

AN ANALYSIS OF THE EFFECTS OF TEACHER ASSIGNMENT
IN THE HOUSTON INDEPENDENT SCHOOL DISTRICT
ON STUDENT ACADEMIC ACHIEVEMENT

A Thesis Presented to the Faculty
of the Department of Sociology
University of Houston

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

By
Jimmy M. Sanders
Fall, 1978

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ABSTRACT

The Singleton Ratio is a court ordered plan requiring the racial makeup of certified employees and teacher aides in every school of a district to roughly represent the racial characteristics of those employees district wide. The on-going educational process between determinants of student achievement and student achievement outcomes is the avenue through which the Singleton Ratio process may affect student achievement. Faculty desegregation has impacted certain determinants of student academic achievement (e.g., teaching experience of faculty members, the degree of similarity between the ethnic backgrounds of students and teachers). The resulting changes in these determinants of student achievement have, it is alleged by critics of the faculty desegregation policy, tended to lower student and teacher commitment to the educational attainment of students. As a result of lowered commitment among students and teachers, it is further charged that the academic achievement outcomes of students have been lowered.

A model has been developed in order to analyze the theoretical process described above. The model considers several determinants of student academic achievement which have been affected by the Singleton Ratio process and observable indicators of student commitment, teacher commitment and student academic achievement. The results of measuring the strengths of the relationships within the

model suggest that the Singleton Ratio process has not affected student academic achievement in the elementary grades of the Houston Independent School District.

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PURPOSE AND GENERAL STRATEGY OF THE STUDY

The purpose of this study is to measure the impact student and teacher commitment to student educational attainment have in determining academic achievement of elementary school children in the Houston Independent School District (H.I.S.D.). A study of such orientation offers a potentially rich source of information regarding the merit of alleged effects of the Singleton Ratio process on student achievement in Houston, Texas. The Singleton Ratio is a court ordered plan requiring the racial makeup of certified employees and teacher aides in every school of a district to roughly represent the racial characteristics of those employees district wide. Conditions resulting from the Singleton Ratio process, it is charged by critics of the policy, lowers the commitment of students and teachers to a principal goal of the educational process (i.e., a creditable and consistent rate of student learning). This consequence of faculty desegregation has emerged, it is suggested, because the Singleton Ratio process has tended to make the classroom setting more alienating and less rewarding to both students and teachers.

From the time of its first implementation, in Houston, the Singleton Ratio has raised a considerable amount of

public dissatisfaction. Probably the most serious charge leveled at the administration of the policy is that it facilitates low educational outcomes for black students in central city schools. Much concern has been expressed from public figures, primarily from the black community, over the priorities of desegregation as mandated by the courts and applied by the district. There is a great degree of anxiety over what many view as the use of faculty desegregation as a substitution for student desegregation.

Major school districts not directly under the Singleton Ratio have emphasized faculty desegregation under judicial pressure while being allowed to all but end efforts directed at student desegregation. Two such districts are the Washington, D. C. and the New York City public school systems. An important circumstance surrounding these districts is the proportion of white students enrolled district wide relative to the proportion in Houston. The Washington district has only 3.5 percent white students in the entire district making student desegregated education in that district literally impossible. The New York City district; however, has 31.2 percent white students, very similar to Houston's 34.2 percent white students district wide.¹ This apparent tendency of placing primary emphasis on teacher desegregation angers many who feel that faculty desegregation, without student desegregation, actually provides a poorer base for

¹ Source: U. S. News and World Report, May 8, 1978 (43-51).

the education of inner city minority children than does a segregated faculty. The most critical variable in racial distribution, it is argued, is student desegregation not faculty desegregation. Such a view has held merit since the earliest major studies of school desegregation in the United States (Coleman et al., 1966; Moynihan, 1967; Pettigrew, 1968). The importance of teachers on the outcomes of students has; however, traditionally been considered to be an extremely critical variable affecting student outcomes (Davidson and Lang, 1960; Rosenthal and Jacobson, 1968; Rist, 1977).

A special school board meeting was held during the early summer of 1977 in order to provide an open forum for concerned citizens to express their feelings about the process of faculty desegregation in the local district. At that meeting, one principal of a black high school expressed concern and frustration over the negative effects on his students caused by the Singleton Ratio process. This condition came about, he argued, because so many of the white teachers assigned to his school, year after year, were not capable of teaching in an all black environment. His point was eloquently presented with the use of the following analogy.

Penicillin and aspirin are good medicines and the Singleton Ratio is good medicine too, but like all good medicines, the Singleton Ratio has horrible effects on some patients.

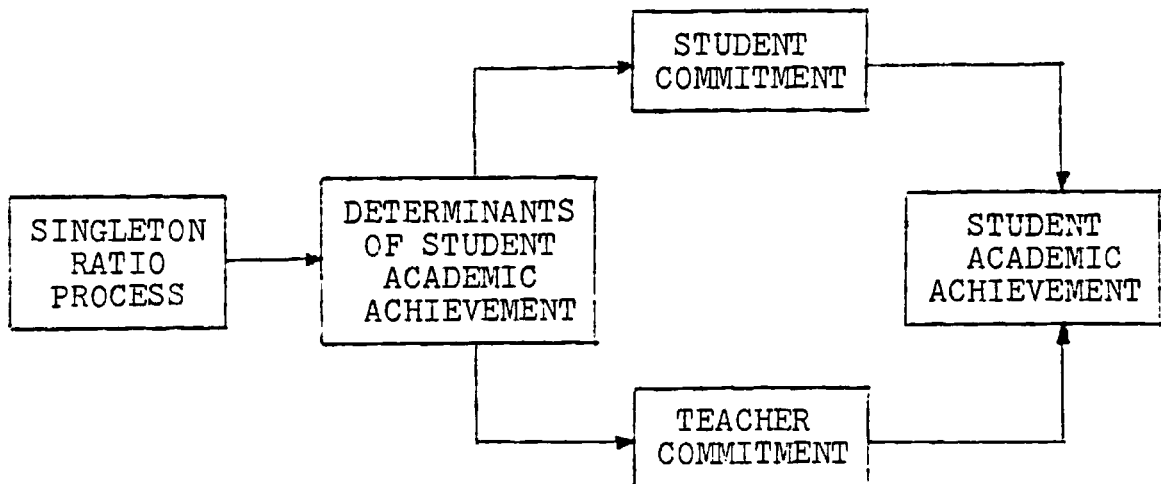
It is pointed out that one-half of the faculties in some black schools change each year. People who leave are usually young white classroom teachers. Experienced white teachers

are not relocated at black schools because transfers under the Singleton Ratio, locally, are based on seniority considerations. As a result, in order to maintain a proper racial balance, black schools must hire several young and inexperienced white teachers every year. Most of these teachers, it is charged, will not return to the school the following year. This self regenerating cycle tends to restrict the quality of teaching faculties in many minority schools. A critical assumption implicit in this argument is that teaching experience and teaching quality are positively correlated. Another assumption is that cultural dissimilarities between inexperienced white teachers and black, inner city, school children tends to significantly limit the degree of understanding and cohesiveness between students and teachers. The latter assumption is the most critical element of arguments which suggest that institutionalization of the Singleton Ratio process has tended to result in a lowering of student and teacher commitment to the goal of educational attainment of school children.

The degree to which the Singleton Ratio process may affect student academic achievement will be demonstrated by measuring the strength of effects of student and teacher commitment to student educational attainment on the academic achievement outcomes of students. These findings will provide further insight to a growing and controversial debate over the extent of teachers' determining influence on their students achievement outcomes. A review of the diversity

of findings regarding this debate may be found in Persell (1976). The ongoing educational process between determinants of student achievement and student achievement outcomes is the avenue through which the Singleton Ratio process may affect student achievement. Faculty desegregation has impacted certain determinants of student academic achievement (e.g., teaching experience of faculty members, the degree of similarity between the ethnic backgrounds of students and teachers). The resulting changes in these determinants of student achievement have, it is alleged, tended to lower student and teacher commitment to the educational attainment of students. As a result of lowered commitment among students and teachers, it is further charged that the academic achievement outcomes of students have been lowered. This relationship between the Singleton Ratio process and student achievement is pictured in Figure I.

Figure I



THE SINGLETON RATIO: A HISTORICAL PERSPECTIVE

Faculty desegregation was first ordered by United States District Judge Bryan Simpson in 1962 regarding three cases in Florida (Weitz, 1970). For the next several years a philosophy of "gradualism" characterized court rulings related to faculty desegregation. This concept was composed of two dimensions. First, plans which called for gradual faculty desegregation, over a period of an undetermined number of years, were considered acceptable by the courts. The second dimension was that the degree of interracial faculty mix which would be considered to constitute a desegregated faculty might, in fact, leave faculties relatively segregated (Coggins, Dickerson, Phillipp, Sneed and Washing, 1966). This attitude and some of the rationale behind it was perhaps best expressed in January of 1968 by the United States Eighth Circuit Court of Appeals regarding a case involving an El Dorado, Arkansas school desegregation case.

It is misleading to think that 'balance' means exact symmetry or equilibrium of the races. Numerical quotas or percentages, although appealing for their simplicity, lack that equitable flexibility which is still needed for a selective distribution of qualified teachers for particular faculty roles. But it misses the constitutional mark to say that this principle of flexibility then justifies a segregated faculty pattern (Leeson, 1968).

EARLY FACULTY DESEGREGATION IN HOUSTON

In December of 1968 the H.I.S.D. received \$85,000 from the United States Office of Education under Title IV provisions to implement faculty integration in six prototype schools located in areas with heterogeneous racial residential patterns. Each of the schools, as it turned out, was attended by a 95 percent or higher proportion of minority students (Noland, 1969). The freedom of choice plan in operation in Houston at that time, which allowed students to attend any school of their choice, was the chief facilitator of this pattern of school segregation even within semi integrated neighborhoods, that is, checkerboard neighborhoods characterized, for example, by blocks of whites and blocks of blacks in the same neighborhood but little actual intermixing of members of different races as next door neighbors.

A CHANGE OF PLANS

In the midst of the development of the limited faculty desegregation plan another related factor arose in the district. On February 11, 1969 the United States Department of Justice filed a motion in the Fifth Circuit Court reopening the 1956 Delores Ross v. Robert Eckels school desegregation case.² One of the points the Justice Department

² Delores Ross v. Robert Eckels led to the first desegregation court order directed at the H.I.S.D.

requested that the school district be required to make further progress on was faculty desegregation. In this suit, the concept of faculty desegregation in Houston was expanded to mean total faculty integration rather than the token efforts typical throughout the country of faculty desegregation strategies.

During the summer of 1970, in response to the Justice Department's action, the H.I.S.D. was placed under the Singleton Ratio. This mandate originated from the 1969 Singleton v. Jackson Municipal Separate School District ruling by Judge Ben C. Connally. In that case, the Fifth Circuit Court required that every school faculty in the Jackson, Mississippi school system reflect the racial distribution of certified staff and teacher aides district wide. Thus, in districts coming under Judge Connally's decision, no campus can differ significantly from another in terms of racial composition of its staff who interact with children. Two other court rulings which have placed similar requirements on school districts are Carter v. West Feliciana School Board, 1970 and United States v. Montgomery Board of Education, 1969.

Because of a degree of vagueness in the earlier Brown v. School Board of Topeka, Kansas desegregation rulings, the power of the judicial branch to impose faculty desegregation requirements on school districts was not firmly established until 1965. During that year, the United States Supreme Court's decisions in Bradley v. School Board of Richmond

and Rogers v. Paul institutionalized faculty desegregation as a viable part of the nation's educational desegregation policy (Weitz, 1970). The establishment of the Singleton Ratio was brought on primarily in reaction to blatant cases of minority teachers being dismissed in wholesale fashion by school districts (Butler, 1974; Dorr, 1972). Most of the districts placed under the Singleton mandate had been guilty of firing a large proportion of their minority employees. This circumstance came about when black schools would be closed and their students absorbed into already existing white schools in reaction to student body desegregation court orders (Detweiler, 1967; Morris, 1967; Wright, 1965).

Interestingly, there had been no large scale dismissal of minority faculty members in the H.I.S.D.; therefore, the circumstances which led to the Singleton Ratio's implementation in Houston are open to speculation. One past school board member who presided as a trustee during the first seven years of the Ratio's implementation in Houston has suggested that district administrators in conjunction with the Department of Justice asked the court to place the H.I.S.D. under the Singleton Ratio. The past board member presents himself as a champion of student integration and has suggested that in desegregating the district's faculty, administrators are attempting to placate the courts regarding the lack of student desegregation throughout the district.

Apparently, a similar suspicion is held by many people politically involved in the actions of the district.³

The implementation of the Singleton Ratio court order, in contrast to earlier court orders allowing for "all deliberate speed", was to be effective "immediately".⁴ During the summer of 1970, H.I.S.D. employees were informed, usually by mail, only a few weeks or even days before the beginning of the school term if they were being transferred because of the new policy. The suddenness of this massive redistribution of employees added to a general grave reaction of faculty members to the faculty desegregation plan.⁵ Many difficulties encountered during the early years of the implementation of the Ratio may have been avoided by programs designed to prepare teachers to work in unfamiliar environments. Because the court required immediate institution of the order; however, there was no time for such training district wide. A limited number of teachers who were in one way or another involved with the teacher crossover program funded by the Title IV grant received in 1969 did receive some such training. Today, the district has no active

³ This statement is based on several formal and informal interviews with district administrators, other employees and community representatives conducted during 1977.

⁴ The precedent for this key change in judicial policy was established in *Alexander v. Holmes County Board of Education*, 1969.

⁵ Approximately thirty percent or about 3,000 Singleton Ratio relevant employees were transferred at this time. The H.I.S.D. does not include consideration of teacher aides in its faculty desegregation policy. With this point in mind, it is interesting to note that more than three-fourths of all teacher aides in the district are black.

program to prepare teachers for employment in varying school environments. It should also be pointed out that colleges of education throughout the nation typically fail to provide critical training in this area. This institutional wide neglect only serves to increase racial problems in the nation's public schools (Adams, 1968; Bash and Morris, 1967).

During the first four years of the application of the Ratio in Houston, schools were allowed to vary from the district's racial proportions by \pm 5 percent at the elementary level and \pm 10 percent at the secondary level. In 1974 the district requested and was granted an increase in allowable variance by the courts to \pm 10 percent at the elementary level and \pm 15 percent at the secondary level. Originally, the Singleton Ratio in the H.I.S.D. was approximately 60 percent white and 40 percent black.⁶ During the 1976-1977 school year the proportion of black, Singleton Ratio relevant, employees at the elementary level was 41 percent. At the junior high and senior high levels respectively, the proportion was 39 percent and 37 percent. A different ratio must be met at each of these three grade levels although the junior and senior high schools are allowed the same variance. The district also makes an effort to place one or two hispanic certified employees in every school although the Singleton Ratio does not require this practice. Each year district employment patterns change slightly; therefore, requiring

⁶ The Singleton Ratio does not differentiate between hispanic and white certified employees.

revised Singleton Ratios to be calculated on an annual basis. This change is made possible because of the variance allowed by the faculty desegregation policy.

THEORETICAL SUGGESTIONS

It has been shown that teacher retention is positively associated with the age of teachers (Pedersen, 1972). That is, teacher turnover rates are highest for young teachers and tend to decrease as teacher age increases until the time of retirement. Betz and Garland (1974) demonstrated that minority teachers tend to be less geographically and occupationally mobile than white teachers. These factors increase the probability that minority teachers will remain, not only in teaching but if allowed to, in a particular school for extended periods of time. In conjunction with Pedersen's finding, in the H.I.S.D. minority teachers do tend to have more teaching experience district wide than do white teachers. This circumstance lends support to the contention, in Houston, that the Singleton Ratio forced the removal of experienced black teachers from black schools and replaced them with young white teachers who tended to be unprepared to teach in a predominantly black environment.

Past studies and an autobiographical novel by a Louisiana teacher have demonstrated that teacher inexperience in dealing with students from different racial contexts does often help create severe problems for both students and

teachers.⁷ These difficulties seem to originate from two sets of interacting social conditions. Racial prejudice on behalf of students and teachers often intensifies problems brought on by communicative limitations between students and teachers because of cultural background differences. These problems then in turn emphasize disharmony between students and teachers often overtly manifested in increased racial discrimination on the part of all parties (Becker, 1970; Claye, 1971).

At least one study suggests that most of the difficulties faced by teachers and students in cross race settings are caused by cultural differences that teachers are able to control with proper training (Sherwood, 1972). In contradistinction, to this potentially positive finding; however, significant differences have been measured in teachers attitudes toward being transferred to racial settings where they would be a minority. In one case, 90 percent of the white teachers compared to only 20 percent of the black teachers, previous to being transferred, expressed the opinion that they anticipated negative reactions from students, parents and community members over the upcoming change (Schaffer and Schaffer, 1970). Such a marked attitudinal difference between minority and white teachers is common in the United States and has been interpreted as demonstrating that the greatest problem encountered by

⁷ The novel referred to is, May I Speak, by Manie Culbertson, Pelican Publishing Company, Gretna, Louisiana, 1972.

many white teachers in minority settings is their own prejudiced attitudes and behaviors (Yee, 1968). White teachers, especially those in predominately white schools, in the H.I.S.D. tend to express more negative attitudes toward any dimension of desegregation than do other teachers (Dworkin, Black and Sanders, 1977).

The legal significance of the Singleton Ratio and its social ramifications have been questioned since the original 1969 decision (Hoffmann, 1972). Likewise, the desirability of broad policy decisions based on the conviction that inevitable positive effects of desegregation would overcome any problems it created has been challenged (Jencks et al., 1972; St. John, 1975). A related problem has occurred when some school districts placed disproportionate numbers of "unstable" teachers in minority schools while reserving "quality" teachers for white middle class schools (Berlowitz, 1974; Clark, 1965; Friedman, 1970; Owen, 1969). The Singleton Ratio, as applied in Houston, provides convenient loopholes for such practices by allowing exemptions to the Ratio based on eleven criteria which would seem to give the district the option to place teachers in any manner they desired.⁸ The H.I.S.D. does not; however,

⁸ The eleven sets of circumstances which allow school administrators to legally avoid the requirements imposed by the Singleton Ratio include: magnet schools; basic skills; compensatory education; special education; regional deaf; small schools; large schools and schools with a concentration of teachers holding graduate degrees. There are also numerous strategies used by administrators to skirt the spirit of the law while meeting the letter of the law.

attempt to use this circumstance to maintain a pattern of segregated faculties throughout the district although exceptional cases of mostly one race faculties did exist during the 1976-1977 school term.

Consideration of the question asking how effective white teachers are in minority schools has been critical to the growing and serious reflection over instant faculty integration (Warren, 1975). Glick (1971) found that teacher skin color was not an important factor when other social, cultural and economic factors were controlled. In contrast to Glick's argument, Braxton and Bullock (1972) suggest that race cannot be ignored as a critical factor because of its influence on many social, cultural and economic variables which do have direct consequences on student outcomes. Larkin (1975) demonstrated that alienated teachers often create hostile climates in the classroom through efforts to maintain classroom order. It is suggested that such efforts often have no educational dimension whatsoever, but are simply means by which children are controlled. Furthermore, teachers' dissatisfaction with school settings has been shown to negatively affect their personal commitment to the teaching role (Conway, 1976).

A THEORY OF THE DETERMINANTS OF ACADEMIC ACHIEVEMENT

Students' academic achievement is directly determined by two theoretical level variables. These causes of

achievement are the degree of commitment of the teacher to provide students with an opportunity to acquire basic knowledge and skills and the degree of commitment of the student to acquire basic knowledge and skills. All observable variables that affect academic achievement may be seen to do so primarily through the intervening effects of the theoretical variables teacher commitment and student commitment. Commitment, whether held by students or teachers is defined as an emotional and intellectual desire to engage in activities which, in effect, increase student academic achievement.

CONCEPTUAL DEFINITIONS OF TEACHER AND STUDENT COMMITMENT

The degree of commitment, held by teachers, to providing students with an opportunity to acquire basic knowledge and skills is a manifestation of the costs versus rewards, to teachers, of their students' academic performance. That is, teacher commitment is determined by the importance of educational outcomes of students to teachers. The greater the professional (e.g., job security, salary) and personal (e.g., peer fellowship, self respect) rewards attained by teachers relative to costs (e.g., time required for lesson planning, classroom disruptions), the greater teacher commitment will tend to be. Similarly, the degree of commitment, held by students, to acquiring basic knowledge and skills results from the costs versus rewards, to students, of their own academic performance. That is, the degree of commitment held by students is influenced by the importance they place

on their own educational outcomes. The greater the rewards (e.g., family support, recognition of achievement in the classroom) received by students relative to costs (e.g., time spent studying, an alienating classroom environment), the greater student commitment will tend to be.

THE IMPACT OF TEACHER COMMITMENT ON STUDENT COMMITMENT

Perhaps the most important determinant of student academic achievement is student commitment. Ultimately, it is the students themselves who most affect their own performance in school for it is they who have the final input in determining how they will apply themselves toward the goal of academic achievement.

A critical reward and cost producing variable which plays a significant role in determining student commitment is teacher commitment. Teachers of relatively high commitment will tend to help create a generally more positive classroom atmosphere than teachers of relatively low commitment. That is, a classroom setting in which the students and teacher interact in a friendly, yet goal (e.g., academic achievement of students) directed manner. This condition exists because highly committed teachers are seeking critical personal and professional rewards which are most likely to be gained from positive classroom settings. The types of rewards teachers may gain from creating positive classroom environments are not as important to teachers of low commitment as they are to teachers of high commitment.

Two key elements for the development of a positive classroom atmosphere are that teachers provide moral support (e.g., positive reinforcement) for their students and that students are provided a thoughtful and thorough presentation of subject material. These impacts of teacher commitment on student commitment tend to greatly affect the rewards and costs students incur in the classroom. The types of rewards students of high commitment seek out are most likely to be attainable in positive classroom atmospheres. Students of teachers with low commitment tend not to have as great of an opportunity to gain rewards which positively affect their own commitment as students of teachers with high commitment. Teachers with little commitment will tend to create conditions which do not lead to high student commitment. Conversely, teachers of high commitment will tend to create conditions which do lead to high student commitment. Therefore, the degree of commitment, held by students, to acquire basic knowledge and skills is significantly affected by the degree of commitment, held by their teachers, to provide students with an opportunity to acquire basic knowledge and skills.

THE IMPACT OF STUDENT COMMITMENT ON TEACHER COMMITMENT

Student commitment has a reciprocal causal relationship with teacher commitment. An argument has been put forth which explains why teacher commitment affects student

commitment. Likewise, the level of commitment of students' is an important reward and cost producing variable which affects the development of teacher commitment.

Similarly to committed teachers, students with high commitment will tend to help create positive classroom atmospheres. Students committed to attaining a quality education will tend to be supportive of their teachers because they, the students, need their teachers assistance in attaining educational goals. The environment defined earlier as a positive classroom atmosphere provides the most conducive conditions for the exchange of teaching, learning and achievement. Therefore, the commitment of students tends to influence the commitment of their teachers.

CAUSES OF STUDENT AND TEACHER COMMITMENT WHICH HAVE BEEN AFFECTED BY THE SINGLETON RATIO PROCESS

Of the many social variables which have an impact on the level of commitment of students and teachers, ten have been selected for consideration in this study. A common characteristic of these determinants of commitment is that the Singleton Ratio process has affected each of them.⁹ The independent variables included in the study are listed below.

- (X₁) The degree of similarity between the ethnic backgrounds of students and their teachers

⁹ The processes by which the Singleton Ratio affects these variables are discussed in a following section of the paper.

- (X₂) The teacher turnover rate from one year to the next for each school
- (X₃) Whether teachers have children attending their own schools, other H.I.S.D. schools or have no children attending H.I.S.D. schools
- (X₄) The degree of interracial faculty socializing in each school
- (X₅) The teaching experience of faculty members
- (X₆) The educational attainment of teachers
- (X₇) Whether or not teachers perceive that they have been turned down for a transfer because of racial quotas
- (X₈) The degree of personal efficacy felt by teachers
- (X₉) The degree of relative satisfaction with the student body racial distribution, at their schools, held by teachers
- (X₁₀) Teachers' perceptions of the effects of the Singleton Ratio in the H.I.S.D.

THEORETICAL PROCESSES BY WHICH THE INDEPENDENT VARIABLES AFFECT TEACHER AND STUDENT COMMITMENT

The degree of both student and teacher commitment will be affected by the degree of similarity of students' ethnic backgrounds to that of their teachers'. Students interacting with teachers of a similar ethnic background will tend to have higher commitment than students interacting with teachers of an ethnic background dissimilar from their own. Likewise, teachers will tend to have higher levels of commitment toward students of ethnic backgrounds similar to their own than toward other students. Intangible ties such as shared ethnocentric values provide for an environment relatively secure from deviations perceived by students and teachers as seriously threatening. In addition, without sufficient communication between actors, commitment is

not likely to evolve to significant levels. Communication between students and teachers is facilitated by a similarity in the sociocultural experiences of the individuals. Therefore, commitment for both teachers and students will tend to be greatest for those cases in which the teacher and student have had similar ethnic background experiences.

High rates of teacher turnover limits the degree to which familiar patterns of interaction between faculty members will develop. Teachers' relationships in schools with high teacher turnover will tend to be unstable and therefore, not conducive to mutual peer support. As a result, teachers will tend to be isolated from one another because of a general unfamiliarity among teachers. This circumstance will tend to limit the degree of commitment held by faculty members. This condition occurs because the availability of rewards, which affect teacher commitment, tends to be limited in schools with high rates of faculty turnover. Conversely, teachers in schools with low rates of faculty turnover tend to be in environments more supportive of commitment growth than other teachers. Employees at these schools will tend to be familiar with their coworkers; therefore, the development of professional and personal relationships will be more likely to occur. Such relationships serve to make the school setting more rewarding for teachers and as a result the commitment of teachers will be positively affected.

Teachers who have their own child attending the school where they teach will tend to have stronger commitment levels

toward the success of the educational process at that school and in the district than other teachers. Furthermore, teachers who have a child attending an H.I.S.D. school other than the school where they are employed will tend to have greater commitment toward the successful attainment of a quality education by students within the district than teachers who do not have children attending district schools. Because their children are part of a system to which they have input, teachers who have children in the H.I.S.D. will tend to be more motivated than other teachers to carry out their roles in that system in an effective manner.

As the degree of interracial teacher socializing increases, teacher commitment will be positively affected. The degree of interracial socializing among teachers is a measure of the degree of faculty socializing. Since most H.I.S.D. school faculties are made up of a large proportion of both blacks and whites, a lack of interracial socializing significantly limits over all faculty socializing. High rates of interracial faculty socializing help to create and maintain positive social environments in schools. Under these conditions, teachers are more likely to provide assistance and friendship to other teachers than are teachers in schools with little interracial employee socializing. Consequentially, schools characterized by significant interracial faculty socializing will tend to provide teachers with a positive working environment within which to conduct their classes. This factor will

tend to increase the commitment of teachers toward student educational attainment.

For teachers, the degree of commitment tends to increase as they accumulate more years in the teaching profession. Each additional year people remain in teaching their opportunity to change careers diminishes. As a result, the personal investment teachers have in their profession, their district, their school and their classroom increases as their experience increases. Concurrently, teachers who expect to remain in education have a significant stake in attempting to create positive settings in the classroom. There are at least two main reasons for this tendency. First, the creation of a pleasant and cooperative environment with students will help make teachers' jobs more enjoyable and less threatening. Second, it is important for teachers who plan to stay in education to be positively evaluated by administrators and parents as to their degree of competency in directing a classroom and helping children develop. The probability for such an evaluation increases if student academic achievement is high. The likelihood that student performance will be high is greatest for students in positive classroom atmospheres.

The degree of teacher commitment tends to be positively affected by the practice of attaining specialized graduate degrees. In gaining a graduate degree, teachers increase their salaries thereby increasing the investment they have in the profession and their particular job. Also, those

persons who have experienced graduate training tend to have more professional resources with which to effectively conduct their classes. As a result, these teachers will tend to find their jobs somewhat easier to deal with than other teachers. This condition will positively affect the commitment levels of teachers with graduate training relative to teachers without graduate training.

The degree to which teachers are committed to teaching is affected by whether or not they perceive that they have been turned down for a transfer because of racial quotas. Teachers who do not perceive that they have been denied a transfer because of such guidelines will tend to have higher feelings of commitment than teachers who believe that they were denied a change in school settings because of racial reasons. Consistent with the logic of this argument, teachers of low commitment have had a significantly alienating experience with regard to the district. As a result, the commitment levels of such teachers will tend to be lessened.

The less personal efficacy expressed by teachers, the less commitment they will tend to have. Persons of low personal efficacy feel that they can do little to affect conditions in their classrooms or the social and educational outcomes of their students. Therefore, such teachers are not likely to be highly committed in the classroom because they will tend not to be highly motivated regarding their professional role. In contradistinction, teachers of

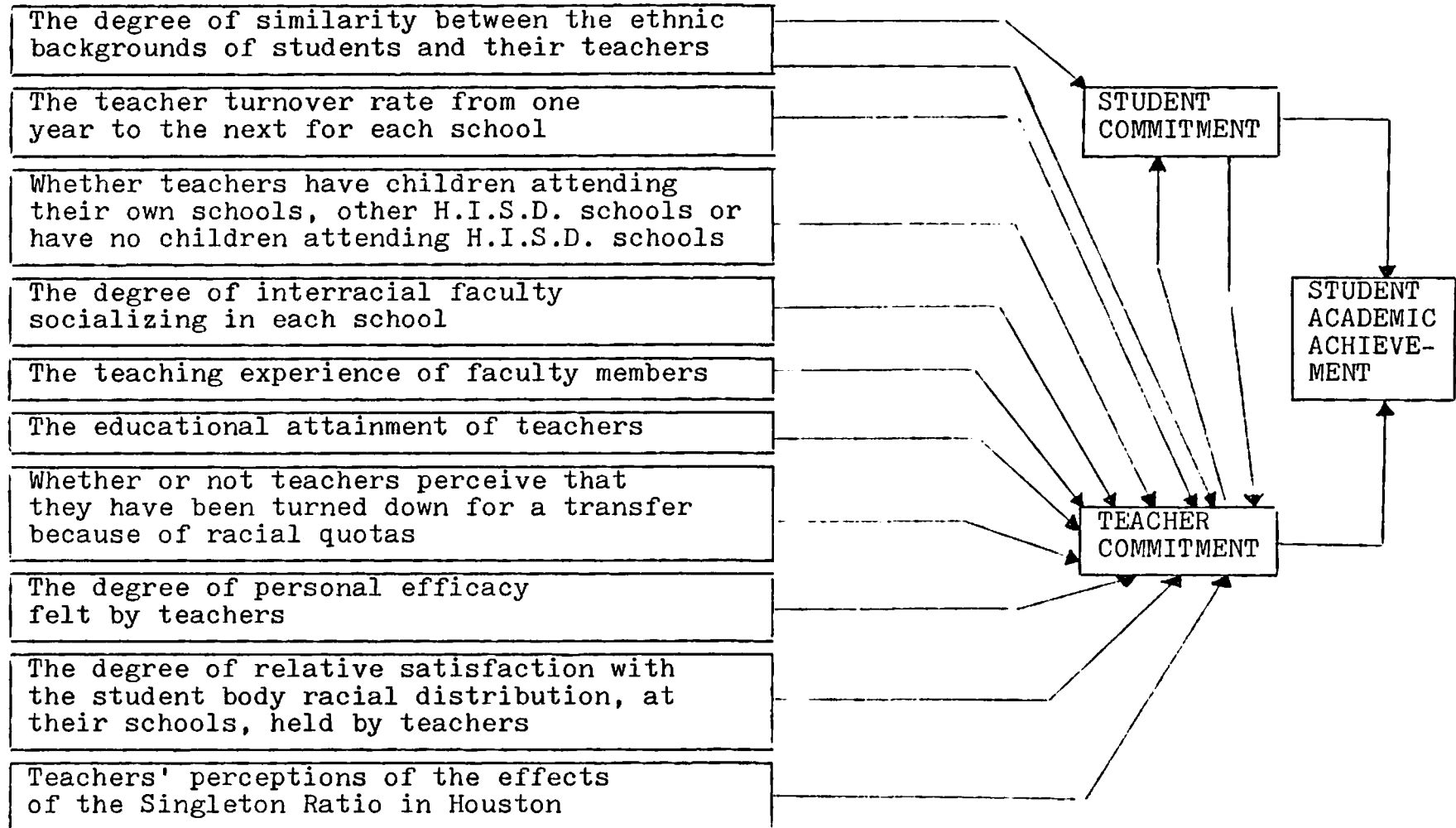
relatively high personal efficacy believe that they can have an impact on their students. The commitment levels of these teachers will tend to be higher than for other teachers because of this personality factor.

Teachers' feelings of commitment will be affected by their relative satisfaction with the student body racial distribution at the school to which they are assigned. Preference for particular students indicates an important factor affecting teacher commitment. Those teachers in racial environments which they prefer will tend to hold higher levels of commitment toward educating their students than teachers in racial environments which they do not prefer.

Teachers' perceptions of the effects of the Singleton Ratio are a measure of teachers perceptions regarding the general state of the school system. Teachers who evaluate the current effects of the Singleton Ratio as positive will tend to have a generally favorable impression of the operation of the school system. This generally positive attitude toward the district will tend to increase teachers levels of commitment. Teachers who evaluate the effects of the faculty desegregation policy on the district as negative will tend to feel disenchanted with the school system. The commitment of such teachers to their students will tend to be restricted because of a generally unfavorable attitude regarding their working environment.

The theoretical framework developed above is pictured in Figure II on the following page.

Figure II*



* The independent variables of the model are assumed to be interrelated.

THE SAMPLE

Data considered in this study were collected during the spring and summer of 1977 in the H.I.S.D. Three data sets are to be considered. Personnel records of 301 classroom teachers, student records of 1,330 fourth, fifth and sixth grade students and the results of a mailout survey for each of the 301 teachers in the sample. The survey instrument was designed to gather demographic, organizational and attitudinal information about the subjects.

SELECTION OF THE SAMPLE

The student-teacher sample was derived from two larger samples. The first was a pool of 3,440 district employees for whom district records and a completed questionnaire were available. The sample of 3,440 subjects originated from a sample of district employees numbering approximately 7,300 individuals. Within the large sample of employees more than two-thirds of the district's classroom teachers were represented. Regarding measured demographic and organizational characteristics of subjects in this sample, the characteristics of all classroom teachers in the H.I.S.D. are closely approximated. The second source was a group of approximately 5,000 students for whom a complete data base was on record. This group of students originated from a randomly drawn sample of 8,203 fourth, fifth and sixth grade students representing each of the district's six administrative areas. The sample

considered in this study consists of students who were linked to their actual classroom teachers and vice versa. The range in the number of students that were matched with each teacher was from one to twelve.

REPRESENTATIVENESS OF THE SAMPLE

The degree to which the sample of 301 teachers and 1,330 students represents fourth, fifth and sixth grade student-teacher characteristics district wide is presented in Table I.

Table I

% of students assigned to:	H.I.S.D.	Sample
black teachers	47.7	42.6
hispanic teachers	2.6	1.3
white teachers	49.7	55.9
beginning teachers	5.1	6.2
teachers with less than three years experience	16.2	17.7
Student racial breakdown	H.I.S.D.	Sample
% of black students	42.1	43.0
% of hispanic students	22.4	12.6
% of white students	34.2	42.8
* Mean I.T.B.S. score for 1977	H.I.S.D.	Sample
fourth grade	4.4	3.6
fifth grade	5.3	4.6
sixth grade	6.2	5.5

* Iowa Tests of Basic Skills

There appears to be systematic patterns of bias in the student-teacher sample relative to the population parameters. These patterns will now be explored. The percentage of students assigned to black and hispanic teachers is noticeably underrepresented in the sample. There is a 5.1 percent underrepresentation of students with black teachers and a 1.3 percent underrepresentation of students with hispanic teachers. The latter figure is important because of the small percentage (2.6) of students assigned to hispanic teachers district wide. Accordingly, the proportion of students assigned to white teachers is overrepresented by 6.2 percent relative to the district. Students in the sample tended to have slightly less experienced teachers than did students district wide during the 1976-1977 school year, but the difference was marginal. The proportion of black students in the sample represents, within one percentage point, the percentage of black students throughout the H.I.S.D. in the fourth, fifth and sixth grades during the 1976-1977 school year. The hispanic sample; however, is greatly underrepresented while the white sample is overrepresented. This problem occurred because of a tendency for hispanic children to be considerably less likely to have I.T.B.S. scores for both of the years under study. Relatively poor attendance and perhaps selected days of absence (e.g., days when achievement tests are administered) may account for this trend. The proportion of hispanic fourth, fifth and sixth grade students during the 1976-1977 school year was 22.4 percent in the H.I.S.D.

The proportion of hispanic students in the sample is 12.6 percent. The proportion of the sample made up by white students is overrepresented by 8.6 percent.

The problems of the sample indentified above were not surprising in their nature or scale. One troublesome and unexpected problem remains to be discussed. That is the degree of similarity between I.T.B.S. scores for the district and the sample. For all three grades the sample scores are considerably lower than district wide scores reported by the school district. Specifically, the fourth, fifth and sixth grade averages were 80, 70 and 70 percent of one academic year below the district averages respectively.

An attempt to estimate the degree to which this condition may restrict the validity of findings from the study was carried out. An analysis of the theoretical model was carried out considering only cases in which the students' I.T.B.S. scores were within one-half (plus or minus) of one grade equivalent score of the district wide average for their grade level. This test was based on a subsample of 280 cases. The unstandardized coefficient (b) for each theoretical direct effect attained from consideration of the subsample was compared to the b for the same relationship considering the total sample. The comparison was made by calculating the t ratio for significant differences of the relationships between the two samples.

A statistical significance level of .01 was required before intersample b's were considered to be significantly

different. Coefficients derived from a path analysis on small samples such as the subsample ($N = 280$) may become distorted (Kerlinger and Pedhazur, 1973). Therefore, a strict statistical criterion for the assessment of the significance of differences between the two samples was employed. Of the fifteen t ratios calculated, none demonstrated a significant difference between the two samples. The degree to which sampling bias has affected the results of this study then, is suggested to be minor.

MEASUREMENT AND SCALES

Standard multiple regression techniques were employed to measure the relationships within the path model. The criterion on which the significance of direct effects were determined consist of two elements. First, path coefficients (betas) less than .05 were considered to be insignificant regardless of their degree of statistical significance. The second element was that path coefficients greater than or equal to .05 were measured for statistical significance based on their F ratios. For the study, a significant direct effect is defined as having a path coefficient of at least .05 and being statistically significant at the .01 level. The preceding steps were taken to guard against the possibility that minute direct effects may be statistically significant primarily because of a large sample size. Previously, Land (1969) has considered this problem and made suggestions consistent with the strategy carried out here. A discription

of the operationalization of each observable variable is presented below.

THE DEPENDENT VARIABLE

The dependent variable of the model is student academic achievement. This variable is operationalized by measuring the relative gain or decrease in student achievement rate on the Iowa Tests of Basic Skills (I.T.B.S.) between the two academic years 1975-1976 and 1976-1977. The test battery is comprised of five subject areas. These are: vocabulary; reading; language; work study; and arithmetic. The theoretical model will be tested using a composite score which best represents students' scores on each of the five area tests as the dependent variable.¹⁰

Student academic achievement is operationalized in terms of a rate. The achievement rate for each student is calculated by the following equation.

$$\frac{\frac{X_{n+1} - X_n}{X_n}}{n} \quad (\text{Equation I})$$

A student's grade equivalent score (X) is represented by a two digit number. The first digit indicates the grade

¹⁰ A cononical factor analysis of the model was conducted including the five subject area tests in relation to the independent variables. The results of this procedure indicate that the five test measures are indicators of a single factor.

level of students' achievement regardless of their actual grade level. The second digit measures the month (1-9), within the achievement grade level, that a child's score falls. For example, a test score of 6.2 means that the student's achievement level is at the second month of the sixth grade. A student's actual grade level during the 1975-1976 school year (n) is represented by the appropriate whole number.

Consideration of academic achievement from this perspective takes into account each student's historical achievement rate in measuring academic achievement outcomes for the 1976-1977 school year. This method will control for differences in academic ability of students throughout the district. For example, two students, A and B enter the sixth grade at the beginning of the 1976-1977 school year. Student A has a prior academic achievement level of 5.9 (grade equivalent score) and student B has a prior academic achievement level of 3.5 (grade equivalent score). Student A's past achievement rate is an average gain of one year in achievement for for each grade level completed. Student B's average past achievement rate is a gain of one-half year of achievement for each grade level completed. At the end of the 1976-1977 school year, if student A's grade equivalent score is 6.9 and student B's grade equivalent score is 4.0, the academic achievement of the two students during the 1976-1977 school year would be weighted equally (i.e., both students' current gain (the numerator of Equation I) is the same as the

past average gain (the denominator in Equation I)). In this way academic achievement gains, from one year to the next, among students with a wide variation in past achievement outcomes can be meaningfully compared.

During the field study researchers became aware of the existence of teacher coaching on the tests. That is, there are cases in which a teacher answers questions for students in order to increase the measured academic performance of the child. The extent to which this occurs and the reasons for it are not completely understood. We do; however, have some informed suggestions. One finding produced by the investigation was that teachers tend to feel that they ought not be evaluated on the academic performance of their students (Dworkin, Black and Sanders, 1977). The argument is put forth by teachers that factors such as the degree of family involvement in the child's intellectual and emotional development and past academic performance in school intervene to such a degree that teachers should not be held responsible for poor achievement of students. By artificially increasing the measured amount of academic achievement of their students, teachers may believe that they are able to assure themselves of a more favorable and just personnel evaluation.

Students' scores on the tests from the former year were considered as an indicator of the reliability of the scores for the latter year (McNamara, 1977). The strategy by which this procedure was carried out was based on the following subjective decision making process. A distribution of the range of each student's scores between the two

school years was considered. In a few cases ($N < 20$) the range between a student's two scores was so great as to be unrealistic. These cases were; therefore, removed from the sample.

There are two possible points of data invalidity concerning the dependent variable which we cannot measure. These are cases where a student may have received a similar degree of coaching during both tests and therefore, whose academic achievement shows a consistent, though inflated, pattern. The other point centers around the degree to which teachers teach the tests to students during the academic year. Under this condition, students may because of being test wise, produce higher test scores than represents their actual level of academic achievement.

The operationalization of the dependent variable is not an ideal measure of achievement, but is perhaps the best available one. The greatest strength of the variable is that when certain problems to internal validity are controlled for, as we have attempted to do, it is a consistent or universal measure. That is, identical performance on behalf of students, results in identical rewards in terms of a test score. From this perspective such a measure is preferable to measures such as course grades which are affected in varying degrees by subjective decisions of teachers.

THE INTERVENING VARIABLES

Operationalization of the theoretical variables,

teacher commitment and student commitment, was carried out by measuring an observable indicator of each variable. The estimated degree of teacher commitment is measured in terms of teacher alienation. The estimate of student commitment is attained by measuring student attendance.

The degree of teacher alienation was measured by a ten item Likert alienation scale included in the mailout survey (Item I in Appendix B). The scale was developed for use in the H.I.S.D. by a member of the research team two years earlier based on the previous work of Seeman (1959, 1967a, 1967b, 1975) regarding alienation measurement. A single composite score representing the average degree of expressed alienation for each item of the scale answered is used as a teacher's alienation score.

The attendance record of a student is measured by generating a ratio of days absent related to days enrolled in a particular school. The result of dividing students' number of absences by the number of days they were officially enrolled in a school was subtracted from the whole number one. This calculation results in relatively high scores for students with regular attendance and relatively low scores for students with poor attendance.

THE INDEPNDENT VARIABLES

The degree to which a student's ethnic background is similar to the ethnic background of their teacher has been

operationalized by comparing district records of student and teacher race. Coding of the variable is as follows:

1. Student and teacher of different racial groups
2. Student and teacher of the same racial group

The proportion of teacher turnover at a particular school is operationalized as the proportion of teachers in 1976-1977 at a school who also taught at that school during the 1975-1976 school year. The resulting percentage is greatest for schools with low teacher turnover rates and lowest for schools with relatively higher teacher turnover rates.

Whether or not teachers currently have children attending the school of their own assignment or another H.I.S.D. school was operationalized by considering two questions from the mailout survey (Item II in Appendix B). The coding scheme is:

1. No child attending an H.I.S.D. school
2. Child attending another H.I.S.D. school
3. Child attending teacher's school

The degree of interracial faculty socializing was measured in terms of teachers' perceptions of the degree of interracial faculty socializing at their school (Item III in Appendix B). The coding scheme for this variable is:

1. Interracial faculty socialization is not common
2. Interracial faculty socialization is common

Following the suggestion of past researchers, total years teaching experience was dicodomized into the following categories: teachers with less than three years of experience and teachers with three or more years of experience

(Murnane, 1975; Spady, 1973). Studies on the relationship between teacher effectiveness and years of teaching experience consistently reveal that teaching skill improves drastically during the first few years of employment. Following that early increase, teacher effectiveness changes little with respect to years of teaching experience.

The highest academic degree earned by a teacher was measured by means of the mailout (Item IV in Appendix B). The data from this source were richer than the district's record. As a result, teachers who have some graduate training, but no graduate degree, are differentiated from teachers with a B.A. level degree and no graduate training. Theoretically, this is a meaningful difference in teachers education level, for it indicates different levels of investment in the teaching role held by teachers. The coding scheme is:

1. B.A. level degree
2. Some graduate work, but no graduate degree
3. M.A. level degree
4. Ph.D. level degree

Whether or not teachers perceive that they have been turned down for a transfer because of racial quotas was also measured on the mailout survey (Item V in Appendix B). The coding scheme used is:

1. Yes, transfer denied because of racial quotas
2. No, never turned down for a transfer because of racial quotas

The degree of general societal personal efficacy expressed by teachers was measured on the mailout survey by an eight item version of the Rotter Internal-External scale

(Rotter, 1966; Rotter, Chance and Phares, 1972). A single representative score of the average degree of expressed personal efficacy for each item of the scale answered is used as a teachers's personal efficacy score. This technique does not affect the relative efficacy scores of individuals reported in the more traditional convention (i.e., the number of responses demonstrating high personal efficacy). Only the way in which scores are reported has been changed. The personal efficacy scale may be found in Appendix B, Item VI.

Teachers' relative satisfaction with the student body racial distribution at their school is operationalized by considering two sources of information. In the mailout survey, teachers were asked their preference for student racial distribution (Item VII in Appendix B). Responses to this item were compared to the student racial characteristics of the school of their assignment. If a teacher desired to work in a school whose student body was comprised mostly of one particular race the percentage of students at his/her school of that race became the teacher's score. In a few cases when a one race school was desired, the actual race preferred was not recorded. In these cases the percentage of students in that school who were of the same race as the teacher was used as the teacher's score. Teachers who wanted to teach in a school of equal numbers of black, hispanic and white students were given a score produced by subtracting thirty-three percent from the largest student

race percentage in that school. This result was then subtracted from the whole number one. These procedures result in relatively high scores for satisfied teachers and relatively low scores for dissatisfied teachers.

Teachers' perceptions of the effects of the Singleton Ratio on the H.I.S.D. is measured by an eleven item battery of Likert scale questions concerning a wide array of areas of possible effects of faculty desegregation. These items were operationalized as shown in Appendix B, Item VIII. A single composite score representing the average degree of perceived positive (or negative) impacts of the Singleton Ratio on the district, for the items responded to, serves as a teacher's score on this variable.

RESULTS

Whether the parts of the educational process under study impact student academic achievement will now be reported. The presentation of results will proceed in an order which follows the logic of the process theorized to be underway.

TESTING THE PREDICTED EFFECTS OF THE DETERMINANTS OF ACHIEVEMENT ON TEACHER AND STUDENT COMMITMENT

The direct effects of three independent variables: teacher turnover; whether teachers have children attending their own school, another H.I.S.D. school or currently do not have a child attending an H.I.S.D. school and the degree

of interracial socializing among faculty members on teacher commitment are not significantly different from zero. As a result, the degree to which these variables cause teacher commitment and indirectly determine student commitment and student academic achievement is concluded to be insignificant. Also, the direct effects of the degree of ethnic background similarity between students and teachers were not significant in determining student or teacher commitment.

The direct effect of teacher experience on teacher commitment is statistically significant at the .01 level ($\beta = +.068$). Following the theoretical argument put forth, teacher commitment increases as teacher experience increases.

The direct effect of teacher education on teacher commitment is statistically significant at the .01 level ($\beta = +.084$). As the level of teacher education increases, the degree of teacher commitment also increases. This association is consistent with the predicted relationship.

The direct effect of teachers' perceptions of whether or not they have been refused a transfer because of racial quotas on teacher commitment is statistically significant at the .01 level ($\beta = +.135$). As predicted, teacher commitment is highest for teachers who do not believe they have been turned down for a transfer because of racial reasons.

The direct effect of the degree of personal efficacy felt by teachers on teacher commitment is statistically significant at the .01 level ($\beta = +.205$). As teacher

personal efficacy increases, teacher commitment also increases. This pattern is consistent with the predicted relationship.

The direct effect of teachers' relative satisfaction with the student body racial distribution at their school on teacher commitment is statistically significant at the .01 level ($\beta = +.215$). Following the theoretical process described earlier, teacher commitment increases as teachers' relative satisfaction with the student body racial distribution at their schools increases.

The direct effect of teachers perceptions about the current impact of the Singleton Ratio, in Houston, on teacher commitment is statistically significant at the .01 level ($\beta = +.232$). As teachers perceptions concerning the effects of the Singleton Ratio become more positive, teacher commitment increases. The measured association is consistent with the direction of the predicted relationship.

TESTING THE PREDICTED EFFECTS OF TEACHER AND STUDENT COMMITMENT

The direct effect of teacher commitment on student commitment is not significant. Likewise, the direct effect of student commitment on teacher commitment is insignificant. The standardized coefficients of these two associations were computed using ordinary least squares regression. The calculation of two-stage least squares with this procedure using the statistical package S.P.S.S. results in systematic underestimates of the reciprocal betas (Hout, 1977). The

direct effect from student commitment to teacher commitment is underestimated by a factor equal to the multiple correlation of student commitment with the independent variables. Also, the beta calculated from teacher commitment to student commitment is underestimated by a factor equal to the multiple correlation of teacher commitment with the independent variables. Therefore, corrected standardized coefficients were attained by dividing the betas attained from the ordinary least squares procedure by the multiple correlation (R) of the appropriate causal endogenous variable. This procedure is demonstrated in Equations II and III, where (B) is the corrected beta, (s) represents student commitment, (t) is teacher commitment and (B*) is the beta attained from ordinary least squares regression.

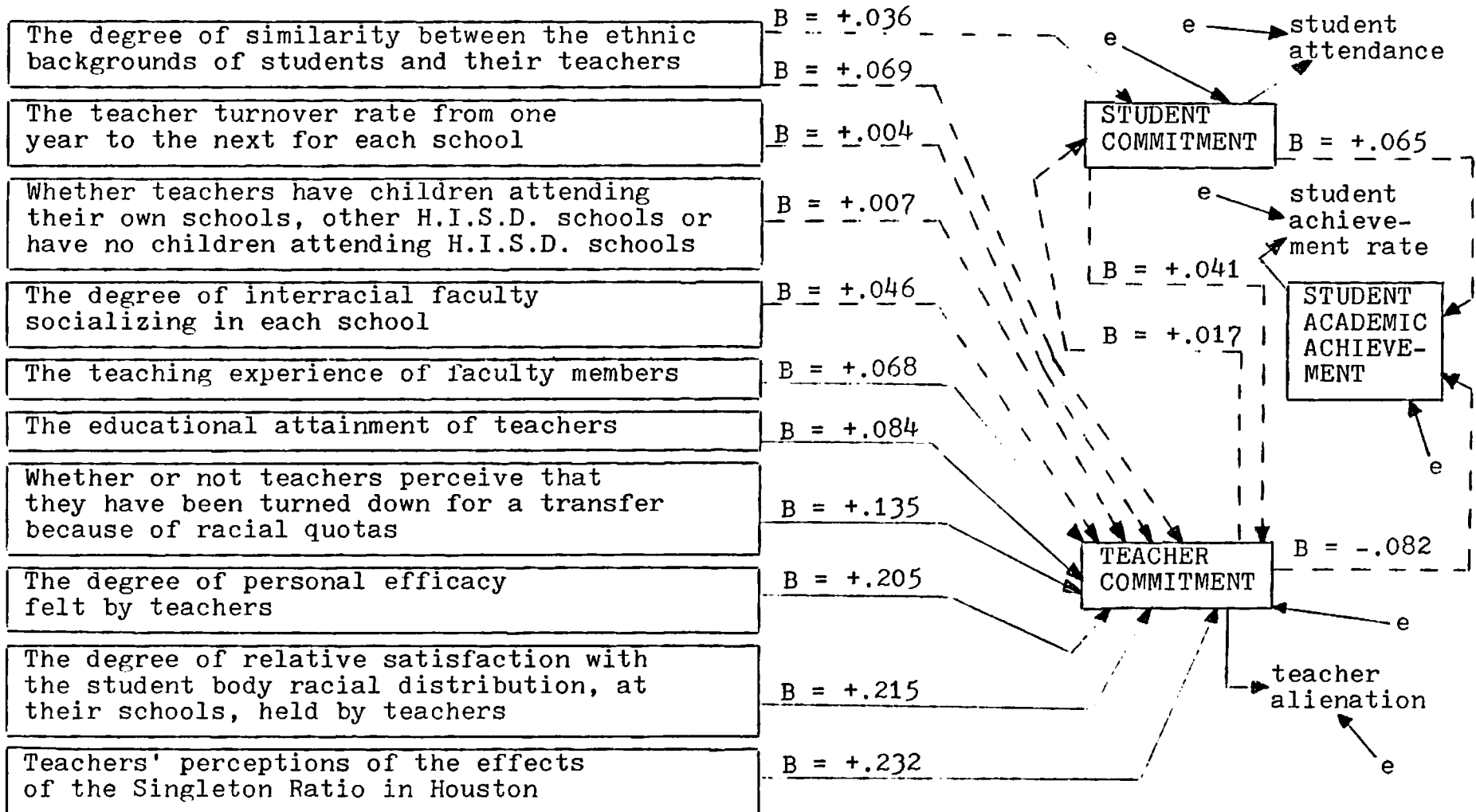
$$B_{ts} = B^*_{ts} / R_s \quad (\text{Equation II})$$

$$B_{st} = B^*_{st} / R_t \quad (\text{Equation III})$$

Finally, the direct effects of teacher commitment, as indicated by teacher alienation, and student commitment, as indicated by student attendance, on student academic achievement are not significant.

In Figure III on the following page, the complete theoretical model is presented. The statistical significance and appropriate beta coefficients (B) for each path are indicated. The simple correlations, b's, beta's, means and standard deviations measured in the study are reported in Appendix A.

Figure III*



* Broken lines reflect nonsignificant associations. Unbroken lines represent significant relationships. Standardized coefficients are denoted by the symbol B.

SUGGESTED EFFECTS OF THE SINGLETON RATIO
PROCESS ON STUDENT ACADEMIC ACHIEVEMENT

The Singleton Ratio process is suggested to have negatively affected student academic achievement by creating the following changes in the independent variables.

The Singleton Ratio process has decreased the degree of similarity between students and teachers ethnic backgrounds. Previous to the implementation of the Singleton Ratio, black teachers usually taught black children and white teachers usually taught white children. This pattern has been drastically changed by faculty desegregation. Historically, because of a disproportionately low percentage of hispanic teachers relative to hispanic students in the H.I.S.D., the degree of ethnic background similarity between these teachers and students has always been less than for whites and blacks.

Teacher turnover in the H.I.S.D. has been increased by the Singleton Ratio process. This effect of the faculty desegregation policy is most noticeable in predominantly minority schools. White teacher turnover in these schools is far out of proportion with teacher turnover district wide.

The Singleton Ratio process has decreased the probability that teachers' children will be attending schools in which their parents are assigned. This occurs as the result of many teachers being placed in schools far removed from their own residence while students tend to be assigned

to schools nearest their homes. Furthermore, the likelihood that teachers will have school aged children has been decreased by the Singleton Ratio process; therefore, decreasing the probability that teachers will have children attending any H.I.S.D. school. This latter condition is the result of a large increase in the proportion of first and second year teachers in the district who tend to be too young to have school aged children.

The degree of interracial socializing among teachers is considered a measure of total faculty socializing. The Singleton Ratio process, in effect, has made interracial socializing among teachers necessary for faculties to be characterized by high degrees of socializing. It is suggested that intraracial teacher socializing is greater than interracial teacher socializing. Therefore, the Singleton Ratio process has decreased the amount of faculty socializing throughout the district.

The average teaching experience of H.I.S.D. teachers has been lessened by the Singleton Ratio process. This condition has been created primarily because inexperienced white teachers who are placed in predominantly minority schools tend to remain in the H.I.S.D. for only a short time. When they leave, because of the means of implementing the Singleton Ratio used by the H.I.S.D., these teachers tend to be replaced by other inexperienced white teachers. As a result, a significantly larger proportion of H.I.S.D. teachers are in their first or second

year of teaching than was the case prior to the implementation of the Singleton Ratio.

The Singleton Ratio process has a decreasing effect on teacher education level. Conditions in the district brought about largely by faculty desegregation results in a large percentage of neophyte teachers continuously entering the system. These teachers tend to be just out of college and hold bachelor degrees. Generally, teachers with graduate training, attend graduate school only after they have started to teach.

The Singleton Ratio process has increased the probability that teachers will be denied transfers because of racial quotas. In fact, the Singleton Ratio is just such a quota. Teacher placement, as the result of the process of the Singleton Ratio has led to large numbers of transfer requests which have usually been rejected. This condition will, in turn, increase the likelihood that teachers will perceive that they have been denied a transfer because of racial quotas.

The degree of personal efficacy held by teachers has been decreased by the Singleton Ratio process. Faculty desegregation in a school district characterized by student segregation has the effect of placing teachers in classrooms where they are racial isolates (e.g., a black teacher in a classroom of all hispanic children). As a result, many teachers may reject their students and/or feel rejected by their students. Social interaction between students and

teachers is limited in such an environment. As a result, student outcomes will tend to be negatively affected. Teachers in this situation, who choose to remain in the H.I.S.D. and realize the small probability of receiving a transfer, will tend to have limited feelings of personal efficacy.

The Singleton Ratio process has decreased the degree to which teachers are satisfied with the racial distribution of students in their schools. This prediction does not assume that teachers prefer to teach in schools where most children are of their own race. Rather, the assumption is made that teachers prefer to teach in such schools more than they prefer to teach in settings where most students are of a race different from their own. These two conditions are by far the most common in the H.I.S.D. because schools tend to be highly segregated in terms of students. Prior to the implementation of the Singleton Ratio, teachers usually taught in schools where most students were of the same race as the teachers.

Teachers' perceptions of the effects of the Singleton Ratio are a measure of teachers' perceptions of the general state of the school system regarding several important areas of concern (e.g., student academic achievement, student dropout behavior). The process of the Singleton Ratio has the effect of making teachers more negative in their evaluation of the district regarding these factors. This condition exists because faculty desegregation has affected

teachers in such ways as to leave many with negative attitudes toward all aspects of the district.

MAGNITUDE OF EFFECTS OF THE SINGLETON RATIO
PROCESS ON STUDENT ACADEMIC ACHIEVEMENT

The direct effects of six independent variables on teacher commitment have been shown to be significant. However, the direct effects of the elements of teacher and student commitment dealt with in this paper on student academic achievement are not significant. Since teacher and student commitment intervene in the effects of the independent variables on student academic achievement, the six variables do not have significant impacts on the dependent variable. Therefore, change in the independent variables appears not to affect change in student achievement. This relationship (or lack of one) suggests that the effect of the educational process under study, on student academic achievement, is negligible. The above conclusion is supported by the magnitude of the multiple coefficient of correlation derived from the relationships within the model ($R = .161$). The total variance in student academic achievement accounted for by variance of all of the variables in the model is approximately two and one-half percent ($R^2 = .026$). A general absence of association between the effects of the educational process under study on the dependent variable appears to be firmly established.

As a consequence of the above findings, the impact

of the Singleton Ratio process on student academic achievement in the fourth, fifth and sixth grades of the H.I.S.D. is suggested to be insignificant. Changes in the independent variables caused by the process of faculty desegregation do not have significant effects in determining student achievement because, regardless of their values, the independent variables do not significantly affect the dependent variable. Therefore, district changes brought about by the Singleton Ratio process may have effects on teachers and students, but such effects do not result in changes in elementary students' performances on the I.T.B.S.

A FINDING OF SPECIAL INTEREST

Contrary to the predicted association, the relationship between teacher commitment and the dependent variable, although not statistically significant at the .01 level, was such that high student achievement tended to be associated with low teacher commitment. Two points make this unexpected result worthy of further attention. First, the degree of measured association was statistically significant at the .05 level and the standardized coefficient was greater than .05 (beta = $-.082$). These conditions suggest that there is a reasonable possibility that the inverse association between the two variables represents something more than a spurious correlation. The second point is that the pattern of association challenges a logical argument on which the predicted theoretical relationships were based. The

argument is that teacher commitment is positively associated to teacher effectiveness which is positively associated to student achievement. These circumstances suggest consideration of an issue raised earlier in the paper. That is, the impact teachers have in determining student achievement.

The results attained from measuring the theoretical relationships suggest that the impact teachers have on student achievement is small. Considering this, an inverse association, of questionable significance, between teacher commitment and student achievement is more understandable. Since the effectiveness of teachers appears to be small, with regard to student achievement determination, the degree to which teacher commitment can increase or decrease teacher effectiveness must be limited.

It is interesting that the tendency for students of teachers with low commitment to have the highest achievement rates did not appear to hold under one set of circumstances. The students of black teachers with low commitment in schools with eighty percent or more white students tended to produce relatively low rates of achievement ($N = 150$). The strength of this association was; however, very weak and did not approach statistical significance even at the .05 level. The relationship between low teacher commitment and relatively high student achievement was strongest ($p < .001$) for black teachers in a school comprised of eighty percent or more black students ($N = 225$). The obvious implications of this finding are in conflict with a central

criticism, in Houston, of the Singleton Ratio process. That is, teacher commitment will tend to be greatest when students and teachers have similar ethnic background experiences.

This study cannot explain the reasons for this unexpected finding but, the following brief speculation is offered. The point was made earlier that an important criticism regarding faculty desegregation was that it was being used by H.I.S.D. administrators as a substitute for student desegregation. This concern is expressed primarily by members of the black community. As a result, black teachers, more than other teachers may feel alienated from teaching not because of student characteristics, but rather because of a general displeasure with the district's desegregation policy. There is a widely held opinion among black H.I.S.D. teachers that the desegregation of faculties in segregated black schools lowers the achievement of black students (Dworkin, Black and Sanders, 1977). Therefore, black teachers in such an environment, who feel this way, may tend to be extremely diligent in performing their job because of being especially committed to black students. Should this be the case, under these circumstances, highly alienated teachers may be able to produce students with relatively high academic achievement rates. In these cases; however, high teacher alienation does not represent a lack of teacher commitment to students, but rather an alienated attitude toward the operation of the school system.

Simultaneously, these teachers will tend to have high levels of commitment for their students.

THE NEED FOR FURTHER RESEARCH

The role of teacher commitment in determining student achievement outcomes appears to vary significantly for different racial environments. Furthermore, the results of this study suggest that teachers' commitment to their district and to their students should be considered as two different theoretical variables. An understanding of the relationship between these two aspects of teacher commitment would provide for a better understanding of the impact teacher commitment has on student achievement in a variety of racial atmospheres. A further understanding of this relationship is critical to the evaluation of the effects of most school desegregation policies on student academic achievement.

A CLOSING DISCUSSION

Public school desegregation has many areas of concern. Historically, school segregation has been a synonym for school inequality (Ashmore, 1954; Embree, 1935; Kaplin, 1963; Pierce, 1955; Wennersten, 1975). This correlation has remained in effect during the 1970's (Ballard, 1974; Newby and Tyack, 1971; Sedlacek and Brooks, 1976). An egalitarian distribution of effective teachers is only one dimension of desegregation policy. Faculty desegregation

is an attempt to justly allocate social as well as academic resources of school systems to all students. Considering the results of this study, faculty desegregation appears to be operating in the elementary grades of the H.I.S.D. without being detrimental to student academic achievement. Therefore, because the Singleton Ratio process is a major element of public school desegregation it may be viewed as having positive effects on the H.I.S.D. at the elementary level.

The Singleton Ratio process; however, as put into effect in the H.I.S.D. seems to have left much to be desired. As a result, the strategy of application of the Singleton Ratio should be seriously reconsidered. Other school districts have transferred only experienced teachers to cross race settings in an effort to avoid many of the difficulties faced by the local school system. Experienced teachers tend to be more effective in reaching a wide range of students than do neophyte teachers. Also, experienced teachers are less likely to quit their jobs if placed in settings where they do not desire to teach than are new teachers. Some districts have rotated teachers out of "less desirable schools" every few years. In this way teachers know that they will have their assignments changed if they continue to teach. These practices help to limit a major problem faced by the H.I.S.D. That is, having to replace several first year white teachers in predominantly black schools each year with more inexperienced white teachers. This cycle is

most pronounced at the secondary level in the H.I.S.D. The education of children in these schools is probably negatively affected by this pattern. Again; however, difficulties surrounding the Singleton Ratio have been brought about more by the way the policy was instituted than the policy itself.

A related area of problems is the existence of racist attitudes and behaviors on the part of some employees and students. The Singleton Ratio cannot alone put an end to this last set of problems, but it is one part of an overall plan to do just that. The concept of public school integration is aimed at equalizing educational outcomes over time. It would be; however, foolish to expect the time period required to be short. Faculty desegregation is an important element of public school integration. The practice should not be abandoned, but the quality of different implementation strategies should be evaluated for their appropriateness in each school system.

The H.I.S.D. might do well to reconsider its current strategy regarding the Singleton Ratio process at this time.¹¹ The district is apparently about to undergo large scale student desegregation maneuvers as a result of a June, 1978

¹¹ As a result of irregularities in teacher assignment throughout the district uncovered in the 1977 study of the effects of the Singleton Ratio process in the H.I.S.D., three to four hundred teachers are being reassigned for the 1978-1979 school year. The method of reassignment; however, is to be conducted by a strategy consistent with the original Singleton Ratio related transfers during 1970.

court order. Faculty desegregation plans should be integrated with student desegregation plans to bring forth the most positive outcomes, social and academic, regarding a combination of the two plans. School districts throughout the nation would do well to coordinate all of their desegregation policies, as best they can, into one long range plan. Through such planning desegregation policies, such as the Singleton Ratio, will be most effective in equalizing educational opportunity and eventually educational outcomes for all racial groups of students.

Appendix A

CORRELATION MATRIX*

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y ₁	Y ₂	Z
X ₁		+0.061	+0.002	+0.052	+0.145	+0.116	+0.217	+0.135	-.444	-.092	+0.012	+0.217	+0.074
X ₂			+0.019	-.010	+0.179	+0.105	+0.020	+0.172	-.109	+0.120	+0.107	+0.217	+0.013
X ₃				-.102	+0.037	+0.041	-.003	+0.053	-.067	+0.018	+0.001	+0.047	-.001
X ₄					-.029	+0.059	-.151	-.104	+0.039	-.331	-.040	+0.167	+0.041
X ₅						+0.331	-.015	+0.205	-.157	+0.001	+0.103	+0.185	+0.092
X ₆							+0.107	-.006	-.154	-.070	+0.044	+0.143	+0.017
X ₇								+0.024	-.250	+0.171	+0.019	+0.263	+0.002
X ₈									-.099	+0.065	+0.043	+0.273	+0.028
X ₉										-.107	+0.019	+0.350	+0.076
X ₁₀											+0.038	+0.300	+0.032
Y ₁												+0.043	-.072
Y ₂													+0.014
Z													

* X₁ through X₁₀ are labeled on pages 19 and 20. Y₁ represents student commitment, Y₂ indicates teacher commitment and Z is student academic achievement.

METRIC COEFFICIENTS

	Teacher Commitment	Student Commitment	Student Achievement	VARIABLES AS DEPENDENT
VARIABLES AS INDE- PENDENT				
X 1	+.100	+.006		
X 2	+.033			
X 3	+.009			
X 4	+.059			
X 5	+.124			
X 6	+.065			
X 7	+.258			
X 8	+.510			
X 9	+.501			
X ₁₀	+.220			
Y 1	+.056		+.107	
Y 2		+.001	-.159	

STANDARDIZED COEFFICIENTS

	Teacher Commitment	Student Commitment	Student Achievement	VARIABLES AS DEPENDENT
VARIABLES AS INDE- PENDENT				
X 1	+ .069	+ .036		
X 2	+ .004			
X 3	+ .007			
X 4	+ .046			
X 5	+ .068			
X 6	+ .084			
X 7	+ .135			
X 8	+ .205			
X 9	+ .215			
X ₁₀	+ .232			
Y 1	+ .041		+ .065	
Y 2		+ .017	- .082	

MEANS AND STANDARD DEVIATIONS

Variables	Mean	Standard Deviation
X 1	1.491	.495
X 2	.861	.084
X 3	1.253	.488
X 4	1.324	.529
X 5	1.823	.382
X 6	2.100	.898
X 7	1.828	.361
X 8	1.579	.277
X 9	.426	.296
X ₁₀	2.759	.728
Y 1	.070	.079
Y 2	3.340	.691
Z	.229	1.336

Appendix B

ITEM I

Those who make the ultimate decisions in the school system really pay attention to my ideas and suggestions as a teacher.

Many of the school rules are so rigid and/or absurd that a good teacher must defy regulations.

The people I work with and my students make me feel that I am of vital importance to the school.

I see my job as contributing very little to the betterment of our world.

I cannot imagine my choosing any other career than teaching.

The longer I am in school, the more I realize how little control I have over things that happen there.

Teachers can get what they want without breaking the rules.

Sometimes I think a teacher could drop dead or quit and nobody would know or care.

My experiences in school have proven that public school teaching is a rewarding career.

I am seriously thinking of leaving the field of education.

ITEM II

Do you have any children in H.I.S.D?

If your children are currently enrolled in H.I.S.D., do they attend the school in which you are employed?

ITEM III

At your school, do employees of different races ever get together and socialize at lunch?

ITEM IV

What is the highest level of education you have completed?

ITEM V

Have you ever requested a transfer in the H.I.S.D. and were turned down because of the racial guidelines or racial quotas for the school in which you were employed, or for the school to which you wanted to transfer?

ITEM VI

Becoming a success is a matter of hard work; luck has little or nothing to do with it.

Getting a good job depends mainly on being in the right place at the right time.

The average citizen can have an influence in government decisions.

This world is run by the few people in power, and there is not much the little guy can do about it.

Without the right breaks, one cannot be an effective leader.

Capable people who fail to become leaders have not taken advantage of their opportunities.

No matter how hard you try, some people just don't like you.

People who can't get others to like them don't understand how to get along with others.

When I make plans, I am almost certain that I can make them work.

It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

Many times I feel that I have little influence over the things that happen to me.

It is impossible for me to believe that chance or luck plays an important role in my life.

Who gets to be the boss often depends on who was lucky enough to be in the right place first.

Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

By taking an active part in political and social affairs, people can control world events.

ITEM VII

If you had a choice, would you want to be employed at a school with mostly black students, mostly Mexican American students, mostly white students, equal numbers of black, Mexican American and white students or a student body composed on one race only?

ITEM VIII

Please evaluate the effect you believe faculty desegregation (Singleton Ratio) currently has on H.I.S.D., that is, the effect today in 1977.

Academic achievement of students

Employee morale

Student discipline

Employee absenteeism

Student absenteeism

Truancy

Student dropout rate

Race relations between employees

Employee turnover rates

Parent-teacher relations

Race relations between employees and students

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