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ABSTRACT

The purpose of the investigation reported here is to test and extend the argument that teachers engage in subtle forms of discrimination in the classroom. Further, other arguments suggested are that teachers base this discrimination on ascribed characteristics of the student; manifest this discrimination in the form of differential expectations for students' academic performances with parallel differences in behavior toward students; affect student learning thereby; and, by doing these things, contribute to the transmission of social inequalities from one generation to the next. A model is developed to provide a systematic representation of the main components of the self-fulfilling prophesy argument. A postulated reciprocal relationship between teachers' cognitive and normative evaluations of students is central to the model. Data comes from 16,000 male and female students who began high school in a major Canadian city in 1959. No evidence of socioeconomic discrimination is found, although sex and ability influences on teacher expectations are demonstrated. However, teachers' cognitive expectations are found to be substantially affected by the students' classroom behavior, a link in the self-fulfilling prophesy argument. Despite this, the data offer no support to the argument. (Author/JH)

TEACHER DISCRIMINATION AND SELF-FULFILLING PROPHESIES

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INTRODUCTION

1. Self-fulfilling prophesies

Arguments that schools are failing to provide the equality of opportunity that is part of their mandate have gained fairly wide acceptance over the past decade. Discrimination by schools--real and imagined, overt and covert--has become the focus of widespread legal action aimed at equalizing the educational opportunities of a variety of disadvantaged subpopulation groups. Concern has been expressed too that not only are schools failing to provide equality of opportunity but in so doing are perpetuating social inequalities from one generation to the next. (Bowles, 1972).

One particular component to this argument seems to have widespread appeal: the notion that teachers engage in subtle forms of discrimination within classrooms and, thereby, set in motion self-fulfilling prophesies. While the idea of self-fulfilling prophesies as social phenomena is not new (Merton, 1957:), the alleged importance of these processes within schools has been examined in depth only recently, and principally as a result of the work of Rosenthal and Jacobson (1968). The central proposition of their argument is that teachers get just what they expect from students in the way of performance in school. If teachers expect high performance from children they will get it and, conversely, if they expect poor performance from certain children, these children will perform poorly in school.

The linkage of teacher discrimination and self-fulfilling prophesies to the broader issues of equality of opportunity and the maintenance of

social inequalities across generations is fairly straightforward. It requires the invocation of an even more popular model of schools and schooling, the model that pictures schools as essentially middle-class institutions with middle-class patterns of values, norms, and expectations for their clients. Social class and ethnic differences in achievement, self-esteem, aspirations, and the like are explained in terms of the relative degree of fit between the child and the school in this respect.

Self-fulfilling prophesies are an important component of this model, linking the social and ethnic background of children to their subsequent school performance. Teachers allegedly hold high expectations for children displaying those behaviors which fit the model of learning that characterizes schools (i.e., middle-class behaviors), and lower expectations for those children whose behaviors are seen as inappropriate (i.e., working-class children). These differences in expectations are translated into parallel differences in teacher behaviors toward students with the result that teacher prophesies about student achievement are fulfilled. In this way, it is alleged that differences in the social class and ethnic backgrounds of students are translated into achievement differences in school and, subsequently, within the broader social structure such that equality of opportunity is denied some students and the class structure of one generation is reproduced in the text.

2. The present research

This paper reports the development and estimation of a causal model designed to test and extend these arguments. Two dimensions of teacher

expectations set in a mutual influence relationship are central to the model: a cognitive expectation and a normative expectation. Variation in these is seen as a function of social class and ability differences among students, along with differences in student ambition, achievement, and program of study. The model examines the effects of these variables on student achievement in each of three areas: general information, English language, and mathematics. The model is estimated for the total group with sex included as a variable (and possible source of teacher expectations), as well as separately by sex on the assumption that the social processes involved may differ between males and females.

Figure 1 presents the basic structure of the model. Variables are caused by all others lying to the left of them, with one exception. Program of study is assumed not to affect teachers' normative evaluations. Variables not separated horizontally are unexamined causally unless otherwise indicated.

Figure 1 about here

BACKGROUND

The literature on self-fulfilling prophesies in the classroom is relatively well known. The Rosenthal and Jacobson (1968) work generated a great deal of interest, some trenchant criticism (Thorndike, 1968), and much related research. Some of this entailed fairly straightforward--and mostly unsuccessful--replications (Claiborn, 1969); while the remainder was concerned with methodological and substantive elaborations.

These elaborations focussed on one or more of the following components of the self-fulfilling prophesies argument:

(i) the generalization of expectancy effects to student traits other than intelligence (e.g., Fleming and Anttonen, 1971);

(ii) the translation of teacher expectancies into teacher behaviors toward students (e.g., Brophy and Good, 1970); and

(iii) an explication of the source (in natural settings) of differences in teacher expectations (e.g., Rist, 1973).

Much of this work has been reviewed in Elashoff and Snow (1971), Finn (1972), West and Anderson (1974), and Brophy and Good (1974).

The overall result of all this effort is a somewhat equivocal set of findings about the nature and effect of self-fulfilling prophesies in the classroom. The following generalizations capture much of the present state of knowledge in broad terms.

1. Expectations "induced" in teachers by experimenters have virtually no effect on student ability or achievement (Baker and Crist, 1971).

2. Expectations developed by teachers in the course of their contact with children in the classroom have no demonstrable effect on intelligence, but appear to have some small effect on student achievement (Dusek and O'Connell, 1973). Evidence for the effects of teacher expectations on other student traits is

limited. Fleming and Anttonen (1971) found no effects on student self-concept. Williams (1972; 1975) found small effects on student's educational ambitions. In brief, "the available data suggest that although expectation effects are quite real, they are neither ubiquitious nor particularly strong in the usual situation" (Brophy and Good, 1972).

3. Evidence for other links in the chain connecting ascribed characteristics of students to school-related abilities through teacher expectations is somewhat more certain. The translation of teacher expectations into teacher behaviors that differ in their nature and extent between students has been demonstrated (Brophy and Good, 1970; Ristl, 1973). The effects of ascribed characteristics of students on the development of a wide range of teacher expectations have been documented also. For example: Rist (1973) describes in detail the way in which class-related behavioral differences among black elementary school children affect teacher expectations and behavior; Palardy (1969) identifies sex-effects; and Jackson and Cosca (1974) provide some evidence of ethnicity effects.

Taken as a whole, the self-fulfilling prophesies literature provides few clear answers to the central issue of teacher expectancy effects on

student achievement, or to the broader question of whether these effects play a role in the maintenance of social inequalities across generations.

Part of this is due to the fragmented nature of the accumulated knowledge about these processes. Much of the work done has focussed on only one link in this system of relationships and has been restricted to the identification of effects without reference to their magnitude. In the present investigation an attempt is made to address these issues by representing the processes in question as a system of cause-effect relationships, and by estimating the parameters of the system.

Several other deficiencies in this body of literature are addressed in the present investigation. The first of these--the matter of sex differences in the nature of these processes--is taken up in the separate estimation of the model by sex, on the assumption that sex differences already identified for expectancy effects on achievement (Finn, 1972) and on ambition (Williams, 1975) will be present in this case. The model is estimated also on the total group but with sex included as a variable.

Second, other than Rist's (1973) anecdotal data, little is known about the within-school variables through which ascriptive differences among students came to influence teacher expectancies. Among those available for examination in the present data are school grades which appear to be important sources of teacher expectations transmitting part of the effects due to student SES and ability (Hauser, 1972). Along with these, the educational ambitions of students and the struc-

tural constraints imposed on students in the way of ability grouping both serve similar functions (Williams, 1975). All three variables are included within the present model in the ways indicated in Figure 1.

Third, the issue of dimensions of teacher expectations has not been raised directly in the teacher expectancy literature. In the past attention has been directed almost exclusively to the effects of teachers' expectations for the student's cognitive performance (e.g., intelligence, achievement) in school. Yet this appears to be only one of a number of dimensions of student behavior important to teachers. For example, teachers face two primary tasks in day-to-day teaching. One of these is the inculcation of knowledge and skills, the other concerns "classroom management" "a significant portion of the total energy required to operate a classroom is spent in the mundane business of managing the movement of social traffic and of responding to violations of institutional expectations (Jackson and Lahaderne, 1967). Parsons (1959) makes the same point with his distinction of cognitive and moral components of achievement. Given the importance of these two tasks to teachers it seems logical to expect that teachers will evaluate students on both dimensions and develop appropriate expectations for their respective performances. That is, teachers will develop at least two sets of expectations for each student: (i) cognitive expectations for the student's performance in academic activities; and (ii), normative expectations based on the student's adherence to the norms of classroom behavior.

These two dimensions of teacher expectations are argued to influence each other--other things equal, better behaved students are regarded as brighter and, conversely, brighter students are seen as better behaved. Furthermore, the inclusion of both dimensions of teacher expectations allows a more adequate examination of the argument that it is the disjunction between lower-class behavior and middle-class norms that underlies social class differences in school achievement and serves to perpetuate initial social inequalities among children. The effects on teachers of social class differences in both cognitive and non-cognitive behaviors--and the indirect effects of each via the other--can be examined.

ESTIMATION OF THE MODEL

1. Data

The subjects in question were drawn from the more than 16,000 students beginning high school in a major Canadian city in 1959. The 10,530 (5,458 males and 5,072 females) who completed the first two years of high school in minimum time, and who did not change schools during that time, were selected from among these. See Williams (1972; 1975) for a more complete description of the sample and data.

2. Variables

See MacEachern (1960), and D'Oyley (1964) for details on the measuring instruments used. Brief descriptions of the variables used here follow:

a. Social Origins. This variable was indexed as the simple unweighted sum of three conventional indicators of socioeconomic status: (i) the student's report of his fathers occupation ordered into eight categories based on Blishen (1967); and (ii) the student's report of father's and mother's education, each a five point scale ranging from "no secondary school" to "university degree."

b. Intellectual ability. This variable was indexed as the simple unweighted sum of scores on three standardized ability tests: (i) the CAAT I, a verbal reasoning test; (ii) the CAAT II, a mathematical reasoning test; and (iii) the CAAT III, a non-verbal reasoning test. The tests are described in D'Oyley (1964).

c. Program. The variable is treated as a dichotomy, "vocational/general" program.

d. Student's Ambition. Students were asked to report their future plans for education and work on a nine-point scale ranging from "leave school for a job" to "complete secondary school and attend university." To create an ordinal scale the original scale was collapsed into four categories: "leave school for job or trade training," "complete school-job," "complete school--non-university training," "complete school--university."

e. Grade point average. Data on the student's grade point average were obtained from the schools directly.

f. Cognitive expectations. Teachers within a school were asked to rate each student's chances of completing the fifth year of high school--the university entrance year--on a five-point scale. They were asked to meet as a group and give a single rating for each student which would represent their combined judgements and, furthermore, to rate students in both programs of study on the same basis.

g. Normative expectations. In addition, teachers were asked to rate students on three dimensions of classroom behavior--"cooperation," "reliability," and "industry"--in the same way. Ratings were combined in a simple unweighted sum to produce the measure used here.

h. Standardized achievement tests. Three standardized achievement measures are used. One is the CTGI, a test of general information, another is the CATE, an English language achievement test and the third is the CATM, a test of mathematics achievement. All three were administered in the Spring of 1961 at the end of the second year of high school. The tests are described fully in D'Oyley (1964).

i. Sex. Sex is included as a variable in one of the models estimated. Males were coded 1 and females 2.

3. Method

The parameters of the model were estimated via path analysis, a generalization of multiple regression to systems of causally related variables. Blalock (1971) provides basic references. Estimation of the non-recursive part of the system followed the two-stage least squares procedures outlined by Duncan et al. (1968). Those sections of the model involving the reciprocal influence relationships were rendered just-identified by assuming program to have no effect on the teachers' normative expectations. Given that teachers were instructed to ignore the student's program of study in their ratings this appears to be a reasonable assumption.

4. Issues in measurement and estimation

The variety of measurement and estimation problems that stem from this data set, and from the estimation procedures used have been addressed elsewhere in connection with similar models and related data (Williams, 1972; 1975). Issues revolving about parametric statistics and ordinal measurement, differential non-response and the use of standardized/unstandardized coefficients are among those dealt with. The combined effect of these considerations is to introduce some reservation about the assignment of a precise quantitative meaning to the estimates obtained. Accordingly, the interpretations made here should be seen as qualitative only.

RESULTS

Table 1 presents the correlations among the eleven variables within the model for the total group and for males and females separately. Each correlation is based on all cases for which values were present for both variables.

Table 1 about here

Table 2 shows the path coefficients for the model based on the total group and with sex included as a variable.

Table 2 about here

Table 3 presents separately by sex the path coefficients (standardized partial regression coefficients) that characterize the model when estimated separately for males and females.

Table 3 about here

Table 4 contains the corresponding path regressions (unstandardized partial regression coefficients) and reports these for males and females separately.

Table 4 about here

DISCUSSION

The discussion will focus on each of four general issues raised earlier: (i) an examination of the effects of student social origins, sex, and ability as antecedents of teacher expectations, and of the mediating role played by the within-school variables, student ambition, program, and grade point average; (ii) a consideration of the mutual influence of cognitive and normative expectations and how each may transmit social class effects to the other; (iii) a specification of the consequences of variation in both dimensions of teacher expectations for student achievement in three areas; and (iv) sex differences in these processes. The issues are not addressed separately but, rather, in two sections: the antecedents of teacher expectations; and the consequences of these expectations for student achievement. The interpretation of the results in these terms must utilize both path coefficients and path regressions as complementary measures each addressing different issues, respectively, the issue of relative effects, and questions of comparisons of effects across variables and/or across sexes (Schoenberg, 1972).

1. Antecedents of teacher expectations

Student social origins have virtually no direct effects on the development of either cognitive or normative expectations in teachers. The effects differ little between males and females (Table 4) and rank as the smallest of all effects in each case (Tables 2 and 3). Thus,

the data provide little support for notions of direct socioeconomic discrimination by teachers, at least among beginning high school students. Arguments that such discrimination has already taken place by this time, having its effects on student ability, ambition, and program of study in elementary school (e.g., Rist, 1973), are not supported in any substantial way by the magnitude of the correlations between SES and these variables (Table 1). These correlations range from .14 to .34 suggesting that at the most only two to ten percent of the variance in these variables could be attributed to socioeconomic discrimination in elementary school. Similarly, related arguments that SES effects on teacher expectations in high school are mainly indirect via the student's manifest ability and ambitions, and via identification with a program of study (i.e., ability group), are not borne out by these data. The indirect effects of SES on expectations via these variables are minor, in the region of .04 or less for all three groups considered.

The model estimated for the total group with sex included as a variable (and under the assumption of additive sex effects) indicates little in the way of direct sex effects on teacher expectations (Table 2). Other things equal, teachers hold somewhat higher expectations for the normative behaviors of girls, but the effect is small (.09). Direct sex effects on teachers' cognitive expectations are negligible (-.03). The indirect effects of sex on teacher expectations within this model are greatest via GPA on teachers' normative expectations but amount to only .08 in this instance. Similarly, data from the models estimated separately for each sex show few substantial sex dif-

ferences in effects on teacher expectations (Table 4). However, there is one major exception, the effect of teachers' cognitive expectations on normative expectations (-.62 for males and .26 for females). The suggestion here is that teachers see bright boys as potential sources of disruption within the classroom. Similar phenomena are suggested by Parsons (1959), and by the conventional wisdom that bright students are not fully challenged by the intellectual tasks of the classroom, became bored as a result, and tend to pose behavior problems for teachers. To the extent that this represents discrimination be sex, then this is the single example of any magnitude within these data.

Among the within-school variables specified as causes of teachers' expectations the findings are predictable. Teachers' normative expectations (NE) are affected by student performance and ambition, and teachers' cognitive expectations (CE) are influenced by student ability, performance, and program of study. Sex differences in the magnitude of these effects are minor.

The mutual influence of teachers' NE and CE has been touched on already under sex differences. Given these sex differences there is little point to examining the effect estimates in the combined model shown in Table 2. Sex appears to interact with each set of teacher expectations in its effect on the other, violating the assumption of additive effects made in the combined model.

The model for males is characterized by negative feedback in which high NE produce high CE, but high CE have the effect of lowering teachers' NE for the student. Substantively, this implies that teachers expect

good performance from well-behaved boys (the confounding of the cognitive and moral components to achievement that Parsons notes: Parsons, 1959) but, in addition, expect that increased achievement will result in less conformity to classroom norms for reasons already mentioned.

The model for females shows positive feedback in which high NE contribute to an increase in CE and, similarly, high CE serve to raise teachers' NE for the student's adherence to classroom norms.

Perhaps of most interest in this connection is the fact that for both males and females the most powerful determinant of teachers' CE is their NE (Table 3). The degree to which students exhibit "cooperation," "reliability," and "industry" within the classroom is a more powerful influence on teacher CE than ability, past performance, or the school's prediction of cognitive capability (program of study). Such a finding would support arguments that see self-fulfilling prophesies arising from the disjunction between lower-class behavior and the middle-class norms of classrooms (e.g., Rist, 1973) if teachers' NE were affected by SES, but they are not. In this case the combined direct and indirect effects of SES on NE are small and provide little evidence in support of teacher discrimination by social class. Thus, variables other than those in this model are having substantial effects on teachers NE and through these on CE, the expectations assumed to affect student achievement. Perhaps notions of "systems awareness" (Tomlinson and TenHouten, 1973) are appropriate here but this remains to be seen.

2. Consequences of teacher expectations

The consequences of teacher expectations under examination in this case are standardized measures of achievement in general information, English, and mathematics. For each measure of achievement the predominant influence was student intellectual ability with effects in the region of .35 to .45. Relative to this, teachers' CE ranged in effect from .06 to .16 while teachers' NE were generally inconsequential (Table 3). Sex differences in the magnitude of these effects were negligible (Table 4).

Thus, these data offer little support to arguments that postulate substantial teacher expectancy effects on student achievement. At best, teachers' cognitive expectations for students' academic achievements are minor in their influence on these achievements.

SUMMARY

The purpose of the investigation reported here was to test and extend arguments suggesting that: teachers engage in subtle forms of discrimination in the classroom; base this discrimination on ascribed characteristics of the student; manifest this in the form of differential expectations for students' academic performances with parallel differences in behavior toward students; affect student learning thereby; and, by so doing, contribute to the transmission of social inequalities from one generation to the next.

A model was developed to provide a systematic representation of the main components of the self-fulfilling prophesies argument and elaborated to address the following issues: sex differences in these processes; the

role of within-school variables in transmitting the effects of ascribed student characteristics to teacher expectations; and the extension of the traditional cognitive definition of teacher expectations to include expectations for non-cognitive behaviors in the classroom. This model was estimated on the total group with sex included as a variable, as well as separately for male and female student groups.

The data failed to provide support for either:

(a) the existance of substantial teacher expectancy effects on achievement; or for

(b) teacher discrimination in the form of differential expectations based on the ascribed characteristics of students.

According to these data school processes are highly conventional. Teachers do not discriminate among students on the basis of social origins or sex but, instead, are influenced in the development of their expectations for students by student ability, performance, ambition, and by the school's classification of these students into programs of study, all logically appropriate sources of data for teachers expectations.

Perhaps the single unconventional finding is that teachers' expectations for student cognitive performance are influenced most by their expectations for the student's adherence to the norms of classroom behavior. However, this confounding of cognitive and normative dimensions of classroom life has been noted elsewhere (Parsons, 1959). Although this relationship offers the potential for social class dis-

crimination (the disjunction between lower-class behaviors and middle-class norms affecting teachers normative expectations and, hence, their cognitive expectations) the data provide no support for this in the way of indirect effects of SES on cognitive expectations via normative expectations.

Not only are the sources of teachers' expectations highly conventional variables, but so too are the sources of student achievement. The variable with the greatest impact on achievement is intellectual ability. Teacher (cognitive) expectation effects are relatively small by comparison, and generally exceeded by the effects of school performance (GPA), and program of study in this model.

In brief, these data offer some limited support for teacher expectancy effects on achievement, but indicate generally minor effects for these variables in comparison with more conventional determinants of achievement. The data offer no support to arguments that teachers engage in subtle forms of discrimination based on the social origins of students, or to arguments that schools perpetuate social inequalities via the operation of self-fulfilling prophesies. Rist (1973:1) may be correct when he asserts that "Myths die hard in America."

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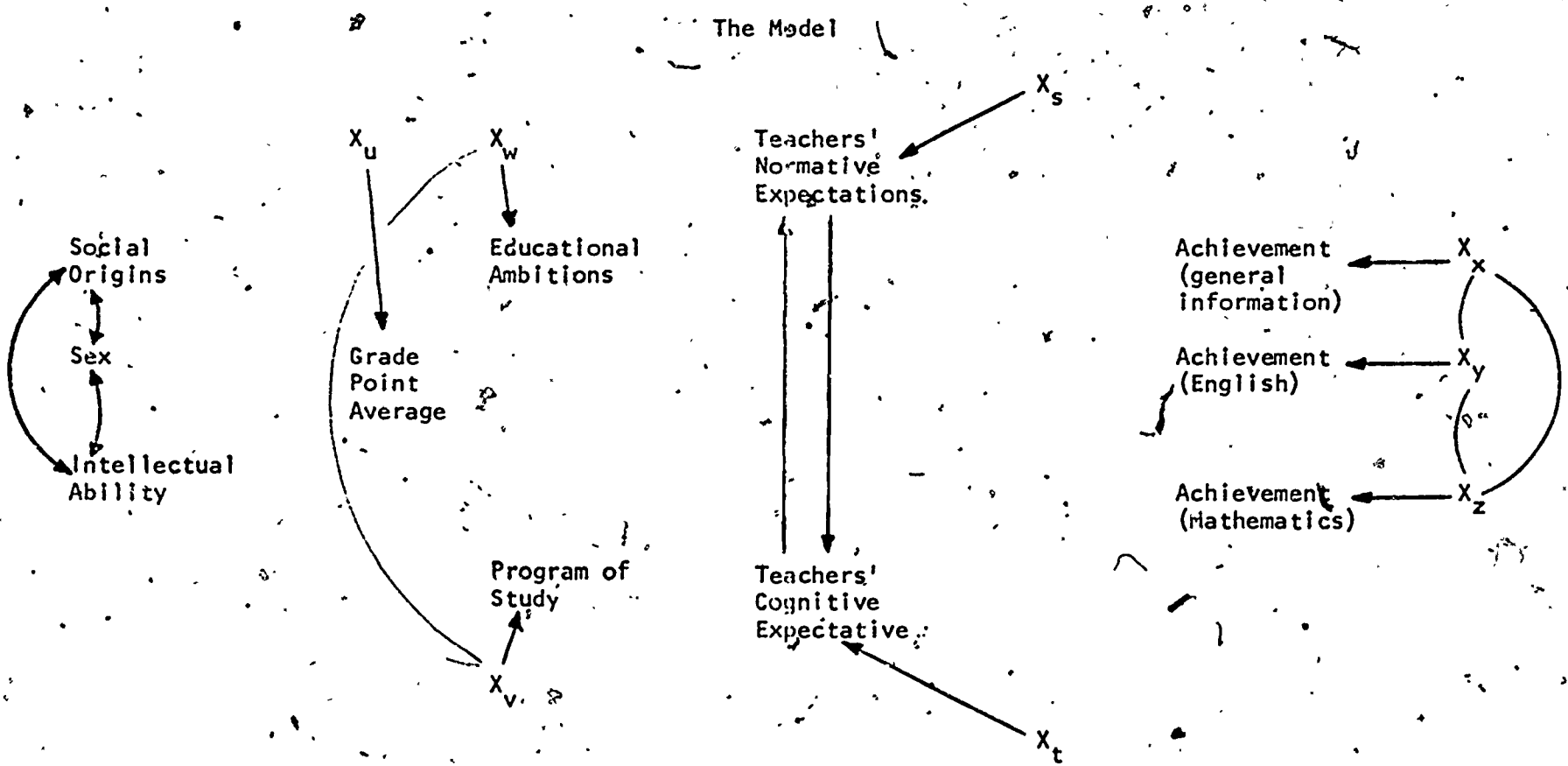
FIGURE 1



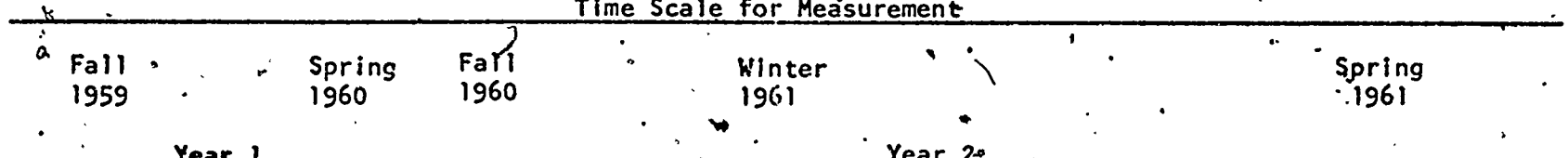


TABLE I

Correlation Matrices for Total Group[a], Males, and Females[b]

	SES	IQ	GPA_1	Amb	Prog	Norm	Cog	CTGI	CATE	CATM
Sex	-.01	-.10	.13	-.23	-.11	.13	.02	-.04	.15	-.03
SES		.23	.15	.26	.29	.08	.18	.23	.25	.14
IQ	.22 .25		.44	.35	.47	.22	.47	.58	.67	.51
GPA_1	.14 .16	.43 .48		.27	.28	.46	.59	.39	.54	.46
Amb	.22 .31	.29 .38	.29 .32		.48	.19	.36	.36	.36	.21
Prog	.25 .34	.46 .48	.29 .32	.40 .55		.16	.40	.49	.55	.19
Norm	.07 .11	.19 .28	.44 .47	.22 .24	.13 .21		.65	.27	.35	.30
Cog	.17 .19	.44 .51	.59 .60	.35 .39	.36 .45	.65 .66		.44	.56	.44
CTGI	.21 .26	.56 .62	.35 .45	.31 .43	.47 .50	.23 .34	.40 .50		.65	.34
CATE	.25 .26	.67 .72	.50 .56	.39 .44	.59 .57	.31 .37	.55 .58	.64 .70		.48
CATM	.16 .11	.55 .47	.48 .46	.26 .14	.31 .05	.30 .31	.47 .41	.36 .30	.53 .44	

Notes:

a. values for total group above the diagonal.

b. values for males and females below the diagonal, with figure for males uppermost in each pair.

TABLE 2

Path Coefficients for Total Group

Dependent Variables	Independent Variables								
	SES	IQ	Sex	GPA_1	Amb_2	$Prog_2$	$Norm_2$	Cog_2	Residual
GPA_1	.04	.44	.18						.88
Amb_2	.18	.20	-.23	.18					.88
$Prog_2$	.19	.37	-.08	.10					.85
$Norm_2$	-.00	.02	.09	.45	.11			-.06	.90
Cog_2	.00	.17	-.03	.24	.06	.14	.49		.63
CTGI	.04	.38	.02	.07	.07	.21	.07	.06	.76
CATE	.02	.42	.20	.15	.05	.25	.04	.13	.60
CATM	.03	.39	-.04	.22	.01	-.14	.04	.15	.80

Correlations among residuals

$r_{vw} = .34$

$r_{xy} = .33$

$r_{xz} = .00$

$r_{yz} = .16$

TABLE 3

Path Coefficients for Males and Females[a]

Dependent Variables	Independent Variables							
	SES	IQ	GPA_1	Amb_2	$Prog_2$	$Norm_2$	Cog_2	Residual
GPA_1	.05 .12	.42 .27						.90 .88
Amb_2	.15 .22	.17 .25	.20 .16					.93 .88
$Prog_2$	.16 .23	.38 .37	.10 .10					.87 .84
$Norm_2$	-.00 .00	.03 .01	.56 .37	.15 .07			-.29 .13	1.03 .83
Cog_2	.01 -.01	.16 .17	.20 .27	.05 .06	.13 .16	.60 .38		.64 .62
CTGI	.04 .03	.37 .38	.04 .10	.06 .10	.23 .18	.06 .08	.06 .06	.78 .72
CATE	.04 .01	.39 .45	.12 .19	.06 .04	.28 .22	.03 .04	.15 .10	.61 .60
CATM	.02 .05	.37 .40	.20 .25	.02 -.00	.00 -.32	.03 .04	.15 .16	.78 .79

Correlations among residuals

$r_{vw} = .28$ / $.40$

$r_{xy} = .31$ / $.35$

$r_{xz} = -.00$ / $-.00$

$r_{yz} = .15$ / $.15$

a. figure for males uppermost in each pair

00028

TABLE 4

Path Regressions for Males and Females[a]

Dependent Variables	Independent Variables						
	SES	IQ	GPA_1	Amb_2	$Prog_2$	$Norm_2$	Cog_2
GPA_1	.13 .12	.24 .27					
Amb_2	.05 .08	.01 .02	.03 .02				
$Prog_2$	.02 .04	.01 .01	.01 .01				
$Norm_2$	-.00 .00	.01 .00	.16 .11	.13 .15			-.62 .26
Cog_2	.01 -.00	.01 .01	.03 .04	.06 .07	.32 .42	.28 .18	
CTGI	.27 .22	.55 .49	.11 .23	1.11 1.76	10.91 7.18	.51 .64	1.19 1.01
CATE	.18 .04	.38 .40	.21 .29	.81 .51	8.71 6.13	.20 .22	1.88 1.11
CATM	.03 .07	.12 .12	.12 .13	.12 -.00	.03 3.05	.06 .08	.63 .61

a. figure for males uppermost in each pair