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ABSTRACT

The debate about appropriate student-teacher authority relations in schools has persisted at least since the movement for "progressive education" in the 1920's, and it is reflected today in the debate between "open" education programs and "traditional" education programs. This paper, based on data from 7,361 students in elementary and secondary open and traditional schools, examines the role of school authority structures in the learning process. The paper identifies formal and informal aspects of the authority structures. Formal aspects, such as individualization of instruction and control of student assignments, differed much more between schools than did informal aspects, such as the teachers' classroom decision-making styles. However, the formal aspects facilitate the small differences in informal aspects found between schools. Also, the formal authority relations are found to have a small effect on nonacademic student outcomes such as self-reliance and attitudes toward school, while the informal authority relations show a much stronger effect. (Authors)

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AUTHORITY STRUCTURES AND STUDENT DEVELOPMENT

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Policy Studies in School Desegregation program applies the basic theories of social organization of schools to study the internal conditions of desegregated schools, the feasibility of alternative desegregation policies, and the interrelation of school desegregation with other equity issues such as housing and job desegregation. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed the Teams-Games-Tournament (TGT) instructional process for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to post secondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes.

This report, prepared by the School Organization Program, identifies formal and informal dimensions of school authority structures and discusses their effects on student development.

Abstract

The debate about appropriate student-teacher authority relations in schools has persisted at least since the movement for "progressive education" in the 1920's, and is reflected today in the debate between "open" education programs and "traditional" education programs. This paper, based on data from 7361 students in elementary and secondary open and traditional schools, examines the role of school authority structures in the learning process. The paper identifies formal and informal aspects of the authority structures. Formal aspects, such as individualization of instruction and control of student assignments, differed much more between schools than did informal aspects, such as the teachers' classroom decision-making styles. However, the formal aspects facilitate the small differences in informal aspects found between schools. Also, the formal authority relations are found to have a small effect on nonacademic student outcomes such as self-reliance and attitudes toward school, while the informal authority relations show a much stronger effect.

Introduction

The authority relationship between school teachers and students has frequently been the object of reform movements in education. Educational theorists and practitioners have contested issues of school authority relations at least since the movement for "progressive education" in the 1920's (Cremin, 1961). While there may be a long-term historical trend to increase student prerogatives in school decisions, each change seems to be followed by counterpressures. At one time there will be movement towards minimizing school regulations and maximizing student involvement in decisions. Then the pendulum will swing in the direction of stricter uniform standards and stronger teacher control of student behavior.

In recent years, there have been several reform movements concerned with the controls on students, regarding both nonacademic and academic behavior. In the 1960's, at the height of student demonstrations in high school, there was an emphasis on students' political and social rights in nonacademic school affairs. From the late 1960's through the current decade, there has also been renewed attention to how authority is structured to control student academic behaviors. Contemporary schools that take different positions on authority-control issues may be represented by those emphasizing "open" learning environments compared to those supporting "traditional" or "back to basics" programs. But the debate about the appropriate student-teacher authority relations in schools remains unresolved and is likely to continue among educational practitioners and theorists.

To learn more about school authority structures in the learning process, we undertook a study in 1973 and 1974 of open and traditional schools

(Epstein and McPartland, 1975, 1976a, 1976b, 1977a, 1977b; McPartland and Epstein, 1976, 1977). This study included test and questionnaire data on 7361 students from grades 5, 6, 7, 9 and 12 of 23 elementary schools, 10 middle schools, and 6 high schools. Two general questions were addressed: What are the defining components of the school authority differences that are successfully implemented in open schools? Which student outcomes are affected most by changes in school authority structures?

Dimensions of School Authority

The research was conducted in a rapidly growing suburban school system that had adopted a policy to implement "open education" in many of its new and existing school buildings. Since at the time of our study the policy had been actively pursued for more than five years, the school system provided a valuable research opportunity to learn which particular school authority dimensions may be most easily changed and which changes may be most resistant to successful implementation.

Some obvious differences could be observed between the open schools and the traditional schools in the system. Instead of buildings with many self-contained "egg crate" classrooms with fixed rows of seats for 20 to 30 students, the open schools utilized large open spaces containing several instructional areas and a large central area that accommodated 100 or more students. The moveable furniture was arranged differently from the standard rows of desks found in more traditional schools. Instead of a teacher conducting a single lesson for all from the front of the room, there were many activities going on simultaneously and more freedom of movement among the students in the open schools. And, you could find

teachers in many of the open schools who would talk about different staff attitudes on the role of students in classroom decisions, or about an improved climate for student-teacher relationships.

Yet it remained an important empirical question of how extensive were both the formal and informal differences in authority between the various schools. We did not assume that open space architecture determined the formal organization of instructional practices, nor that the formal classroom practices determined the informal relationships between teachers and students. Instead, the first objective of this research was to determine the particular changes of formal and informal structures that had actually been implemented in the schools. As will be described below, the evidence strongly suggests that it is much easier to change the formal organization of instruction than it is to alter the way teachers relate informally to their students.

Formal and informal aspects of school authority

The distinction between formal and informal arrangements is a familiar one in many theories of industrial and other goal-directed organizations. The formal organization of official regulations, roles and purposes may be contrasted with the informal relations, attitudes and expectations that frequently guide behavior of individual members. This study used a similar distinction between the formal and informal aspects of school authority structures, rather than beginning with a single definition that combined both aspects.

There have been a variety of definitions in previous descriptions and research on open schools. Most of this work has focused on elemen-

tary schools and has included both formal and informal features of classroom arrangements in the definitions of openness without questioning which aspects are the most significant in actual practice. Some descriptions of open education stress the quality of informal life in the classroom and emphasize the informal climate of teacher-student relations in the definition of openness (see, for example, Featherstone, 1971; and Silberman, 1973). Other work emphasizes the philosophy or attitudes of teachers toward the learning process and includes in the definition of openness images of "child-centered education" in which teachers are prepared to follow the natural curiosity, interests and abilities of individual students (see, for example, Barth, 1972; Bussis and Chittenden, 1970; Plowden, 1967; and Weber, 1971). Some research operationalizes the concept of openness by using measures that include both the attitudes of teachers about the learning process and the informal relationships in the classroom, as well as descriptions of the formal arrangements of materials, instructional tasks, and official rules that govern classroom activities (see, for example, Walberg and Thomas, 1972; Evans, 1972; and Tuckman, et al., 1973).

Two general results from our research help to clarify issues on the definitions of openness by identifying the aspects of school authority structures where significant changes can be directly implemented, and the aspects where large changes are not common and occur indirectly.

1. Open and traditional schools differed greatly on formal organizational aspects of their authority structure, but the same schools did not differ nearly so much on the informal aspects of student-teacher authority relations.

As part of the procedures to define the specific components that distinguish "open" and "traditional" schools, we identified those survey items about classroom practices that showed the most agreement by students in the same school and the least overlap in responses by students from different schools. This criterion of between-school variance was used to learn which specific elements of change had been most successfully implemented in the "open" schools. We reasoned that when clear distinctions in students' perceptions of specific school practices depended on the particular school they attended, then these specific practices had taken hold as a defining characteristic of open schools. Conversely, when the distribution of student reports about a school practice was very similar in each school, we argued that the practice was not as successfully changed through the innovation of openness. Results show that a measure that emphasized formal school structural properties of openness has much stronger between-school differences than other measures of the informal classroom processes.

The features on which schools differed greatly were: individualization of instruction (whether the teacher usually permits different individuals or groups of students to work simultaneously on separate assignments), control of student conversation and movement (whether the teacher permits students to talk and move freely among different locations during classtime), control of student assignments (whether the teacher gives students choices of alternative assignments) and frequency of supervision of student assignments (whether the teacher permits students to work on their own for extended periods of time). These features are concerned

with the formal structure of the control of classroom activities. In simplest terms, from the teacher's point of view, the difference in formal structure of open and traditional programs begins with whether a single lesson is to be prepared for the entire class that will start and end at a fixed time or whether many alternative activities of different content, difficulty or duration are to be made available which different students can work on simultaneously. When classroom activities are individualized, the teacher spends less time holding the attention of the entire class to a single lesson and more time assisting particular groups or individual students while other students are busy with their own assignments. From the students' point of view, this often means that fewer controls are placed on their conversation and movement during class and more responsibility is given to them for choosing and organizing learning activities without constant teacher direction and supervision.

These differences in individualization of program did not always correspond to the existence of open-space architecture of the school building. In the sample of elementary and secondary schools, only a little more than half of the teachers in open space buildings reported using a predominantly individualized instructional program, while up to one quarter of the teachers in traditional self-contained classrooms reported using individualized methods. So while open-space buildings may facilitate the development of a variety of instructional approaches, it is not surprising to find that the architecture of a school by no means determines how teachers will formally structure their classroom learning activities.

Just as the school architecture does not determine the formal instructional program, the formal aspects of individualization and control of classroom activities do not determine the informal social relations between teachers and students. We did not find the same large between-school differences on two measures of informal student-teacher relations--students' perceptions of teacher expectations and teachers' classroom decision-making styles. One measure which failed to strongly distinguish the various schools was a four-item scale of whether teachers expected originality and personal opinions in students' classwork, or whether they expected close conformity to their own directions and ideas. A second measure on which the distribution of student perceptions was nearly equal across the schools was a nine-item scale measuring whether teachers reserved most of the decision-making prerogatives for themsevles or extended decision-making opportunities informally to students.

The comparison was striking between measures of the formal and informal aspects of school authority, in terms of their between-school variance. At the secondary level, the average between-school variance for the measure of formal openness of the school program (36 percent) was more than ten times as large as for the scale of teacher expectations and more than five times as large as for a scale of teacher decision-making style. Similar, though less dramatic differences were found at the upper elementary level. This means that, while student reports on the more formal aspects of openness depended strongly upon the particular school they attended, the same was not nearly so true for their perceptions of the informal social processes in the classroom.

It appears that in implementing open education it was possible to

successfully implement formal changes in the individualization of the instructional program that altered the amount of time students would be under strict controls and close supervision of their teachers, but it was not easy to change teachers' attitudes about their dominant role as the authority in informal encounters. There were teachers located in every school who regularly shared authority with students and others who did not. Because informal authority relations may be determined by well established personality traits or educational philosophies of individual teachers, it may be very difficult to train or recruit a faculty to establish a distinctive style of informal teacher-student relations throughout a school. On the other hand, changes in the formal organization of instruction from traditional single-lesson classes to numerous simultaneous activities appear to be more easily instituted in schools, and these changes can at least alter the frequency and extent of teachers' contact with students where strict controls are applied.

These results should not be read to say there were no effects at all of the formal aspects of openness on the informal social processes when teachers and students were in contact. There is evidence of some statistically significant and substantively important relationships between the formal and informal aspects of school authority, although these relationships were not very large. This is the second important general result from this study of the dimensions of school authority differences:

2. The small differences between schools on informal aspects of teacher-student authority relations are facilitated by the large formal organizational differences of schools.

There is convincing evidence that there are some facilitating effects of the openness of the formal instructional program on teachers' informal expectations for student behavior. Using items from the same measure on which we reported a small between-school variance, we examined whether the formal structure of openness is related to specific kinds of teacher expectations. Students were asked about their teachers' expectations on the following four behaviors: "Students should listen well and follow directions; students should have unusual, imaginative ideas; students should do work that is neat and clean; and students should speak out with opinions." Students were asked to rate each behavior on a scale from "very important" to "not at all important" to their teachers. Even though student ratings across the sample were positively correlated for all pairs of these four items--teachers who were seen to have high expectations on one behavior were also generally reported high on other behaviors--an interesting set of relationships was found with the formal open school measure. Students in more open schools at all grade levels consistently report less teacher emphasis on strict following of directions or neatness in work and more teacher emphasis on creative ideas and expression of students' opinions. These relationships were small but statistically significant and consistent across all grades in our sample. The results suggest that the open school organization facilitates the development of teacher-student relations that deemphasize uniformity and reward originality and self-expression. Some teachers who wish to foster student individuality may find the open structure more enabling than traditional classroom structures, and other teachers may come to

value freer student expression as a consequence of conducting open instructional programs.

There is also convincing evidence that formal open school structure facilitates informal teacher-student sharing of decision-making authority. These analyses involved the same measure of teacher decision-making style on which we reported a small between-school variance. Although the differences between schools on this measure were very small in comparison to the measure of formal structure of openness, teacher decision-making style did represent a true difference in the school environments of open versus traditional schools. We found three times as much difference in between-school classroom decision-making style (6 percent) as there was for an exactly parallel measure of parents' decision-making style (2 percent). Since both scales were based on student perceptions, the interpretation of this difference in between-school variances is that the teacher decision-making scale represents a small but true distinguishing feature of the school environments. Moreover, we found a significant positive relationship between the formal open school measure and the scale of informal teacher decision-making style. This relationship was examined in general and more specifically by using refined within-school measures of openness and teacher decision-making style for three academic subjects. At every grade level, the formal openness of the instructional measure correlated in a significantly positive direction with the informal decision-making measure, either in general for all subjects in grades 9 and 12, or for particular subjects in grades 5, 6 and 7, where within-school distinctions between openness of subjects

were important. These results suggest that teachers who may find it difficult in traditional instructional programs to establish an informal decision-making partnership with students may be able to develop such an informal environment within the open instructional programs.

Other research also suggests a facilitating link between the organization of classroom tasks and teacher's style of controlling behavior. Bossert (1977), in observations of elementary school teachers' behaviors, finds that a teacher may be limited in the kinds of student behavior and responses he or she encourages by the more traditional single-lesson method of instruction, since that structure requires more teacher control and uniformity in treatment of students. He describes how the same teacher may develop different informal relationships with students, depending upon the formal organization of instruction.

Our results on the dimensions of school authority in open and traditional elementary and secondary schools may be summarized as follows. The major changes that are implemented in open schools concern the formal aspects of the program: individualization, control of conversation and movement, control of student assignments and supervision of assignments. Informal aspects of teacher-student relationships, which may be a function of the distribution of teacher personalities or educational philosophies, are not nearly so easily changed. Nevertheless, the formal structure does appear to have a small but significant effect on the probability of informal relationships developing in which teachers give more emphasis to student originality and involve students more frequently in the classroom decision-making process.

The next objective of this study was to examine effects of school authority differences, both effects of the formal program differences that most clearly distinguished the open and traditional school structures, and effects of the differences in informal student-teacher authority relations that frequently existed within both open and traditional school structures.

Effects on Student Outcomes

A variety of student outcomes were studied for possible effects from differences of the formal and informal organization of authority in schools. The outcomes included (1) students' academic development, as measured by standardized achievement tests and educational aspirations, (2) students' nonacademic development, as measured by selected personality scales, and (3) student attitudes toward school and school coping skills, as measured by indices of student satisfaction and school behaviors. The analyses of the effects of school differences on these outcomes controlled statistically on differences of student background, so that the nonrandom distribution of students among the different school settings would be taken into account. The family background controls included socio-economic status and family authority relations, as well as race, sex, and ability.

The results can be summarized for three questions about effects on student outcomes: What are the effects of the formal program of openness? What are the effects of differences in informal processes of authority relations, which may exist in both open and traditional programs? Does the size or direction of school effects depend upon the type of family

environment that a student has experienced?

Effects of the formal program of open schools

Comparisons were made between students in open and traditional schools on the various student outcome measures, after statistically controlling on family background. The first general result comes from these analyses.

1. The apparent effects on students due to differences in the formal structure of open versus traditional schools are found for non-academic outcomes and student attitudes but not for academic outcomes. However, even the effects for non-academic outcomes and student attitudes are small.

For students' academic performance, several extended analyses of relationships between school openness and student performance on standardized tests failed to reveal sizeable or consistent effects. Students' standardized achievement scores on ITBS achievement tests in grades 5, 7, 9 and the reading subtest of the Test of Academic Progress in Grade 12 were studied. Using conventional analyses of the immediate impact of openness on student achievement, the degree of openness of the instruction program accounted for less than two percent of the variance in test scores and the direction of the relationship was inconsistent across four grades (positive in some grades and negative in others). These inconsistencies were not explained by extended analyses selected to examine important details of the relationship between openness and achievement. Extended analyses showed no orderly trends of achievement scores due to

duration of attendance in open schools, no evidence that openness of specific subjects within schools is differentially related to achievement on those subjects, and no evidence that openness interacts with any other variable included in the school effects model in consistent or interpretable ways. That is, the results do not suggest that the achievement of certain subgroups of students is more positively or negatively affected by open education. The conclusion most clearly supported is that, at the elementary and secondary levels, students neither gain nor lose in their performance on standardized achievement tests as a consequence of attending open schools.

Similarly, open school attendance had no consistent significant effects on students' educational aspirations. A measure of students' college plans was analyzed for the secondary school sample, and failed to show any consistent positive or negative differences that were related to the type of school program.

For student personality development, the picture was somewhat different for one outcome measure -- student self-reliance. This study used an eighteen-item scale that measures the degree to which individuals need strong social approval or explicit direction before taking action. This scale has important properties of reliability and validity: it discriminates among individuals who were named by peers and teachers as independent students, and it shows developmental trends of greater average self-reliance as a student becomes older. With family and individual characteristics held constant, students in more open schools have slightly higher self-reliance scores. It must be stated that the size of the effect at each grade level is not as impressive as the consistency of

the positive direction of effects. In two years of data collection, at every grade level, there is a small, positive impact of openness on student self-reliance.

Other general student personality measures -- self-esteem and control of environment -- were not influenced by open school experiences in any sizeable consistent way across the grades.

Several indices were used to measure student attitudes and school coping skills. The Quality of School Life scale is a multidimensional measure of students' satisfaction with school, commitment to classwork, and reactions to teachers (Epstein and McPartland, 1976a). In many descriptive accounts of open schools, mainly at the early elementary level, students are described as appearing happier in open schools. However, to consider the statistical accuracy of the observations, or the generalizability of such findings at the secondary level, this research examined the effect of open schools on student satisfaction in some detail.

The present research yields one very consistent result -- students in more open schools are significantly more positive in their evaluations of their teachers than students in more traditional schools. In grades 5, 6 and 7, this is true when we examine particular subject classrooms, and in grades 9 and 12 the pattern is clear in every test conducted in subject classrooms and at the school level. At the high school level, where the variation in the openness of the school program is greatest, students in more open schools also report more general satisfaction with school. And, at both the elementary and secondary levels, duration of attendance in open schools has positive effects on student evaluation

of teachers and school in general. However, there are no consistent effects of openness on students' commitment to classwork.

The effects of openness of school programs were not present for some other school coping skills measured in this study. There are no consistent, significant effects of openness on "school anxiety" (feeling tense or lost in school) or on "prosocial school-task behavior" (acting as an "ideal" student). The measure of "school-adjustment" (frequency of disciplinary incidents) did present some interesting patterns. Students in more open programs report being reprimanded in class more frequently for a variety of disciplinary reasons, especially in grades 6 and 7. At the high school level, there was no significant difference in adjustment between students in open and traditional schools. In addition, analyses of data collected over a two-year period suggest that students with initial disciplinary problems learn to adjust in the open schools; students with adjustment problems one year had fewer problems the next year in more open schools, while in traditional schools more of the same students continued to have discipline problems both years.

In general, while some selected student outcomes were consistently and significantly related to the formal structure of school openness, none of these effects were very large. Thus, the formal aspects of openness, which were shown to be most easily implemented in schools, had a significant but small impact on certain non-academic and attitudinal student outcomes.

The next phase of our study of educational effects examined the effects of the informal teacher-student authority relationships that

vary significantly within both open instructional program schools and traditional schools. The second general result about effects comes from these analyses.

2. Informal authority relations in schools are strong correlates of student outcomes, especially of non-academic outcomes.

Some earlier research in schools suggests that the way teachers exert authority in the classroom can affect the development of some student coping skills (for example, Lewin, Lippitt and White, 1939). Similarly, many years of family research have shown that authority relationships between parents and children in the home can have important consequences for child development (see, for example, Baumrind, 1975; Elder, 1968; Hoffman and Hoffman, 1964). Our research developed parallel measures of teacher-student and parent-child informal authority relationships to examine the importance of these factors on academic and non-academic outcomes.

In contrast to the weak effects of the formal structure of school programs on student outcomes, both the informal teacher-student and parent-child authority relationships were found to be much more strongly related to all student outcomes even after students' socio-economic status is taken into account. In addition to the scale of teacher decision-making style, we developed a corresponding scale of parent decision-making style, as measures of informal authority relationships with the child; student scores on both scales are positively related to most of the student outcome measures. In particular, net of other factors, teacher-student decision-making scale scores were significantly and posi-

tively related to the measures of student self-reliance and to all measures of school attitudes and coping skills, including student satisfaction, school adjustment, low school anxiety, and prosocial task-related behaviors. And, net of other factors, the parent-child decision-making scale scores were significantly and positively related to these same outcome measures and other personality outcomes as well. These patterns were equivalent for males and females at all grade levels in elementary, middle and high schools. In addition, two patterns of the results of analyses provide some indications of the complicated causal processes that link informal authority relationships to student development.

First, the results suggest that student-adult informal authority relationships are more important than students' socio-economic background for the development of positive non-academic outcomes. For example, although student socio-economic status was the more dominant influence in accounting for academic performance on standardized tests and in explaining differences in students' educational aspirations, student scores on measures of informal teacher-student and parent-child decision-making style showed that these practices were especially important influences on personality and attitudinal outcomes.

Second, the results indicate that informal authority relationships are not improved simply by eliminating controls on youngsters at home or school, but must reflect the ways in which authority is communicated and decisions are made. A fourteen-item scale of the number of rules in the home (level of regulation) was used in this study in addition

to the parent-child decision-making scale to measure the family authority relationships. Although these two scales were positively correlated with one another -- families with frequent child involvement in decisions tended to have fewer rules -- the two scales were often not related to student outcomes in the same direction or degree. Generally, the family decision-making measure was a much stronger positive correlate than level of regulation for most student outcomes, especially student self-reliance, school attitudes and coping skills. Moreover, when family decision-making style was statistically controlled, infrequency of family rules was related negatively to some student outcomes. The fewer the rules, the lower the student's perceived quality of school life, school adjustment, school-task behavior, and aspirations. This suggests that reducing restrictions on children without the appropriate communication and decision-making processes regarding authority issues may have unfortunate behavioral consequences. This finding is in keeping with other research that indicates the reasoning processes between parents and children are critical features of the authority relationships (Baumrind, 1970; Becker, 1964; Elder, 1968).

In sum, we find that informal teacher-student relations have much stronger positive effects on student development than formal organization of authority in a school program. The indications of the complicated processes linking informal authority relationships to student development may help to explain why it has not been easy to implement successful school changes on these important informal factors.

The final element in this study of school effects was an examination of whether certain types of students are affected differently by

variations in the formal and informal structure of school authority: The third general result comes from these analyses.

3. There is no strong evidence that different combinations of family and school environments interact to influence student outcomes. The effects of differences in school environments do not seem to depend upon student socio-economic status or family authority practices.

Both researchers and practitioners have emphasized the need to consider whether certain students would be more likely to benefit from a revised school structure than other students. Although interactions have been difficult to document and replicate in educational research, especially for populations of non-deviant students (Berliner and Cahen, 1973; Cronbach and Snow, 1977; Feldman and Weiler, 1976; Salomon, 1972), there was reason to hypothesize that effects of formal or informal school authority structures would be different for students from particular family backgrounds.

The current study examined closely whether students' experiences at home would make them more or less receptive to the influence of open school practices or classroom decision-making styles on particular student outcomes. We tested the possibility that congruence of family and school learning environments is important for school satisfaction and coping skills (see Snow, 1970 and Salomon, 1972 on "preferential treatment interactions"), while incongruence is important for growth (see Hunt, 1971 and Atkinson, Lens, and O'Malley, 1976 on "disequilibrium of treatment"). It is not difficult to imagine that students from "traditional" families in "open" schools may be less satisfied or comfortable in an

unfamiliar environment, but yet may benefit most in developing self-reliance because they have received less practice in self-reliance at home. The study also considered that open schools may be particularly effective for the most economically advantaged students.

The data do not support these hypotheses about family-school interaction effects. In extensive analyses of the interaction of all family-by-school interactive possibilities, there were no significant, consistent or interpretable interactions on any of the outcomes studied. The results of tests of interaction indicate that students did no better or worse in open and traditional schools because of the matching of particular family and school experiences. Similarly, there were no notable or important special interaction effects found in combinations of informal teacher-student relations and various family environment conditions.

The results of analyses of interaction effects suggest that the congruence or incongruence of school and family environments, per se, is not a primary influence on student development. Although there may be personal or philosophical reasons why parents seek school settings for their children that "match" the family environment, this study concludes that the main effects of school and family practices that encourage student participation in decision-making at school and at home are more important influences than environmental interaction effects for positive student development.

Implications for Theory and Practice

Research findings that contribute to educational theory may or may not have direct implications for educational practice. That depends in

large part on whether the variables identified by research as important for student development can be purposefully manipulated through practical educational reforms.

Our study of authority structures and student development sought both to identify the types of student outcomes that are potentially most responsive to variations in authority relationships, and to suggest important practical considerations for capturing this potential. It is here that the distinction between formal and informal dimensions of school authority structures is of interest.

In our study of effects on student development, we found evidence that the informal authority relationships between teachers and students has a strong impact on student outcomes, particularly on students' non-academic competencies and their attitudes toward school. The results were parallel for authority relations at home and in school: both parent-child decision-making practices and teacher-student decision-making processes are shown to have sizeable positive relationships with students non-academic attitudes and behavior, net of the students' socioeconomic status. Further research is needed to develop detailed theories of the processes at work, since our studies confirm earlier research that complicated combinations of decision-making patterns and levels of regulation are involved and the specific causal mechanisms are not all clear.

We also found that it is possible to implement changes in the formal aspects of a school's authority structure. Individualization of instruction, fewer restrictions on student movement and conversation, more student choice of assignments and longer periods of student responsibility for self-direction were all aspects that clearly distinguished open from

traditional schools in our study. These changes had statistically significant but small effects on students' self-reliance and satisfaction with school, not on standardized achievement test performance.

These formal changes also appeared to have a facilitating effect on the informal relationships between teachers and students, and enabled some teachers to reinforce more student self-expression and to involve students more deeply in classroom decision-making processes. Yet these facilitating effects did not produce large overall contrasts between schools in these informal aspects of teacher-student authority relationships. Although schools with open instructional programs had slightly different informal teacher-student authority relationships, each school had a surprisingly similar representation of teachers who reserved most informal authority to themselves as well as teachers who shared more prerogatives and responsibilities with students.

Putting together our results on the major sources of potential effects from authority structures and on the prospects for practical implementation, we find that a major task remains for researchers and educators. The informal aspects of teacher-student authority relationships appear to have strong potential for impact on particular student outcomes, but these aspects are the most difficult to change throughout a school. Conversely, important modifications in the formal authority structure of a school's instructional program can be instituted, but these changes have little direct impact on student outcomes and a limited indirect role in facilitating important informal authority dimensions. To fully capitalize on the potential of authority variables for student development, work is needed to develop ideas on a variety of possible

changes in school authority structures that can both be successfully implemented and have impressive effects on students. Research is also needed to evaluate a wider range of educational experiments that have successfully altered interesting features of the school authority structure. Basic research is needed on the specific causal processes underlying powerful teacher-student and parent-child authority relationships to suggest analogous features that may be embedded in new organizational forms for schools.

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