiddish-speaking students within urban centers and French-speaking students in rural areas which would account for increased facility in English and Mathematics achievement by the urban dwellers as compared with their rural counterparts. Conceivably, the model for any future study involving the present data could include such a variable.

Other studies might also extend the present research by studying those students not only who remained in Grade 10 but also those who dropped out. It is conceivable that the effect of ethnicity as mediated by teachers' expectations is more pronounced among the drop-out population, although the opposite may also be true.

Studies involving the effect of ethnicity as mediated through teachers' expectations within the early primary grades should uncover more evidence for the self-fulfilling prophecy than within the secondary school population used for the present study (Rosenthal, 1976).

Within the context of changing any situation that might foster ethnic

effects through the negative expectations of teachers, the basic implications of the self-fulfilling prophecy ought to be considered lest such pronouncements echo like hollow platitudes. Since this undertaking has defied the science of man since antiquity, such a statement may appear to be altogether pointless.

Indeed, all the loving artisanship shown by Pygmalion for his block of marble did not bring her exquisite form to life. Naught but the gods were empowered to do so; and when Venus-Aphrodite finally condescended to put the lowly mortal out of his self-inflicted misery, she did so largely out of pity together with some of her own divine designs (Naso, c.A.D.1). Even slatternly Eliza Doolittle did not undergo her seemingly magical transformation from flower girl to grand dame as a result of the pedantic effort of Professor Henry Higgins, though there is little doubt that the metamorphosis would have been possible without the groundwork laid by his toil. It was, however, up to his humble assistant to "bring her to life" simply by treating her like a lady (Shaw, 1916).

It might, then, be more appropriate to note the remarks of Herbert Kohl (1969: 85), a past master of applying the Pygmalion effect in ghetto education, as they reflect upon the efforts of those who brought the effect of the self-fulfilling prophecy to its current reputation:

The researchers assumed god-like roles; they were the only people in the school who knew what the "experiment" was all about and who were not themselves the subjects. They presumed their involvement was neutral and that their work was simply an attempt to uncover "objective" (though statistical) knowledge. Yet, can a social science "experiment" involving the manipulation of human beings be neutral? Moreover, what is the moral cost of acquiring knowledge through deceit and bad faith? This study does not reveal what the teachers who have been studied feel, nor whether they have learned something about themselves that could have some effect.

The present study employs no conscious deception of subjects. It presumes to uncover knowledge based upon statistical analysis and to examine it within a theoretical framework suggested by the previous literature. Within this framework, it attempts to reveal what teachers and students who have been studied feel. In effect, it is a study of how certain of these feelings transmit their effects within the school. It presumes to be useful to those who would reduce any statistical effects due to ethnicity to the sum total of their social worth, zero.

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