

**AN ANALYSIS OF THE RELATIVE INFLUENCES OF  
URBANIZATION, SCHOOL SIZE, AND SCHOOL CLIMATE  
ON STUDENT ACHIEVEMENT**

by

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**ABSTRACT**

The project will investigate the relative influence of school size, community type, and school climate on students' achievement. The results will be relevant to policy makers concerned with enhancing student achievement and faced with the possibility of school closures. In contrast to other studies of school climate, which have focused on the SES composition of the student body and students' and faculties values and norms regarding academic work, this project will focus on students' and faculties' "expressive/communal" orientation. This orientation is hypothesized to be related to the ability of a school to provide the safe, humane, and supportive atmosphere for learning, noted as an important variable in studies of effective schools. It may also be related to the size of the school and its community environment. In the first year the proposed model will be examined using data from two existing data sets. In the second year the results of the first year will be used to develop case studies of 6 high schools using survey and ethnographic methods to examine how school climate develops and how it is related to the other variables. The work is expected to result in articles and a monograph suitable for use by practitioners as well as researchers.

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## Research Problem and Project Objectives

Educators and the public have long been interested in promoting student achievement. They have also been concerned with keeping the cost of education at the lowest level possible. One major way of increasing "efficiency" in education, both historically and currently, has been school consolidation. Beginning at the end of the last century and continuing until the present time school districts have been consolidated. Small districts have merged and central high schools have been constructed. In addition, in recent years, in the face of declining student enrollments and continuing budget crises, many districts have closed schools. It is usually the smallest schools in a district that are closed. How do these consolidations affect student achievement? Is the effect different for schools in rural areas than in urban or suburban areas? If differences exist, why do they exist? One possible explanation could involve the organizational climate of schools of different sizes and in different areas.

I propose a two-stage research project to examine the relationships between school size; community environment, particularly community size and degree of urbanization; schools' and classrooms' organizational climate, specifically their values regarding the nature of group relationships; and students' achievement. For the first part of the study I propose to do quantitative analyses of two large data sets, examining the relative influence of school size and urbanization on student achievement while controlling for other variables known to affect student achievement. Using the results of this study I propose to develop a second stage of the research that will use in-depth case studies to examine how the organizational climates within schools help to account for the relationships between school size, urbanization, and achievement.

This work should have immediate implications for educational policy makers concerned with student achievement and faced with the possibility of having to close or consolidate schools. The research should both help develop understandings of the extent to which school size and community environment influence academic achievement and the processes by which this influence occurs. This in turn may help inform administrators and policy makers of the possible consequences of administrative decisions regarding school closures and consolidations. The results of the in-depth studies proposed for the second part of this study should help reveal how community environment and school size influence a school's organizational climate, which could suggest ways of intervening in schools to develop organizational climates which are most conducive to student achievement.

I believe that this project directly addresses the issues raised in CEPM's research paradigm (Duckworth, 1981). The research paradigm notes the importance of including variables involving the community, school organization, and the classroom environment when studying students' achievement. By hypothesizing a relationship between the community environment, school size, the organizational climate of the school and classroom, and students' achievement, this proposed project parallels the paradigm.

I believe that the proposed project supports the program theme of secondary school organization through basic, as opposed to applied, research. The proposed research will examine the nature of the environment in which administra-

tors and teachers work and in which their students learn in an attempt to see to what extent these environmental conditions affect learning. In the process of this investigation I expect to learn a good deal about the quality of teaching and student achievement in different high school and community environments. I will be able to expand upon the relationships between the high school environment and the norms and value orientations of the faculty. The results of the research should also result in hypotheses regarding administratively-sponsored strategies (e.g. school closures and consolidations) and teachers' improvement in teaching. Investigation of such hypotheses is not, however, the major focus of the study. This work should be seen as work that is preliminary to such specific issues. Once the results of this study are compiled the questions of administratively sponsored strategies that involve the context of the school may be more intelligently addressed.

### The Theoretical Framework and Background Research

My interest in this problem stems from two different research projects with which I have been involved. A number of years ago I helped with the evaluation of reading programs in a local school district (Hendrickson, 1977). After controlling for the socio-economic status of the students in each school we found that one of the major predictors of their reading achievement was the size of their school. Students in smaller schools, regardless of their socio-economic background or curriculum or teacher related variables, scored higher on standardized reading tests.

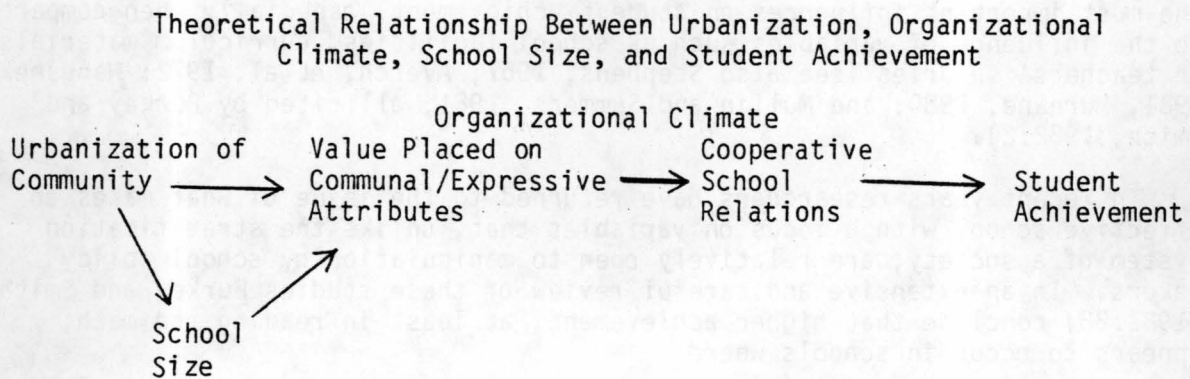
In another, unrelated project, I explored variations in social psychological characteristics of people from different social environments, specifically from communities of different sizes (Stockard & Dougherty, 1983). This work was based on theoretical formulations of classical sociological theorists including Durkheim, Weber, Tonnies, and Simmel. From research on students in three widely different settings I found support for the views of these early theorists that people from more rural environments tended to view the world in what I have termed a more "communal" or "expressive" manner. They seem to see such attributes as cooperation and good relationships with others as more important in relation to various goals than do students in more urban settings.

Research on school effectiveness suggests that one of the most important characteristics of effective schools and classrooms is time on task, a situation that is possible only when students and teachers cooperate with each other. The literature also suggests that humane, safe and comfortable environments promote learning (see discussion below). If students value cooperation and good relationships more highly, it could be suggested that time on task and the possibility of a humane environment would be greater. If this value on cooperation varies from rural to urban settings, as my previous work would suggest, one could also propose that time on task and humane environments would be more common in rural settings, assuming that the skills of the teacher and other related variables are comparable. On the other hand, one could suggest that the immediate environment of students (e.g. the classroom or the school) is as important as the more general extra-school environment. Perhaps the more intimate setting of smaller schools is as important as smaller communities in influencing the development of a communal/expressive orientation.

To some extent, the variables of school size and urbanization covary. Small schools are probably more common in rural areas, larger schools are more common in urban areas. Yet, this is not always so, for small schools continue to exist within urban areas. For instance, the study in the local district mentioned above involved only one urban district. In addition, many small districts have consolidated, resulting in relatively larger schools located within rural environments. Thus, it should theoretically be possible, given a large enough sample, to examine the relative influence of school size and urbanization on student achievement.

Figure One summarizes the hypothesized relationship between urbanization, organizational climate, school size, and student achievement. For the first part of the project an extensive measure of organizational climate is not crucial, for I will focus on the relationship between urbanization, school size and achievement while controlling for other relevant influences on achievement. Figure Two summarizes the model to be used for the analysis in the first year.

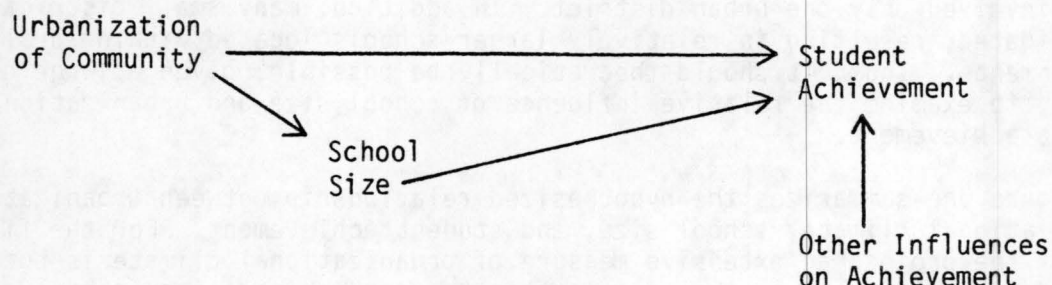
Figure One



In the remainder of this section I review the literature related to student achievement, the influence of school climate on achievement, variations in expressive/communal attributes among group settings, the relationship of school size to student achievement, and the influence of community environments on student achievement. I then reformulate the model presented in Figures One and Two as a way of specifying the analysis that will be performed. My review of the literature has not been exhaustive. A thorough literature search is scheduled for the first few months of the research project.

Figure Two

Relationships to be Examined in  
Part One of the Proposed Project



Student Achievement -- The issue of what influences student achievement has received a good deal of attention in the literature. Earlier works tended to downplay the importance of school related variables (e.g. Coleman, 1966; Jencks, et al, 1972), stressing that family background and related variables were among the most important influences on student achievement, especially when compared to the influence of variables such as school facilities, curriculum materials, or teachers' salaries (see also Stephens, 1967; Averch, et al, 1972; Hanushek, 1981, Murnane, 1980; and Mullin and Summers, 1981, all cited by Purkey and Smith, 1982:2).

In recent years researchers have returned to the issue of what makes an effective school with a focus on variables that, unlike the stratification system of a society, are relatively open to manipulation by school policy makers. In an extensive and careful review of these studies Purkey and Smith (1982:28) conclude that higher achievement, at least in reading and math, appears to occur in schools where

"the staff agree to emphasize those subjects, are serious and purposeful about the task of teaching, expect students to learn, and create a safe and comfortable environment in which students accurately perceive the school's expectations for academic success and come to share them."

They also note that this conclusion parallels research regarding effective classrooms, which concludes that classrooms in which students are more likely to learn math "are characterized by order, structure, purposefulness, a humane atmosphere, and the use of appropriate instructional techniques" (Purkey and Smith, 1982:28).

Thus the literature suggests that apart from variables related to the background of individual students, most importantly social status, students' academic achievement appears to be influenced by the nature of their classroom and school environment. This appears to involve not just adequate instructional technologies, but a classroom and school climate that is "safe and comfortable" or "humane" and promotes among both staff and students the importance of achievement. This suggests the importance of directly examining the relationship of school climate to academic achievement.

School Climate and Academic Achievement -- Purkey and Smith (1982) discuss the importance of the culture of the school in affecting student achievement, suggesting that analyzing this area is the next important step in developing knowledge about more effective schools. While they primarily cite very recent studies of the influence of school climate, a concern with this variable has been apparent in sociology for many years, particularly in the status attainment literature. The early studies usually used the average socio-economic composition of the school as the measure of school context or climate and examined how this composition was related to students' educational or occupational aspirations (e.g. Wilson, 1959; Michael, 1961; Turner, 1964; Boyle, 1966). These studies generally show that students in schools with a higher SES composition tend to have higher aspirations and postulate that the norms in schools with a higher SES composition differ from those in schools with lower SES compositions. Other sociological studies have directly examined the "cultural context" of schools, but have usually focused on only the world of students (e.g. Cusick, 1973) or teachers or principals (e.g. Foskett, 1967, 1969) and have not looked at the social integration of the two groups (see McDill, et al, 1967:182; also Bidwell, 1965:992).

The exceptions to this pattern appear to be the work of McDill and his associates (1967, 1969) and, more recently, Brookover and his associates (1975, 1979). McDill, et al. directly challenged the use of the socio-economic context of the school as a measure of school climate by examining the influence of other aspects of the school environment. Using data gathered from both students and teachers they developed measures of the schools' climates on such dimensions as "intellectualism" and "academic orientation." As one would expect, they found that the individual level variables of family SES and intelligence were the most powerful predictors of high school students' mathematics achievement. Yet, once these variables were controlled, the various school climate variables, but not the SES context of the school, had important effects on student achievement. The specific results reported by McDill et al. indicate that once students' individual characteristics are controlled, higher math achievement is influenced by a school climate with more emphasis on academic performance, competitiveness and intellectualism; that encourages an intrinsic value of knowledge and provides more emotional support to students; and, with somewhat smaller effects, a climate that has greater social cohesion, a press toward scientism and greater value placed on the humanities, and more rewards for intellectualism and achievement (McDill, et al, 1969:572).

While McDill, et al's, work appears to be in the general line of the status attainment research area and in response to the work on the socio-economic status context of schools, Brookover and his associates' work (1975, 1979) is more directly concerned with the attempt to uncover variables that can account for the differential effectiveness of elementary schools. Their analyses stress the importance of students' and teachers' beliefs about what students can and should achieve within the school. Not surprisingly, they found that schools with achievement that was higher than would be expected given their race and socio-economic composition tended to have students with a low sense of futility and higher perceptions of the evaluations and expectations of them by others. Corresponding to students' perceptions, teachers in high achieving schools tended to have higher evaluations and expectations of the students. The



students' sense of futility was primarily accounted for by teachers' evaluations of the students, the students' perceptions of norms stressing academic achievement, and the students' perceptions of teachers' evaluations of their probability of achievement. In other words, high achieving schools seem to be characterized by both students and teachers believing that students can achieve and by a perceived stress on academic accomplishment. The latter variable corresponds to the results reported by McDill, et al (1967, 1969).

With respect to the specific concerns of our study it is important to note the extent to which McDill, et al., and Brookover, et al., dealt with the value-orientation of the school, variables that might be related to an expressive/communal orientation, and the extent to which school size is related to school climate. Brookover, et al. explicitly designed their study to separate the urban and rural schools, primarily because the racial composition of the sample (Michigan schools) meant that all the black schools were in urban settings, while white schools were in both urban and rural settings. Their measures and analysis of school climate focused specifically on orientations toward academic work as well as variables related to the students' self concept, although they gathered data on the community environment and school size. They examined the zero order correlations of school size and average daily attendance with the mean achievement within each school and found somewhat inconsistent results between high and low status white schools and between predominately black and white schools. Unfortunately, in their multivariate analysis involving both climate and school structure variables, they combined school size and average attendance with other variables regarding the teachers, thus eliminating the possibility of finding the extent of their independent effect.

McDill, et al., also had data on school and community size, but focused their analysis on the climate related variables, specifically the felt student and faculty "press" for academic and intellectual achievement. One variable that might be related to an expressive/communal orientation, a felt press by students for supportiveness, provided some contribution to a factor seen as measuring the stress on valuing the acquisition of knowledge. The teachers' perception of such a press on supportiveness failed to load on any factor. It appears then that these studies have not directly addressed the issues raised by the present theoretical model.

The Communal/Expressive Orientation -- Reference has been made throughout this proposal to the communal/expressive orientation that is seen as more characteristic of rural than of urban dwellers. (A more complete development of this perspective is found in Stockard and Dougherty, 1983, forthcoming.) Classical sociological theorists such as Durkheim (1933), Tonnies (1957), Weber (1930), and Simmel (Wolff, 1950) noted distinctions between more complex and differentiated societies, typical of the urbanized modern world, and the more rural, less differentiated and less complex societies typical of rural environments. Contemporary studies have continued to find significant differences in both attitudes and behaviors of urban and rural dwellers, even when various individual characteristics such as income and education are taken into account (e.g. Willits, et al., 1973; Fischer, 1975; Glenn and Hill, 1977).

The communal/expressive orientation refers to one part of a distinction that

has been made by numerous authors concerned with general orientations toward the world or social-psychological characteristics. David Bakan (1966) has discussed the distinction between agency and communion; Talcott Parsons (1951, also Parsons and Shils, 1952; Parsons, et al, 1954) has focused on the instrumental-expressive distinction. Bakan characterizes agency and communion as

...two fundamental modalities in the existence of living forms, agency for the existence of an organism as an individual, and communion for the participation of the individual in some larger organism of which the individual is a part. Agency manifests itself in self-protection, self-assertion, and self-expansion; communion manifests itself in the sense of being at one with other organisms. Agency manifests itself in the formation of separations; communion in the lack of separations (Bakan, 1966:14-15).

Bakan's formulation is purposely broad in scope, Parsons' formulation of the expressive-instrumental distinction is somewhat more limited and thus potentially more useful to sociologists. It refers to individuals' orientations to interaction within social systems. Expressive actions involve an orientation toward relations among the individuals within a social system; instrumental actions involve an orientation toward goals external to the immediate relational system (see Johnson, et al, 1974). Expressive actions might be seen as acting out the principle of communion; instrumental actions might be seen as acting out the principle of agency.

My own work with this distinction has (among other avenues of research) included an examination of how adherence to the communal/expressive dimension varies from one community setting to another, in an attempt to test the propositions that derive from the work of the classical theorists (Stockard and Dougherty, 1983). In a comparison of students from three communities that varied widely in their relative size I found that students from the more rural settings were usually much more likely than those from the more urban settings to view the world in expressive and communal related terms.

While the work reported above suggests that the community environment may have an important influence on the extent to which people adopt an expressive/communal orientation, other work suggests that the nature of an interactive setting may influence the extent to which people exhibit an expressive/communal orientation. One aspect of studies of the expressive/communal orientation is a fairly consistent finding that expressiveness is more commonly associated with females; agency/instrumentalness is associated with males. In an attempt to examine how this association appears in group settings, Finigan (1979) found that in small groups where a greater proportion of the participants were women, expressive/communal oriented interactions were more common. In groups with a greater proportion of men, expressive/communal oriented interactions of all participants were less common. This suggests that not just the nature of the surrounding community but the composition of the group in which subjects interact can influence the orientation which people take toward others.

While my review of the literature is not yet complete, I know of no study that has examined the relationship of the expressive/communal orientation to the

climate of schools and classrooms. Given that an expressive/communal orientation involves greater concern with the welfare of others and a greater concern with cooperation, it could be hypothesized that in settings with a greater value on expressiveness and communion, cooperation and concern for others would be greater. This in turn could help create the orderly, safe, and humane environment seen as an important element of effective classrooms and schools.

School Size -- As noted above, my interest in the effect of school size on achievement was first piqued when I served as a consultant to a local school district on an evaluation of their elementary reading program (Hendrickson, 1977). In this carefully developed and designed study of the average reading achievement of students within schools it was determined that only three variables (of a total of twelve including classroom size, expenditures, teachers' experience, and number of specialists available) helped to differentiate between schools with higher achievement scores than would be expected given their SES characteristics and those with lower than expected scores: size of the school, a low rate of parent requested transfers of students from the school, and more time spent teaching reading outside of the regularly scheduled period. The second variable may represent a response to effective schools rather than a cause, and the results with the third variable support results of the effective school literature. The results with the first variable, however, suggest that something unique may occur within the environments of small schools that promotes student achievement.

Boocock (1980:194) cites two other studies (both in Summers & Wolfe, 1975) showing greater achievement among students in smaller schools, but notes that it is unclear to what extent socio-economic differences in the compositions of the student body can account for these differences. Brookover, et al. (1979) note that in a sample of all schools in Michigan and a sample of majority black schools, students in smaller schools have higher average achievement. This result did not appear in their sample of majority white schools. Unfortunately, school size was not included as a separate variable in their multivariate analyses.

Barker and his associates (1964) in a wide-ranging series of studies of high schools of varying size focused on students' participation in extra-curricular activities and concluded that students in smaller schools and smaller communities tended to participate in more nonclass "behavior settings" and to hold more responsible positions in those settings. While little data appear to be available on the relative academic achievement of students in these schools, it does not appear that there is any consistently demonstrated strong correlation between school size and academic achievement, especially at the high school level. According to Boocock (1980:194), analyses of the Project Talent data from the early 1960's "revealed no consistent pattern of correlations between high school size ... and a variety of school outcome measures." A review of studies of the effect of school size in the 1950's and 1960's also apparently uncovered no strong correlations (Hechinger, 1977, cited by Boocock, 1980:194). It is not at all clear, however, if these studies controlled for other variables known to influence achievement, including social status of the students and the schools' climate.

Community Environment -- There appear to be relationships between the type of community in which a student attends school and the students' achievement and future educational plans. Part of the literature in this area has involved the socio-economic composition of the school, a variable that is often related to community type. As noted above, McDill, et al. (1967, 1969) demonstrated that most of the variance accounted for by SES composition could be explained by variations in school climate.

Another dimension of this literature has shown that both the type of community and the students' individual family backgrounds influence their achievement test scores and plans to attend college. Rogoff (1961) compared aptitude scores and the percentage of students planning to attend college in nine different community settings: small independent towns, suburbs, and large towns and cities, each subdivided into 3 population size groupings. Analyses within each community type include controls for the students' SES background. The results indicate that both family social status and the type of community influence academic achievement and college plans. Within each social status category, attending school in a suburb appeared most conducive to both academic achievement and, to some extent, future college attendance.

Unfortunately, Rogoff's study does not control for the climate of the schools or the quality of instruction that students receive. Schools in smaller, and especially rural, communities apparently have more difficulty than schools in other communities attracting and retaining high quality teachers (Lambert, 1960; Henderson, 1971; Tamblyn, 1971; Randhawa and Michaluk, 1975) or enough teachers to fill their needs (Henderson, 1971). It would be important then to control for the quality of instruction that students receive in assessing the effect of community environments on student achievement.

A Return to the Theoretical Model -- The above review of the literature has noted the importance of variables related to the individual student, the classroom, the school, and the community environment in explaining student achievement. Figure 3 lists variables reviewed above that are related to student achievement and organizes them in terms of their relative level of analysis (the individual, classroom, school, and community setting). Figure 3 also defines the variables which are the primary independent variables and those to be used as controls.

It may be seen that the dependent variable is student achievement. A relevant independent variable on the individual level is the value which a student places on an expressive/communal orientation. Because the students' ability level, study skills, and social status are also known to be important influences on achievement, they should be used, if possible, as control variables. On the classroom level a relevant independent variable (not necessarily to be included in the analysis in the first year) is the classroom climate and specifically the value placed on an expressive/communal orientation. Possible control variables for the classroom include the teachers' training and other related skills, the SES composition of the classroom, the time allocated for learning, the classroom's academic climate, and the nature of the curriculum. On the school level the size of the school and the expressive/communal orientation are relevant independent variables. The SES composition of the school and various cli-

Figure 3

Possible Variables for Analysis by Level of Aggregation  
and Status in the Analysis

Place in the Analysis	Level of Aggregation				Dependent Variable
	<u>Community</u>	<u>School</u>	<u>Classroom</u>	<u>Individual</u>	
Independent Variables	Urbanization (size and type of community)	Size Expressive/ communal orientation*	Expressive/ communal orientation*	Expressive/ communal orientation*	Achievement
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Control Variables	SES composition	SES composition Academic climate variables	Teacher's training, commitment, behavior, skills, SES composition Time allocated for learning Curriculum Academic climate	Ability Study skills SES	

\* not needed to complete the analysis in final stage of the project

mate related variables, especially the value placed on an academic orientation, are relevant control variables. Finally, with respect to the community environment, the degree of urbanization and the size of the community are the relevant independent variables, while the socio-economic composition of the community is a relevant control variable.

### Research Design and Methodology

To examine the model presented in Figure Three a two-stage project is proposed. The first stage, a quantitative analysis of large data sets, is described in detail below. The second, involving case studies of several high schools, will be conducted in the second year. A full proposal for that project will be developed only upon the completion of the first stage and so it is not described in detail in this document. Below the sample, measures, and the analysis procedures for the first stage are explained and the second phase of the project is briefly described.

### The Samples and Measures

Two independent samples will be used to examine the model presented in Figure Three. The use of two independent samples provides an important validity check on the results that will be obtained. The first sample involves eleventh grade students in Oregon public high schools in 1978. Data on these students were gathered as part of a statewide assessment project in early 1978 (see Ascher, 1978). An independent contractor was hired by the state to carry out the assessment project. Using a stratified cluster sampling design that specified the type and location of the school district (elementary, secondary or unified) and the ethnic character of the student body, 86 high schools were selected to take the tests. Because participation was voluntary, only 81 of these schools actually completed the testing. Individual students were scheduled to take only one test each, so slightly less than ten percent of the eligible students took each test. Nevertheless, a total of 10,200 students completed tests in reading, writing, and computing, representing approximately 30% of all 11th grade students in Oregon in that year.

Tests were administered by the classroom teachers during regular school hours and the testing time took about 60 minutes. Test items were developed by the Teaching Research Staff of the Oregon Department of Education in consultation with content review panels selected from educators from around the state. Only previously field-tested items were used.

Data are available for each student taking the test on their answers to each question and (from information provided by the classroom teacher) on their race or national origin, enrollment in federally funded programs, amount of reading instruction per day, size of reading instruction group, diagnosis for remedial work in reading, severity of reading problem, participation in remedial reading programs, and bi- or multilingual characteristics and related learning problems. Although the data are not currently on the tapes, information is available on the classroom and school assignment of each student. I have requested access to this information from the State Department of Education (see Appendix A) and have received verbal assurance that I may have the data. I will then use data

available from the State Department of Education and relevant census information to code the size of the school as well as the size and nature of the community and related SES composition information. Because data on characteristics of teachers, including their educational attainment, salary, and building assignment, are available to the public in Oregon I also plan to obtain building-level information on the training of teachers and their average salaries.

The second source of data is the High School and Beyond study by James Coleman (1982). This involves a nationally representative sample of students from both public and private schools. I will only use the public schools in my study to minimize the problems of determining the relevant community for students enrolled in private schools. The High School and Beyond study includes information on students' achievement on standardized tests and survey data from the students on courses taken, involvement in extracurricular activities, violations of school rules, attitude toward school, future educational aspirations and expectations, and demographic background (religion, race, and ses). Information on each school included in the study was obtained from the principal and includes data on curriculum, school size, school facilities, disciplinary problems, and school staff. The High School and Beyond study did not gather demographic information regarding the community environments of the school, but a group of other researchers, including Harmon Zeigler of the University of Oregon, is planning to gather such data under NIE sponsorship this summer and fall. They will compile the information on community size and SES that I will need to complete my analysis.

Table 1 summarizes the measures that I will use in the analysis of each data set. It may be seen that variables are available within each data set to test the proposed model that is summarized in Figures 2 and 3.

### Analysis

Analysis of covariance will be used to analyze the data. Analysis of covariance is appropriate for situations with dependent variables measured on an interval scale and independent variables measured on both nominal and interval scales. Analysis of covariance is also the preferred method when dealing with contextual problems such as analyzing the influence of school related variables on individual achievement (see Hauser, 1971; also Lincoln and Zeitz, 1980).

Analyses will first be conducted on the individual level using the achievement of individual students as the dependent variable. Because of the nature of the available data, many of the studies of school effects on achievement have used the average achievement level in a school as the dependent variable (e.g. Brookover, et al, 1979), even though the achievement of individuals is often the main concern. Unfortunately, this procedure could lead to the masking of important contextual effects, and their impacts on individuals. The correlations obtained with aggregated data also tend to overestimate the actual level of association found at the individual level (Robinson, 1950). Thus, it seems important to examine the data with the dependent variable measured at the individual level.

The analysis will then be repeated with the data aggregated to the level of

Table 1

Variables to be Used in the Analysis

	Oregon Assessment Data	High School & Beyond Study
Dependent Variable	Achievement in reading, writing, & math	Achievement in English & math
Independent Variables	Building Size Community type population rural/urban/suburb	Building Size Community type population rural/urban/suburb Severity of discipline problem in school* Students' incidence of discipline problems*
Control Variables	Sex of student Race of student Enrollment of student in federally funded special programs Amount of reading instruction per day for each student Average educational level of teachers in building** Average salary of teachers SES composition of school & community	Sex of student Race of student SES of student Academic quality/facilities of school** Extent of participation of students in school in federal programs SES composition of school & community

\* possible proxies for a communal/expressive orientation

\*\* possible proxies for academic climate of the school



the school to allow comparisons to other reports. Using the average achievement of students in a school as a dependent variable will allow the identification of how well schools do in producing achieving students and variables that help explain this variation among schools. Finally, besides simply the level of achievement, it is important to consider the amount of variation among students within a school. It is clearly more desirable to have a high average achievement level in conjunction with a small standard deviation than high achievement with a large standard deviation or average achievement with either a small or large standard deviation. An analysis of the model using the coefficient of relative variation (a ratio of the standard deviation to the mean) of school achievement will attempt to analyze influences on the relative variation of achievement within schools.

It is expected that these analyses will result in a greater understanding of the relative influence of school size and community environment on student achievement. It is hoped that it will be possible to delineate certain characteristics of schools and school environments that describe this relationship. If appropriate, deviant case analysis will be used to analyze cases which do not fit the general model discovered. The results obtained from this analysis will be used in planning the second phase of the study.

### The Second Phase

The second year of the project will involve case studies of approximately six high schools, their variations in organizational climate, and how this climate develops and is related to student achievement. Final plans for this phase will be developed in the latter part of the first year and will depend upon the results obtained from the analysis described above. If the model developed above holds for the data and both community type and school size appear to be important influences on student achievement when other relevant variables are controlled, then I tentatively plan to select 2 high schools in three types of communities: rural, suburban, and urban. One of the high schools in each community type will be large and the other will be small, thus allowing comparisons among high schools in each community type and with varying sizes. Care will be taken to minimize other variations among the school sites, so that the schools will be as similar as possible in variables such as ethnic composition, socio-economic make-up and teacher quality, thus providing controls on these variables. The analysis will focus on the relationship of school size and community environment to organizational climate and student achievement.

If, however, the analysis indicates that other variables, such as academic preparation of the teachers, the schools' academic facilities, or the socio-economic composition of the community or school are found to be the most important independent influences on student achievement, then the sample will be designed to examine how these variables influence the organizational climate of the school and student achievement. For instance, if academic preparation of the teachers is found to be the most important influence in the quantitative analysis, then the sample will be designed to include schools with teachers with varying levels of academic preparation. If the schools' facilities are found to be most important the sample will include schools with varying levels of such facilities, while trying to control for other relevant variables.

Surveys and ethnographic methods will be used to gather data in this part of the study. Surveys will be designed for both students and staff to examine the subjects' value orientations and the academic climate of the schools including the academic goals and priorities of both students and staff. Measures similar to those used by McDill, et al. (1967, 1969) and Brookover, et al. (1975, 1979) as well as ones specifically regarding the expressive/communal orientation will be used. This will allow an examination of a wider variety of school climate related variables than the earlier studies employed. Information on student achievement will be obtained from school records, and information on the community environment will be obtained from public sources such as the Census Bureau and the appropriate state departments.

Ethnographic methods will be used to augment the survey data and will focus on more subjective aspects of school climate and academic orientation. Graduate student ethnographers will be assigned two schools each and will use methods such as in-depth interviews and observations to gather data about the schools. These interviews and observations will focus on how the schools' organizational climate appears to be developed and reproduced in the everyday life of the school. Care will be taken in these observations to examine linkages between various aspects of organizational climate (e.g. academic orientation and expressive/communal orientation) and the relationship of organizational climate to student achievement. Care will also be taken to assure that data gathered by the three researchers are comparable.

#### Work and Staffing Plan

Table Two summarizes the major tasks for the two years of the project. During Winter, 1984 I propose to do the additional coding needed for the Oregon data set, to get the computer files ready to run on the U of O computer, and to complete a literature review. During Spring, 1984, I plan to complete the computer analyses, as much as possible, and begin work on the first draft of the results. The second and third drafts of the results of the first phase will be completed during the summer. During Fall, 1984 the proposal for the second phase of the project will be completed including the selection of study sites and the development and pretesting of instruments. Site visits and collection of data will occur in the winter of 1985 along with the coding and preparation of data files. The analysis of the data will occur during the spring of 1985 and the summer and fall of that year will involve the writing of results.

The staffing plan calls for my release from teaching one course in the spring and fall of 1984, the winter and fall of 1985 and for my full-time work in the summer of both 1984 and 1985. It also calls for the assistance of one .3 GTF from January to June of 1984, two .3 GTF's from September to December of 1984, and three .3 GTF's from January through August of 1985. I will oversee all phases of the project and will be responsible for the planning of all analyses and the final form of all written products. The GTF's will help with the coding and computer work and with the preliminary drafts of various parts of the analysis. They will also help with the formulation and pretesting of the survey instruments for the second year and will be primarily responsible for gathering the ethnographic data. (I have used the method of having advanced GTF's gather ethnographic data in another project (Stockard, 1982) and this has proved very

Table 2

## Work and Staffing Plan

Major tasks	Dates	Person days		<u>Student Help</u>
		<u>PI</u>	<u>Grad Asst</u>	
Coding of buiding data for Oregon data set	1/84	2	8	
Developing data files for computations on the UO computer	2/84	4	8	
Literature Review	1/84-2/84	8	4 <sup>9</sup>	
Computer Analyses	3/84-5/84	10 <sup>5</sup>	10 <sup>5</sup>	
Writing first draft of results	4/84-6/84	20	10	
Writing second draft of results	7/84	12	-	
Third draft and dissemination	8/84	8	-	
Full proposal for second year of the project	<del>9/84-10/84</del> 4/84-5/84	10	15	
Developing survey instruments for second year	11/84-12/84	10	25	
Site visits and collection of data	1/85-3/85	8	60	
Coding of data and preparation of files	2/85-3/85	9		10
Analysis of ethnographic data	3/85-6/85	8	40	
Analysis of survey data	3/85-6/85	17	20	
Writing first draft of results	6/85-7/85	20	60	
Writing second draft of results	8/85-9/85	12	-	
Final development of write-ups for dissemination	10/85-12/85	10	-	

satisfactory. It is a method commonly used in studies of this type.) The GTF's will be responsible for writing the reports of their particular aspect of the project under my supervision. When appropriate, student help will be obtained for the more mundane aspects of coding and data entry.

#### Deliverables and Dissemination Plans

In addition to the Quarterly Reports required by NIE, the results of the work of each year will be summarized. At the end of the two year project, they will be combined into a form that is suitable for publication by a commercial publisher. Hopefully, this monograph will be written in a style that is accessible to practitioners. If this does not appear feasible, then the development of two large reports, one for researchers and one for practitioners, will be considered. In addition, various articles summarizing phases of the project will be written. Those aimed toward researchers will be submitted to journals such as Sociology of Education or the American Educational Research Journal. Articles more appropriate for practitioners might be submitted to journals such as The Executive Educator or Phi Delta Kappan. In addition, presentations could be given to groups such as the OSBA, AASA, etc. The resources of ERIC and of CEPM will be utilized heavily in determining the outlets for the writings and presentations aimed toward practitioners.

#### Statement of Capacity

I anticipate no problems in completing the proposed research. I have been assured access to both the Oregon Assessment data (see letter of request in Appendix A) and to the High School and Beyond data. I have extensive experience in data analysis and conducting research projects. I have analyzed large data sets before and supervised the analysis of extremely large data sets. I have also successfully conducted survey research projects and have supervised the ethnographic work and in-depth interviews of other. A vita listing my previous work is in Appendix B.

The facilities at the University of Oregon should be ample for my needs. The computer facilities (IBM 4341 and DEC 1091) will be more than adequate and with the rather small allocation requested for books and the resources of the University's library I should have no problem with the literature review.

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APPENDIX A

Letter requesting access to Oregon Data



# UNIVERSITY OF OREGON

May 31, 1983

Dr. Robert Clemmer  
Oregon Department of Education  
700 Pringle Parkway, SE  
Salem, Oregon 97310


Dear Dr. Clemmer:

Thank you for meeting me last Thursday to explain the nature of the data available in the Oregon Statewide Assessment Study. As I mentioned to you then, I believe that the data would be quite appropriate for my research project that has been proposed as part of the University's Center for Educational Policy and Management's Institutional Grant from NIE. In this project I plan to examine the relative influence of school size and community environment on high school students' academic achievement while controlling for other variables (such as instructional time) known to affect achievement. The Oregon data are especially attractive because they include extensive and well designed measures of achievement and involve a representative sample of students from throughout the state and in a variety of school and community settings.

Thus, I would like officially to request access to the 1978 assessment data on the achievement of eleventh grade students. Because of the specific concerns of my project it is necessary that I also have access to the identification of the building and school district of each student. All of my analyses will be statistical in nature and the names of individuals, buildings, or districts will not be given in any write-up. In addition, no one building or situation will be described in any way that might lead to its identification. To assure that I have not abused the privilege of gaining access to identification of building and districts, I would be more than happy to have people in the Department of Education review any manuscripts before publication.

Again I appreciate your attention to my research needs and taking the time to meet with me last week. If I may provide any more information about this request, please do not hesitate to ask.

Sincerely,

  
Jean Stockard, PhD  
Associate Professor

cc: Richard O. Carlson  
CEPM

APPENDIX B

Vita of Principal Investigator

RESUME  
Spring 1983

Jean Stockard

Department of Sociology  
University of Oregon  
Eugene, Oregon 97403  
(503) 686-5002

25262 Gap Road  
Brownsville, Oregon 97327  
(503) 466-5060

Education

Bachelor of Arts (2), 1969, University of Oregon  
Mathematics  
Sociology  
Master of Arts, 1972, University of Oregon  
Sociology  
Doctor of Philosophy, 1974, University of Oregon  
Sociology

Teaching Positions

1981- Associate Professor, Department of Sociology, University of Oregon  
1976-81 Assistant Professor of Sociology, University of Oregon  
1974-76 Visiting Assistant Professor of Sociology, University of Oregon  
1971 Graduate Teaching Fellow, Department of Sociology, University of Oregon  
1969 (Spring) Student Teaching, Astoria Junior High School and Tongue Point  
Job Corps Center, Astoria, Oregon

Other Professional Appointments

1980-81 Director, Center for the Sociological Study of Women, University of  
Oregon  
1980 Research Associate, Center for Educational Policy and Management,  
University of Oregon; Principal Investigator for Study of Sex  
Differences in Career Patterns in Education  
1977-79 Research Associate, Center for Educational Policy and Management,  
University of Oregon; Sex Equity in Educational Leadership Project  
1975-79 Associate Director (Research), Center for the Sociological Study of  
Women, University of Oregon  
1977-78, Research Consultant, Eugene School District 4-J  
1981  
1976-77 Co-Principal Investigator, Sex Equity in Educational Leadership  
Project (funded by the Women's Educational Equity Act, United States  
Office of Education), Center for Educational Policy and Management,  
University of Oregon

- 1969-70 Guidance Counselor, Sanostee Boarding School, Navajo Reservation  
 1967 Summer Day Camp Counselor, Upper Manhattan YWCA, New York City

Fellowships and Awards

- 1980 University of Oregon nominee for AAUW Young Scholars Award  
 1974-75 Faculty Research Award, Office of Scientific and Scholarly Research, Graduate School, University of Oregon  
 1973-74 Ford Foundation Dissertation Fellowship in Women's Studies  
 1972-73 National Science Foundation Graduate Fellowship  
 1971-72 National Institute of Mental Health Research Training Fellowship, University of Oregon  
 1969 Phi Beta Kappa  
 1967-68 National Science Foundation Undergraduate Research Training Program Participant, Department of Sociology, University of Oregon  
 1966 Passed with Distinction (top 5%), Honors College Comprehensive Examination in Literature, University of Oregon

Courses Taught

Introduction to Sociology	(Soc 201)
Introduction to Quantitative Methods in Sociology	(Soc 326)
Introduction to Social Research Research	(Soc 327) (Soc 407)
Inequality and Education Measurement	(Soc 407G) (Soc 407G)
Sex Equity and Education (co-taught)	(Ed Adm 407G)
Sociological Research Methods	(Soc 411G, 412G, 413G)
Sociology of Women	(Soc 455G)
Sociology of Education	(Soc 491G)
Logic and Scope of Sociology (co-taught)	(Soc 507)
Quantitative Methods in Sociology, II and III	(Soc 507)

Publications

Books and Monographs:

- Sex Equity in Educational Leadership: An Analysis of a Planned Social Change Project, Jean Stockard, Newton, Massachusetts: Education Development Center, 1982.
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- The Future of Motherhood, by Jessie Bernard, Signs, 2 (Autumn, 1976): 238-240.

Widely Disseminated Unpublished Work:

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"The Management of Education Professionals in Instructionally-Effective Schools: Toward a Research Agenda." Richard Hersh, Douglas Carnine, Meredith Gall, Jean Stockard, Mary Ann Carmack and Paul Gannon, Eugene, Oregon: Center for Educational Policy and Management, University of Oregon, 1981.

"Public Prejudice Against Women Administrators: Fact or Fiction?" Jean Stockard, Patricia A. Schmuck, and Janet Hart. Center for Educational Policy and Management, University of Oregon, 1977.

"Approaches to the Cross-Racial Adoptive Situation," Jean Stockard, Holt Adoption Program, Eugene, Oregon, 1972.

"A Study of the Long-Term Adjustment of Children of Korean Heritage Adopted by American Families," Jean Stockard, Holt Adoption Program, Eugene, Oregon, 1972.

Professional Memberships:

American Sociology Association  
Section on Sex & Gender  
Section on Sociology of Education  
Pacific Sociological Association  
Sociologists for Women in Society