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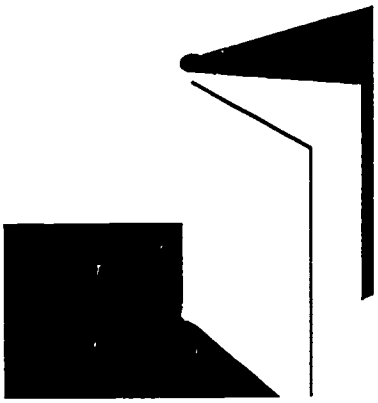
ABSTRACT

The effects of the school psychological environment on student motivation and the indirect effects of school leadership on student motivation are examined in this report. Path analysis of a comprehensive data set of over 16,000 fourth-, sixth-, eighth-, and tenth-grade students from 880 public schools was used to develop a causal model based on a psychometric approach. The model identifies a causal chain of factors leading from school goal stresses through motivation to achievement for grades 6, 8, and 10. Findings point to the importance of the school psychological environment at the tenth-grade level, especially for nonwhite students, the significance of ethnicity in motivation, and the crucial role of the family at the fourth-grade level. A conclusion is that school leaders can and do influence the psychological environment of their schools. Three figures and six tables are included. (39 references) (LMI)



The "Psychological Environment" of the School: A Focus for School Leadership

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The National Center for School Leadership

Project Report

University of Illinois at Urbana-Champaign

College of Education

In collaboration with

The University of Michigan

MetriTech, Inc.

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The "Psychological Environment" of the School: A Focus for School Leadership

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Abstract

Motivation appears to be the primary factor determining school effectiveness, but what are the factors that cause some schools to be more effective in motivating students to learn than other schools? This report summarizes the findings of a study initiated to answer this question. Motivation can be characterized by a student's personal investment in a given task. The magnitude of motivation is influenced by the psychological environment of a school, that is, by the meaning given to the overall education experiences. The most salient findings presented in this report include (a) evidence that supports a causal chain of factors leading from school goal stresses through motivation to achievement, for students in Grades 6, 8, and 10; (b) support for the importance of ethnicity in motivation; (c) importance of the psychological environment of the school, at the 10th grade level, especially for non-white student groups; and (d) the role of family strongest for students in the 4th grade. Finally, (e) the results of the study indicate that school leaders can and do have the ability to influence a school's particular psychological environment.

The "Psychological Environment" of the School: A Focus for School Leadership

Few would disagree that the effectiveness of our nation's schools is a major issue. The effectiveness of schools is regularly decried; the call for reform is a daily event (Cuban, 1990). There are, of course, a variety of reasons for school effectiveness, or lack thereof. Motivation appears to be one of them (Fyans & Maehr, 1990; Walberg, 1981, 1984). Unless students are engaged by school tasks, the school cannot be viewed as performing its role effectively. Whether or how students are invested in learning has to be construed as a sine qua non of school effectiveness.

There is, of course, a large body of research related to student motivation and learning (Ames, C., & Ames, R. (Eds.), 1989; Maehr, M.L., 1987). At one point, this research concentrated heavily, almost exclusively, on individual differences in motivation stemming from such factors as sociocultural background, previous school experience, and learning (e.g., McClelland, 1961). More recently, the motivation enhancement effects of the nature and design of tasks, teaching practices, and classroom management have been

in focus (e.g., Ames, 1987). Only to a limited degree has the possibility been considered that the school as a whole provides a context which facilitates student motivation. Anecdotal evidence, at least, seems to indicate that schools which appear to be effective in eliciting the personal investment of students in learning, indeed, are different kinds of schools. They have a focus on the value of achievement; teachers, students, and administrators exhibit a sense of purpose. The research literature on school effectiveness reinforces such anecdotal reports (e.g., Good & Weinstein, 1986). In addition, this literature at least alludes to the importance of motivational factors. While it does not explore this question systematically--or in terms of current motivation theory--repeated reference is made to the way school-wide policies, procedures, and activities focus student effort on learning goals.

Given the importance of student investment in learning, it is reasonable that those concerned with managing the school as a whole may well ask about the "motivational character" of schools. If they have at least casually read either anecdotal or other reports on school effectiveness, they will find it difficult not to ask, "Are some schools more effective in motivating

students than others?" In addition to what happens between task and student and teacher and class to further student investment in learning, can and does the larger context affect student motivation? Are there school-wide practices, procedures, and processes that have positive--or negative--motivational effects? Do different schools have "cultures" or "climates" which tend to affect the nature and quality of student engagement?

The purpose of this chapter is to summarize progress to date in a program of research, directed first, toward answering whether or how school context makes a difference in student motivation. Assuming it does, a second question is almost inevitable: Can and do school leaders affect student motivation through the way they manage the overall school context?

The Causal Model

The program of research to be described is based on a particular causal model, a set of critical constructs and a methodology that is distinctly psychometric in nature. A simplified version of the causal model which guides the research summarized in this paper is found in Figure 1. While the basic conceptual framework is

suggested there, several words of explanation are in order.

SCHOOL LEADERSHIP ---> SCHOOL PSYCHOLOGICAL ENVIRONMENT ---> THE "MEANING" OF SCHOOL ACHIEVEMENT ---> STUDENT PERSONAL INVESTMENT

Figure 1. The Causal Model

Student Personal Investment

First, the "bottom line" is student personal investment in learning. While few would ignore the possible importance of something generally termed motivation in determining organizational effectiveness, not all would agree on what this important something is. Commonly, it is assumed that motivation has something to do with inner states of the person such as needs, drives, psychic energies, or forces. Admittedly, when researchers or laypersons talk about motivation, that kind of language is often used. But these terms represent inferences from certain behavioral patterns. It is possible that disagreement and confusion about the nature and definition of motivation is a product of not considering precisely what it is that causes us to infer motivation. What is the observation, the perceived

behavior, that causes us to believe that motivation is or is not present in a particular person or group?

References to motivation seem to encompass a wide variety of activities. Closer scrutiny of these references and activities, however, indicates that the term motivation is more precisely associated with a certain set of behavioral patterns. It may be suggested that references to motivation tend to arise out of observations regarding five distinguishable behavioral patterns: choice, persistence, continuing motivation, intensity, and performance (cf. Maehr & Braskamp, 1986). Examples of these behavioral patterns in the case of students in the performance of school-related tasks is found in Table 1.

TABLE 1

Outline of factors incorporated in the constructs of the causal model.

General Categories	*Illustrative Examples*
Personal Investment	
Choice	Absenteeism; dropping out
Persistence	Time spent working on a task
Continuing Motivation	Returning voluntarily to work on a task
	Takes work home on occasion without an external reason
Activity Level	Number of problems solved in a given time-frame
Performance	Score on achievement tests, grades
Meaning	
Perceived Options	"I expect to leave school at 16; everyone I know and care about did, so why not ..."
Thoughts about self	"I am good at math ..."
Personal Incentives	"I want to do well in school so I can make money ..."
School Psychological Environment	
Perceptions of what the school stands for, particularly how it defines the meaning and purpose of learning and the way it is to occur	"My school wants all students to learn ..."
	"This school only cares about those who have talent."
School Leadership	
Action taken, policies and procedures in effect	"Recognition for the best; disinterest in the rest."

On the surface these behavioral patterns may seem diverse. Yet, there is a certain commonality suggested therein. They each indicate how and to what extent individuals invest themselves in any given activity. Indeed, as we observe individuals apparently making choices, persisting at tasks, and exhibiting varying levels of intensity, a convenient metaphor comes to mind. Persons can and do invest resources, such as money, in a variety of ways. They can and do also invest such personal resources as time and energy in a variety of ways. When observing the distribution of time and energy, one might suggest that the individual is in effect investing his or her personal resources in a certain manner. Observations of intensity possibly suggest that not only the direction but also the amount of resources is important. In any event, the term personal investment is one that we have found to be convenient for summing up the kind of behavior that gives rise to motivational inferences.

It may also be noted that there is more than style involved in the use of the term personal investment. The use of this term is designed to stress that motivation is particularly indicated by the kinds of choices that people make in their lives. Therewith, it is stressed that motivational problems are not, in the

main, attributable to a lack in motivational potential. Rather, motivational problems are largely a matter of how people choose to invest their time and energy. Thus, when teachers consider students to be "unmotivated," they do so because they have observed that they are not directing their attention to assigned tasks. They are not generally passive or inactive. Indeed, in another context or on different types of jobs, these same students may be observed to show all the activity, persistence, and involvement that would elicit the characterization, motivated. The point is that, for the most part, motivation cannot be appropriately viewed as something the person either has or doesn't have. Rather, people are differentially motivated depending on the situation. Boldly put, all individuals will exhibit these behaviors that reflect motivation under some conditions. Thus, the inevitable question of concern is--why in this but not that case? What is there about a particular task or school context that does not serve to elicit the personal investment of a student? The basic answer implicit in this approach to the study of motivation is direct: there is not really anything "wrong" with the person--she is not lacking in drive, she is not lazy; she simply is not attracted to the task in this case. In such instances

the question should be: What is there about the context that does not serve to elicit her investment?

So, by using the term personal investment, the stress is placed on both whether and how students direct their personal resources of time, talent, and energy. All have a reservoir of such resources; the question in the main is how they choose to use these and what prompts this choice. Parenthetically, it may be noted that this conception tends to identify the study of motivation with observable behavior: the observation of choices made, the direction of action taken, the levels of performance, etc. (see Table 1). Research contingencies, however, will often lead to using verbal behavior (attitudes, self-report of choices, etc.) to approximate such observations. While such approximations have been shown to be useful and in many instances highly related to the actual behavior simulated, it is well to stress that action is the bottom line in the study of student personal investment.

Meaning Determines Personal Investment

The focus for change is the situation, especially the meaning of the situation to the performer. What a given situation means to the individual is the critical determinant of investment.

Meaning may mean different things. The theory of personal investment construes the term meaning to refer to certain thoughts and perceptions that the individual has in reference to self and the performance situation. Briefly, there are three types of thoughts that are especially important in this regard (see Table 1). First, there is the perception of options or action possibilities available in the situation. Individuals choose and act in terms of what they perceive as possible and acceptable. Bringing school work home and actually working on it may or may not be salient options to any given student. A second meaning component consists of the thoughts that one has with reference to one's own person: broadly, one's self-concept. Maehr and Braskamp (1986) have suggested several aspects of selfhood that may be particularly important so far as motivation and personal investment are concerned. Included among these is a sense of competence and a belief in one's ability to do something if effort is put forth (cf. also, Covington, 1984; Nicholls, 1984; Nicholls & Miller, 1984). Third and finally, there are reasons for, or personal goals in, performing the task. These relate to the individual beliefs about what is worth doing and why. What does the person hope to get out of performing? What is defined as a successful or

unsuccessful outcome? These may be referred to as personal incentives (Maehr, 1984; Maehr & Braskamp, 1986).

All three of these components are commonly featured in theories of motivation. They must be viewed as cognitions that operate collectively and interactively in mediating the personal investments that people make (cf. Maehr, 1983; Maehr, 1974; Maehr & Braskamp, 1986).

Antecedents of Meanings and Personal Investment

General antecedents. Of course, there are a variety of factors that affect the meanings that are associated with personal investment. We can simplify this complexity of causes by referring to two basic causal categories: the person and the situation.

First, it may be noted that individuals arrive at any specific situation with "experiential baggage." They have a history that has given them certain meaning biases, certain thoughts about themselves and about situations. They arrive at any scene with established beliefs about, and definitions of, success and failure. They vary in their sense of themselves as self-reliant and competent. And, they may also vary in their knowledge about, sensitivity to, or preference for, certain options. The point is that people are seldom, if ever, blank tablets so far as meaning is concerned.

These thoughts and perceptions--meanings--may have at least an initial effect on how individuals behave. Such meanings, however, are subject to change in response to different contexts and circumstances. They are not qualities fixed in stone at an early age, though they may represent an important investment bias.

Features of the learning context such as the nature of the task to be done, with whom it is to be done, and how it is to be done, play a critical role in determining personal investment. Personal investment is affected by the way tasks are designed and learning managed and guided (Ames, 1987; Maehr, 1984, 1987). It is within such a framework that we can presume to look at the school context as a determining factor in personal investment. Is there a way that the school as a whole defines school tasks, what these tasks are, how they should be done, and where they should lead? We think that is a definite possibility; and, therefore, we propose the school psychological environment as a variable in the causal model.

The school as a psychological environment. The school may be viewed as a "psychological environment" which affects the nature and definition of tasks and activities which occur there. By referring to the school as a psychological environment, we are

emphasizing the importance of certain perceptions that the participants in the organization have which influence their behavior in significant ways. Of course, it is assumed that these perceptions can be influenced by external events and that they are, or can be, shared to varying degrees by others in the organization. However, the stress within the model is on the individual's experience of the environment and how that shapes other perceptions and behavior. In this regard, school (psychological) environment is conceptually analogous to classroom environment as studied by, for example, Ames and Archer (1988) and Ryan and Grolnick (1986).

The psychological environment defined. While a broad range of cognitions/perceptions could be considered as an integral part of the psychological environment of the school, we have initially concentrated on the stress placed on certain purposes and desired ends (Ames & Ames, 1989; Ames & Archer, 1987, 1988; Ames, Maehr, Archer, Fisher, & Hall, 1989; Nicholls, 1984; Dweck, 1985, 1988). How is the pu pose of an activity defined within a particular context? How is learning defined? What is the purpose of school--and what are its rewards? The research (Braskamp & Maehr, 1985; Maehr & Braskamp, 1986; Maehr, 1987) thus far has

identified four basic goal stresses. These goal stresses are labeled as Accomplishment, Power, Affiliation, and Recognition. Table 2 provides a brief description of these dimensions.

In addition to these four goal stresses, a fifth dimension was also identified. There was reason to believe that the very saliency of the school as an identifiable context with certain goals, purposes, and expectations in itself might be a critical factor. That point was often made in the school effectiveness literature (e.g., Good & Weinstein, 1986). Besides, it seems logical enough that schools may stress, to a greater or lesser degree, what they stand for. They may be more or less effective in communicating their nature and mission.

In sum, this early work eventuated in reliably distinguishable dimensions of the organizational context and psychometric procedures for assessing these. These dimensions represent the school's definition of the meaning and purpose of schooling but also reflect how such learning should take place. While the basic dimensions were arrived at through initial study of a wide variety of organizations with adult respondents, these scales have more recently been specifically adapted for use in schools, employing forms to which

school staff as well as students can respond. Briefly summarized, the same basic structure holds, with evidence available that the five different dimensions can be usefully employed in examining the psychological context of schools as well as other organizations (for a thorough summary of the research evidence in this regard see Krug, 1990).

Of course, these particular dimensions represent only one possible configuration of the dimensions of organizational context They evolved from a specific attempt to understand organizations in terms of personal investment theory and therewith focus on dimensions that have been found useful in that context. Different, but not altogether dissimilar, organizational context dimensions have been designated by others (see, e.g., Denison, 1984, 1985). Thus, while it would not be wise to assume that these dimensions are the final word on the topic, they may well specify organizational variables of critical importance, especially so far as motivation and achievement are concerned. Indeed, we are currently re-working the concept and the measuring procedures on the basis of new data. However, as we will subsequently endeavor to show, it is a workable conceptualization for this stage of our research.

Table 2

Dimensions of School "Psychological Environment" Assessed

Accomplishment

Emphasis on excellence and pursuit of academic challenges.

Item Example: This school makes me like to learn.

Power

Emphasis on interpersonal competition, socially comparative, achievement.

Item Example: At this school it is very important to get good grades.

Recognition

Emphasis on social recognition for achievement and the importance of schooling for attaining future goals and rewards.

Item Example: This school gives recognition for good performance.

Affiliation

Perceived sense of community, good interpersonal relations among teachers and students.

Item Example: Teachers at this school treat students with respect.

Strength/Saliency

The perception that the school knows what it is about and that students know what is expected.

Item Example: Every student in this school knows what it stands for.

The possible role of leadership. As noted earlier, it is assumed that the psychological environment can be influenced by external factors. Specifically, it is hypothesized that the leadership of a school plays a major role in affecting how students perceive the school--its definition and stress on learning and the purpose of schooling. Thus, it is likely that teachers and administrative staff can and do influence student motivation and achievement patterns as they affect the psychological environment of the school. It is not altogether clear how this occurs and, while a most critical feature of the causal model, it is a feature that is perhaps the least fully explored to this point. The considerable literature on school effectiveness tends to underscore the importance of school leadership, but provides few guidelines for action. Yet it seems evident that school-wide policies and procedures are likely to have effects of significance. Through a variety of actions, the leadership and staff express their beliefs about the nature of schools and learning. Goals are defined and interaction patterns established which create the psychological character of the school.

A reflection on the nature of the model. It should be evident that the basic form of the causal model is implicit in recent discussions of organizational culture

(Baden & Maehr, 1986; Deal & Kennedy, 1982; Denison, 1985; Frost, Moore, Louis, Lunberg & Martin, 1985; Maehr, 1987; Maehr & Fyans, 1990). Such discussions often refer to the possibility that culture does something to people and affects how they behave in the organization. Occasionally, there is at least indirect reference to the motivational effects of organizational culture. Certainly, one reason for all the talk about organizational culture is the belief that someone, usually the leader, can do something about it. Thus Schein (1985) suggests rather directly and boldly that leaders manage by managing organizational culture.

The causal model may be rightly construed as one form in which this hypothesis might be operationalized. While the notion that leaders lead through managing the organizational context is hardly novel, it is perhaps seldom stated so boldly. Moreover, the way the variables are defined may verge on the controversial.

The term culture has characteristically been tied to a particular methodology. So-called "qualitative methods" have almost been assumed when talking about culture in general and organizational culture in particular. There is currently a strong movement within the realm of educational inquiry which stresses the validity and the usefulness of such methods (McMillan &

Schumacher, 1989). There are a variety of reasons adduced for such an approach--some good, some bad. It is sometimes said that such qualitative data present images closer to the practitioner's experiences. They are, therefore, more likely to be apt to use. This may be true. Certainly, one often observes that discussions of management are based on case studies at the best and "old war stories" at the worst. The predominance of such talk may suggest that some form of qualitative data is indeed more readily absorbed and likely to be used by practitioners.

Most would agree that qualitative data at the very least have heuristic and interpretative value. However, there are major problems and limitations with qualitative data. First, it is not altogether clear how useful such data really are to practitioners. Perhaps they like it better. Qualitative reports seem to speak about things practitioners know, in language they understand. But is qualitative research more likely to affect practice? Possibly. But it should be pointed out that qualitative approaches do not really provide the practitioner with methods for assessing organizational culture. Few practitioners have the time or the talent for ethnography. Most are not inclined to hire an ethnographer, participant observer, or someone

interested in naturalistic studies to hang around the organization for weeks at a time to gather information which, hopefully, at some point in the vague future, will eventuate in a portrayal of the culture of the organization. Thus, qualitative research to date has not really provided readily utilizable tools for assessing organizational culture. If a manager cannot assess organizational culture in some reasonable fashion, how can she relate to, or use, the concept of culture? This alone gives rise to a need for more efficient, standardized, and objective data-gathering procedures.

But there are also good scientific reasons for not limiting the study of culture to qualitative approaches. Recent discussions of organizational culture have made a real point of stressing that organizations differ in terms of the culture that typifies them--that seems intuitively plausible--but the assurance of objective, replicable measures of cultural variation is needed. Moreover, it is increasingly suggested that organizational culture does something. It is a variable that is related to other variables, but whether or how it varies is not altogether clear from qualitative research. Even less clear is how any assumed aspect of culture relates to any particular variable of interest.

For example, how does organizational culture affect the motivation and achievement of students? Does it really make a difference in fulfilling the school's mission or purpose? There might be value in specifying school culture in such a way that it can be related in a systematic manner to student outcomes. Objective, quantitative study of school culture might also allow for the wider pooling of scholarly efforts. The facts of one researcher are there to review, to replicate, to correct, and to incorporate into different theoretical models.

While qualitative approaches to the study of culture have had and continue to have value, they also have certain limitations. Thus, it seems reasonable to consider other research paradigms. What might simply be termed a psychometric approach could contribute to the study of organizational culture. While such a psychometric approach has not been widely applied in the study of organizational culture, there is precedent and a rather firm basis for pursuing such an approach (see, e.g., Campbell, Dunnette, Lawler, & Weick, 1970; Cook, Hepworth, Wall, & Warr, 1981; James & Jones, 1974; Lawler, Hall, & Oldham, 1974; Schneider & Snyder, 1975; Stern, 1970; Triandis, 1972). All in all, there is reason and hope that pursuing a more objective and

standardized, quantitative approach to the study of organizational culture might prove useful--both for understanding and practice. In any event, the present construction of psychological environment is drawn from current discussions of organizational culture, but represents a certain approach to the use of this concept. The concept of psychological environment as used here is one possible embodiment of the organizational culture construct. This conceptualization, as well as the overall causal model, reflects an attempt to create a psychometrically based model of school culture, a model which is subject to systematic testing, objective analysis, and replication of results. That may be anathema to some. There is no question but that this is not the usual way in which culture is defined or studied. However, a reasonable argument can be made for such an approach (Maehr, 1990). The proof will be in the testing.

Overview of the Research Program

The research conducted thus far may be described as consisting of three overlapping phases: a) a conceptual/methodological phase, b) a validation phase, and c) an intervention phase. The conceptual/methodological phase has recently been

presented and discussed in detail elsewhere (Krug, 1990; Krug, & Ames, 1989). Therefore, I will concern myself only minimally with this work. The intervention phase has only just begun. As a result, the discussion of this phase will be largely limited to a review of the questions that are being and must be raised and to an outline of the research agenda. The focus of this report, then, will be on the validation phase. Granted that one can construct and standardize a measure of the psychological environment of the school, the primary questions at issue are: What does it mean? What does it do? How does it relate to student motivation and achievement?

The Psychological Environment of The School: Validation Studies

The program of research began with an intensive effort to define the critical variables comprised within the causal model. In particular, special attention was devoted to developing a psychometrically viable definition of the psychological environment of an organization. Items were constructed and scales developed. These were put to a test in a variety of organizations, including a variety of schools. The scales that emerged as the result of this intensive

process have been described earlier (see Table 2). Preliminary evidence of the validity of these scales is to be found in their ability to distinguish different types of organizations (Maehr, 1987; Maehr & Braskamp, 1986), including particularly different types of schools (Krug & Ames, 1989). Thus, the scales were shown to be an effective and perhaps useful mechanism for describing the "character" of an organization. That first step is not inconsequential; but it cannot be, and has not been, the last step. Of critical importance is whether these measures relate to motivation or personal investment. How might these different organizational goal stresses influence personal investment? Does the psychological environment of the school influence student motivation and achievement in any important manner or fashion?

Psychological Environment and Student Personal Investment

A series of studies has been directed toward answering this question. The most notable of these to date involves a comprehensive data set involving over 16,000 fourth, sixth, eighth, and tenth grade students drawn from 880 public schools. While these studies are reported in greater detail elsewhere (Fyans & Maehr, 1990; Maehr & Fyans, 1990), it is critical to the

present message to summarize the nature and results of these studies.

School, family and peers' psychological environment: relationship to motivation and achievement. Briefly, the results provide strong support for the overall causal model. A summary of a series of path analyses leading to this conclusion is contained in Figures 2 and 3. These path analyses also portray the relative influence of two other social factors (peer and family achievement press) at each of the four grade levels considered.

Briefly, the evidence for the existence of a causal chain leading from school goal stress through motivation to achievement is strongest in 6th, 8th, and 10th grade results. The picture at the 4th grade level is a complex one. The role of the family appears to be strongest at the 4th grade level with school perceptions and individual student motivation emerging as the predominant factors in school achievement thereafter. Peer press is highly related to school perceptions and student motivation at the 10th grade level and related primarily to family at the 6th and 8th grade levels--but not to motivation. At the 4th grade level, peer press is again related to both school perceptions and motivation.

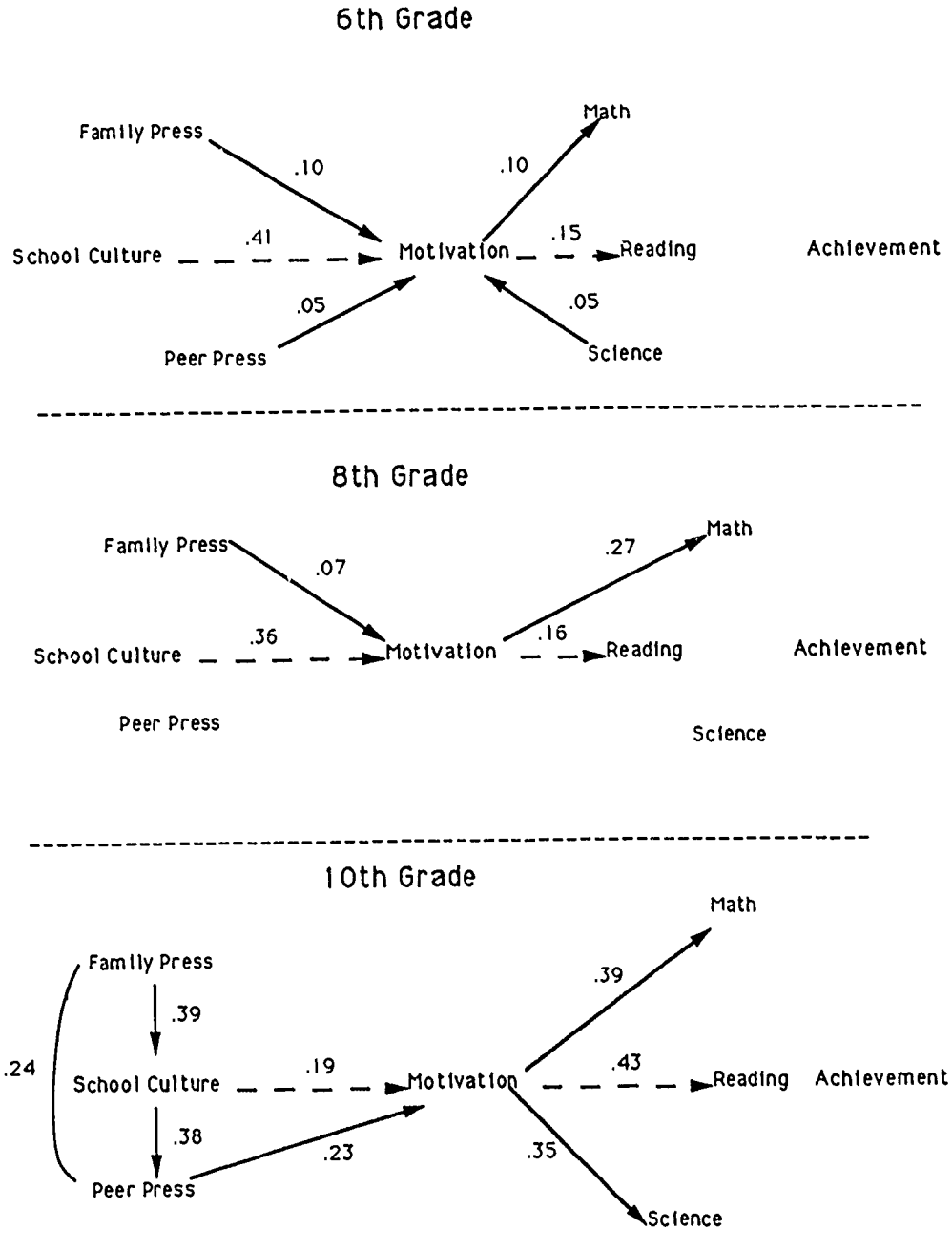
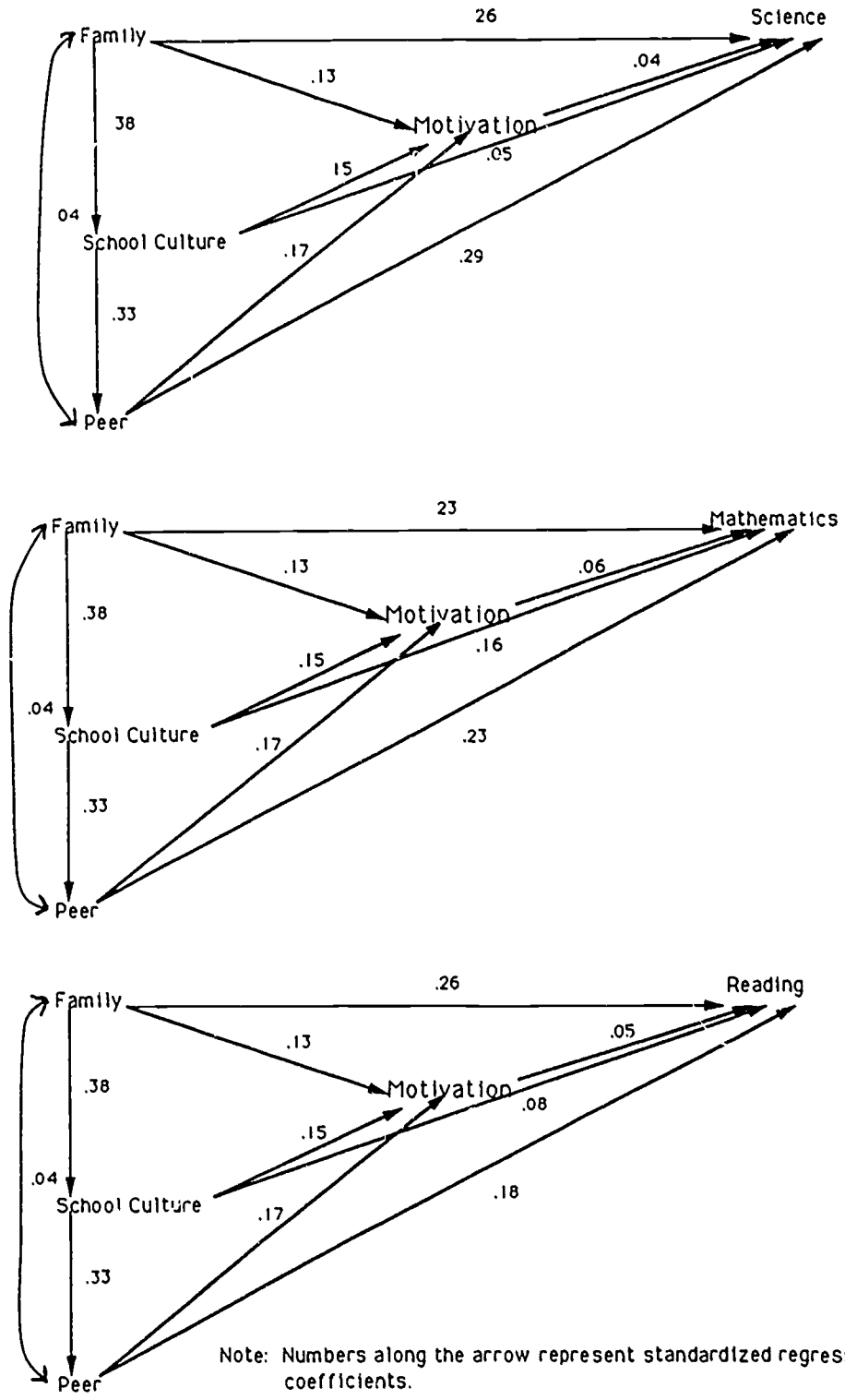


Figure 2. Portrayal of Path Analyses at 6th, 8th, and 10th grades



Note: Numbers along the arrow represent standardized regression coefficients.

Figure 3. Portrayal of Path Analysis (4th grade)

School psychological environment and motivation. Given the evidence for a school psychological environment ----> motivation cognitions (meaning) ----> achievement causal path, we next considered the contribution of each of the five goal dimensions to the overall relationship found between school psychological environment and student motivation cognitions.

Multiple regression analyses were conducted in which each of the school environment dimensions served as the predictor variables and the summed motivation score was the criterion variable. The results of these analyses are presented in Table 3. There it can be seen that in the prediction of motivation from school environment, the Accomplishment and Recognition dimensions generally figure most strongly. However, variations from this theme can be noted.

Table 3

School Psychological Environment and Motivation Cognitions

Summary of Multiple Regression Results: Dimensions of School Psychological Environment Across Four Grade Levels

	4th grade	6th grade	8th grade	10th grade
Accomplishment	.16*	.18	.24	.31
Power	.07	.09	.10	.08
Recognition	.05	.09	.08	.14
Affiliation	-.002	.03	.01	.06
Saliency/Strength	.09	.08	.08	.004
	R^2=7%	R^2=11%	R^2=14%	R^2=21%

*Standardized beta weights

School psychological environment, student ethnicity and motivation. A third general finding concerns the differential influence of perceived school goal stresses in the case of different ethnic groups. The results of a series of analyses are summarized in Table 4. Several summary observations of the data presented there can be made. In general, the results may be described as heuristic, perhaps at points bordering on the provocative. They prompt interesting questions deserving of further study. One can note variation in the apparent importance of school psychological environment for different ethnic groups at different grades. The meaning of this variation is not always readily apparent. What is reasonably clear is that the school psychological environment appears to be most important at the 10th grade level, accounting for a sizable portion of motivation variance. Moreover, it is important to note that this is especially true in the case of non-white groups. Does this mean that, especially for minorities, the school psychological environment is a critical factor as the student reaches adolescent and high school years? If so, the attention to the development of effective learning environments can by no means be limited to the early grades. All too often, of course (and for a variety of reasons), that

TABLE 4

School Psychological Environment X Student Ethnicity: Summary of Multiple Regression Analysis of School PsychologicalEnvironment Dimensions on Motivation for Each Ethnic Group

4th Grade

Standardized Beta Weights

Dimensions	*White*	*Black*	*Hispanic*	*Asian*
Accomplishment	.18	.08	.09	.36
Power	.07	.08	.22	.10
Recognition	.04	.09	.01	-.10
Affiliation	.02	-.14	.09	-.05
Saliency/Strength	.10	.14	.18	.12
R^2	8%	5%	13%	16%

6th Grade

Standardized Beta Weights

Dimensions	*White*	*Black*	*Hispanic*	*Asian*
Accomplishment	.18	.28	.19	.08
Power	.09	.04	.02	.04
Recognition	.09	.01	.03	-.09
Affiliation	.03	-.09	.02	-.02
Saliency/Strength	.08	.08	.10	.09
R^2	11%	14%	5%	2%

8th Grade

Standardized Beta Weights

Dimensions	*White*	*Black*	*Hispanic*	*Asian*
Accomplishment	.24	.22	.16	.15
Power	.11	.07	.17	.10
Recognition	.10	.01	.08	.08
Affiliation	.05	.02	.12	.02
Saliency/Strength	.07	.05	.03	.11
R^2	17%	7%	19%	12%

10th Grade

Standardized Beta Weights

Dimensions	*White*	*Black*	*Hispanic*	*Asian*
Accomplishment	.32	.18	.31	.03
Power	.08	.12	.09	.07
Recognition	.15	.21	.08	.37
Affiliation	.06	.10	-.05	.19
Saliency/Strength	.01	-.01	.13	.06
R^2	23%	33%	44%	58%

has been the case. Getting a good start in school may be a sine qua non of effective education, but clearly effective education cannot stop there. These results would suggest that attention to learning environments at the upper levels dare not be ignored.

In addition to the overall importance of school psychological environment in explaining motivation, one may also call attention to the varying importance of different "environment profiles" for different ethnic groups at different grade levels. For example, while Accomplishment remains rather consistently important for whites across the various grades, it varies in importance for the other groups. The possible differential importance of school environment stresses for different groups and different grades needs to be considered further.

School psychological environment, motivation and student personal investment: Conclusions and questions. While these studies and their results must be considered preliminary in nature, they do strongly suggest that school goal stresses can influence students' motivation and achievement. These stresses appear to be differentially important at different stages and of varying importance to children of different ethnic backgrounds. Indeed, it is a bit disconcerting perhaps

that a profile of "the one best school environment" does not leap out from the data. Nevertheless, school goal stresses appear to be not only a measurable variable, but a variable that makes a difference. At the very least, these results, together with other studies that have been initiated, should encourage discussions on leadership, school context, motivation, and achievement, based on observations that can be replicated, tested, and tried in the public arena. Moreover, there is some basis from these and other data, as well as theory, to suggest the direction in which these discussions, data gathering, and theory building might go. That bodes well for the study of the school as an organization. It should also contribute to the study of leadership as well. It makes it possible for us to ask, and perhaps ultimately answer, an underlying question that prompts this line of research: Is the psychological environment of the school a variable over which those in leadership roles can have some control? Or, more specifically, can school leaders influence the perceptions of goal stresses and thereby influence student personal investment in learning.

Toward Intervention

There is a reasonable amount of evidence that one part of the causal model has a degree of validity. School can be characterized as a psychological environment and this characterization appears to have merit. More specifically, students' perceptions of school goal stresses appear to be related to student personal investment in learning in an important way. The findings that sum up to this general conclusion force a second question: What determines this psychological environment? That second question is tied up with a very practical issue: whether or how one can intervene to change the psychological environment of the school. In the earlier statement of the causal model, the role of intervention or determination was placed in the hands of "the leader." That was really a matter of convenience, although it represents an interesting hypothesis. In the ensuing discussion, we are less concerned with whether a leader determines the environment than with actions, policies, and processes (possibly under the control of those in leadership roles) that can and do affect the psychological make-up of the school.

What are the implications for action? What are the implications for those who manage and lead schools?

Awareness

At a first level, it should be clear that school goal stresses are factors with which leaders must reckon. But more than that, the results reviewed here present a way of looking at the psychological environment of the school, examining it, assessing it, and asking, Is this what we want? If not, what can we do? The technology associated with the present research should, at the very least, have heuristic value for practitioners. Therewith, one might expect that leaders, leadership teams, and school staff might be stimulated to begin examining the psychological environment of their school. With assessment procedures readily available, there is a basis for evaluating whether something has happened and for evaluating the happening.

Indeed, it may be noted that a systematic version of this has already been initiated in a selective way in a sample of schools in the state of Illinois. Thus, certain school administrators are currently engaged in a process whereby they will employ these instruments as primary assessment procedures as they engage their staff in concentrating on what can be done to enhance the psychological environment (Krug & Ames, 1989). When an evaluation of these activities becomes available, we

will in effect have the first hard evidence on whether or how those in leadership roles can influence school goal stresses. But the point to be made now is that the availability of appropriate assessment procedures provides the way for, and perhaps serves as, a stimulant to the kind of experimentation that should provide fruitful evidence in the not-too-distant future.

One should not gainsay such experimentation by professionals. Indeed, one should support it and try to learn from it. Knowledge about practice can be derived by practicing. However, it is appropriately complemented by more controlled research. Such research is planned (Midgley & Maehr, 1990) but not yet a reality.

Classroom Research as an Analogue

While we have not conducted studies which show how one can intervene to affect school psychological environment, there is evidence that intervention is not a vain hope. That evidence rests on research on classroom environments. For understandable reasons, the intervention research with the smaller environment of the classroom is considerably more advanced than intervention research with larger environments such as schools. As a result, there is a reasonably robust body of knowledge associated with changing the psychological

environment of the classroom. Conceivably, this research has major implications for what leaders can do to enhance the larger school environment. For the present purposes, what is fortuitous is that considerable attention has been given to issues that are conceptually parallel to those considered in this chapter on leadership (Figure 4).

TEACHER

(Goals---->Behavior)----->Classroom Context----->Student Motivation & Personal Investment

PRINCIPAL

(Goals---->Behavior)---->School Context---->Student/Staff Motivation/ "Personal Investment"

Figure 4. Parallel Leadership Roles Extant in Schools

As in the case of the school level research reviewed earlier, the classroom level research referred to here is likewise based on what is called goal theory, especially as that has evolved in the work of Carole Ames (Ames, 1987; Ames & Archer, 1987; 1988; Ames & Maehr, 1988). In this work, the classroom is viewed as a psychological environment which is characterized especially by varying degrees of stress on certain goals. Further, it has been hypothesized and found that classroom goal stress has served to define the learning goals adopted by students (Ames & Archer, 1988). It has also been shown that as students adopt certain goals, their motivation and achievement change in predictable ways. A summary of the research that has been conducted to get to this essential understanding of the role of goals in determining student personal investment in classroom learning tasks is presented in Table 5 (see also Table 6).

Table 5

An Interpretive Summary of Selected Studies on Goals - The Evolution of An Idea

PHASE 1	FOCUS: Manipulation of Presumed Critical Characteristics of Task: Intrinsic/ Extrinsic Reward, Evaluation Procedures	EFFECTS OBSERVED:	Variation in "Continuing Motivation" Variation in risk-taking/challenge-seeking, Academic venturesomeness, creativity Differential performance of individuals varying in sense of competence
	cf: Maehr, 1976; Hill, 1980, 1984; Dweck & Ryan, 1985; Amabile, 1983		
PHASE 2	FOCUS: Interpretation of Phase 1 studies as studies of goals and their effects.	EFFECTS OSERVED:	Certain external events -----> perceived goals -----> behavior
	cf: Maehr & Nicholls, 1980; Ames, 1984; Dweck, 1986; Maehr, 1989		
PHASE 3	FOCUS: Description of Learning Environments in goal terms	EFFECTS OBSERVED:	Subjects perceive different goal stresses in different environments; these perceptions relate to beliefs and behavior patterns
	Classrooms: cf. Ames & Archer, 1988		
	Schools: cf. Maehr & Fyans, 1989		Teachers, parents, and school administrators adopt different goals and this appears to affect the environment they create
	Homes: cf. Ames & Archer, 1987		
PHASE 4	FOCUS: Changing Management Strategies of Teachers, Parents and Administrators	EFECTS OBSERVED:	Individuals appear to be able to change goals and change management strategies with minimal training
	cf: Ames et al., 1989 C. Ames & Maehr, 1988 R. Ames & Maehr, 1988		

Intervention research to date has focused principally on two goal stresses. In intervention studies at the classroom level, these goals have been labeled Mastery and Performance goals (Ames & Maehr, 1988). These goals are in the main conceptually comparable to what, at the school level, were earlier labeled Accomplishment and Power. Considerable information is available on how these goals emerge and how they affect student behavior. This specification has led to operationalizing more precisely what it is that teachers can do in managing instruction that will create environments in which students are likely to adopt either of these two goals as a primary orientation.

Table 6

Achievement Goal Analysis of Psychological Environment

	Mastery (Accomplishment) Goal	Performance (Power) Goal
Success defined as . . .	improvement, progress, mastery	high grades, high performance compared to others
Value placed on . . .	effort/learning	public acknowledgement of achievement, demonstrating high ability compared to others
Reasons for satisfaction . . .	progress, challenge, mastery	doing better than others, success with little effort
Instruction oriented toward . . .	how students are learning, progressing	students' comparative performance levels
Focus of attention . . .	process of learning	performance relative to others
Reasons for effort . . .	learn something new	high grades, perform better than others
Evaluation criteria . . .	absolute criteria; evidence of progress	norms; social comparisons
Type of involvement . . .	all participants; high degree of choice	differential participation by ability; low choice
Errors viewed as . . .	part of the learning process	failure

Adapted from work by C. Ames et al. (Ames & Archer, 1988; Ames, Maehr, Archer, Fisher & Hall, 1989)

The intervention procedures that have been developed are oriented around an acronym proposed by Epstein (1989), but worked out in greater detail by Ames (Ames & Maehr, 1988). As is seen in Table 7, the TARGET structure embraces six basic domains in which learning management decisions are often made. While the work thus far has focused principally on classroom level intervention, it is also possible to imagine how comparable conceptions and strategies can be employed in the overall management of the school. Thus, as school policy and procedure tend to emphasize interpersonal competition and social comparison, it is likely that Power goals are likely to be a more salient feature of the school psychological environment. The way students are grouped for learning, how evaluation is conducted, recognition given, etc., is also likely to be important and is also often under the general control of school level policy. District and school leaders often have it in their purview to decide how students are to be grouped, which students to recognize and on what basis, whether to encourage competition or cooperation, if and how autonomy is to be encouraged, methods for evaluating performance, and a host of other policies and procedures that can affect the psychological environment of the school. Thus, the leadership of a school can choose to

inaugurate school-wide policy which is likely to affect how children perceive learning, a policy which may even contradict and possibly prevail over what is happening at the classroom level. Many concrete examples of this can be given. I will simply make my point by asking two questions. How does the school-wide testing program affect the psychological environment of the school? How does a learning for extrinsic reward program such as that sponsored by Pizza Hut affect the psychological environment of the school? School-wide testing is pervasive and probably handled in ways that are more or less likely to lead to Accomplishment or Power goal stresses. The Pizza Hut program (Grades 1-6) involves 15,000,000 students in 45,000 schools in 600,000 classrooms. If it is used as the official guidelines suggest, the emphasis is on giving extrinsic rewards (pizza) on a competitive basis. Those who read the most are likely to win the most. Moreover, the clear implication is that the rewards of reading are extrinsic and that reading is not valued in its own right. Given the present line of argumentation and evidence, as a school adopts this program it should enhance the Power or Performance aspects of the overall psychological environment (and diminish the Accomplishment or Mastery aspects).

Table 7
Target Structures

TARGET Structure	Strategies	Outcome Measures	References
TASK	Goal-setting challenge Challenge	Persistence Self-Competence	deCharms, 1976; Deci & Ryan, 1985; Maehr & Braskamp, 1986; Roberts & Duda, 1984; Schunk, 1985, 1989
AUTHORITY	Shared decision-making Individual choices	Autonomy/Independence Participation in school/ extra-curricular activities	Connell & Ryan, 1984; Deci & Chandler, 1986; Deci & Ryan, 1985
REWARD (for)	Improvement Participation Daily Progress	Self-efficacy Self-confidence Attitudes Self-worth	Ames, 1987; Covington & Omelich, 1984; Maehr, 1976; Roberts, 1984, 1986; Schunk, 1989
GROUPING	Cooperative learning Peer tutoring Special skills training	Social acceptance Social skills Self-confidence	Cosden, Pearl, & Bryan, 1986; Greshman, 1981, 1984; Gresham & Reschly, 1987; Johnson & Johnson, 1975, 1984; Oden & Asher, 1977; Slavin, 1983
EVALUATION (based on)	Strategies for improvement Strategy attribution	Self-regulated learning Self-efficacy	Ames & Archer, 1988; Corno, Collins & Capper, 1982; Covington, 1985; Paris & Oka, 1986; Schunk & Cox, 1986
TIME	Self-scheduling Flexible time Self-Pacing	Task completion Motivation	Slavin, 1980; Wang, 1979; Wang & Stiles, 1979

Note: Adapted from Ames & Maehr (1989)

Leadership, the School Environment, and Student Outcomes: Conclusions and Prospects

Admittedly, the classroom is not the school, and the parallelism between school environment and classroom environment research is not perfect. Yet, the similarities are obvious; and, parenthetically, it may be noted that one of the truly classic studies of leadership (Lewin, Lippit, & White, 1939) employed small groups not unlike classrooms. So, it is not altogether unreasonable to explore the research on classrooms for purposes of developing hypotheses about schools and school leadership.

The research on school environments presented in this chapter indicates that the school is perceived as a psychological entity much as the classroom. More specifically, goal stresses associated with the school environment seem to relate systematically to student motivation and achievement. At this point, the research on schools is a step or two behind research on classrooms. In the case of schools, there is evidence that student perceptions make a difference in cognitive measures of motivation and on standardized achievement tests. In short, we know that school goal stresses have important effects on student personal investment in learning. However, we need to specify the nature of

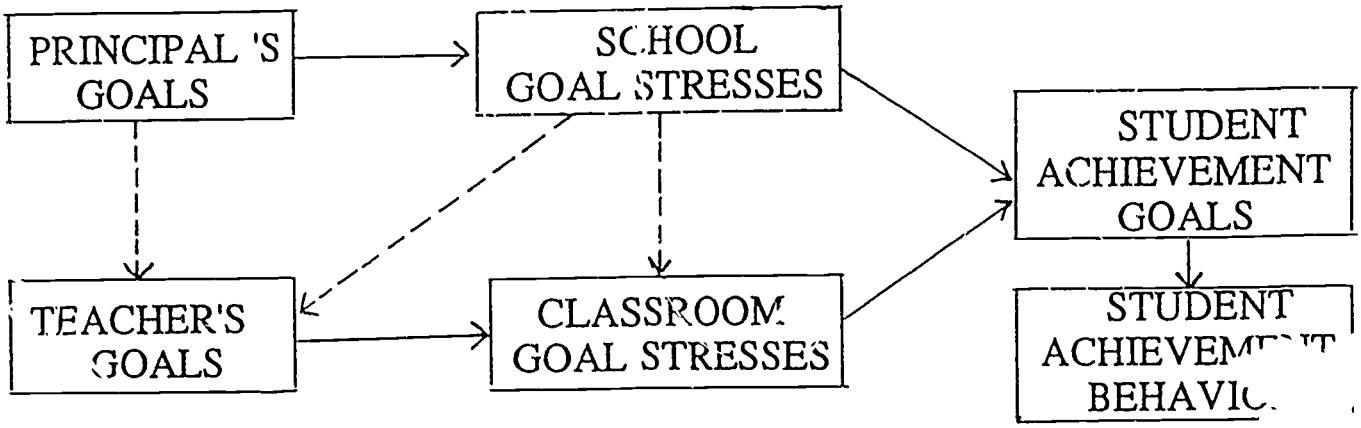
these effects further. Thus, does a stress on Accomplishment lead to more "Academic Venturesomeness" and a stress on Power to a greater emphasis on short-term learning goals? And what are the full effects of Affiliation and Recognition goal stresses?

To pursue these questions effectively, it will be necessary to further clarify the goal dimensions. Perhaps it would also be helpful to match them more closely with classroom dimensions. Research on school environments and classroom environments have, to some degree, gone separate ways. Maybe that is inevitable. But greater parallelism would yield a more elegant and useful theory of school environment effects on student personal investment. Yet, the point to be stressed in this regard is that school environment research can certainly benefit from classroom environment research and the two should perhaps be conducted in tandem. Perhaps, indeed already at this early point, the classroom research anticipates the outline for a theory of management which can effectively come to terms with questions of how, or whether, the environment of the school can be changed.

Certainly the classroom research is at least a fitting heuristic for school research. However, it is only that. Considering school-level effects on

motivation and achievement is likely to involve considering different linkages. Consider just one possibility in this regard. The research tells us how to intervene in the case of teachers in the classroom. Can we hope to intervene with principals in a manner similar to that in the case of teachers? Can we expect ever to provide management goals and strategies that will change school environments much as we do with teachers and classroom environments? On the one hand, it is clear that classrooms are not schools and teachers are not principals. On the other hand, classrooms and schools are arguably both psychological environments that affect the motivation and achievement of children.

Insofar as the leadership role involves working on the psychological environment, what distinguishes teachers and principals on the dimension of leadership?



----------> SOME EVIDENCE FOR LINKAGE

- - - - - - - - - - - - - -> LITTLE OR NO EVIDENCE RELATIVE TO POSSIBLE LINKAGE

Figure 5. Goal Linkages Affecting Student Motivation

(Adapted from C. Ames, 1989b)

Figure 5 suggests a set of linkages--and a way that intervention at school and classroom levels may be conceptualized. Additionally, for purposes of simplification, we have treated the school (perhaps the principal) as a single entity. There are issues, of course, regarding who is the leader and how leading can take place that are different at school and classroom levels. Yet, we submit that the classroom analogue is a fitting point of departure for considering more precisely how leadership can have school-wide effects on student motivation and achievement.

Of course, we don't have the kinds of answers to these questions that we would like. An "action manual" has not and cannot at this point be presented. A road marker or two has been placed which might help those in leadership positions to find their way toward establishing policies and procedures which encourage personal investment at a particular time and place. But most importantly, the seeds for further discovery are there. A workable methodology has been developed and research has begun. Perhaps equally important, there is a framework that provides a starting point for building a theory of school intervention. At the very least, it may be suggested that a perspective which views the leader as working on the psychological environment of

the organization to elicit and direct personal investment toward certain ends is a viable perspective. I might add that work on school culture could well profit from the more focused effort on goal stresses taken here. Perceptions of goals in learning are not all that there is to "school culture." But if school culture is to be a fully useful construct, a tact similar to the one taken here might be desirable--perhaps even necessary.

Conclusion

This paper began with the observation that the personal investment of students in learning is, and should be, a concern of those in school leadership roles. For a school to be effective, students must be engaged in productive learning. They must be personally involved in the process of becoming educated. Student engagement and investment in learning is properly a concern of teachers. It is just as properly a concern of administrators and those who play leadership roles in the schools.

The essential argument of this chapter is that the personal investment of students, and their motivation for learning, is not only influenced through what happens in home or classroom. There is a school effect

that is important and that school effect is the proper concern of school leadership. A working causal model was outlined which suggests that a variable, critical to student investment in learning, is the psychological environment of the school. That causal model implies that leadership can and, for good or ill, probably does influence the nature of the psychological environment--and thereby influences students.

The shape and form of this causal model is hardly unique. Any claim to uniqueness in the foregoing narrative rests on how the critical variables are being operationalized--and with what results. In spite of the fact that the research to date is preliminary, the methods in the process of development, and the theory extant only in outline form, the evidence speaks rather clearly. The psychological environment of the school is a measurable variable, a variable of some importance in predicting motivation and achievement of students.

Somewhat less clear at this point is how one intervenes as a leader to affect the psychological environment and thus influences student personal investment in learning. While it is true that we have little systematic knowledge at this juncture regarding how to do this, we are not without a sense of direction. The construction of the causal model follows guidelines

extant within current motivational research and on social processes at the classroom level. Fortunately, research at the classroom level has progressed to the point where considerable information on intervention is available. There is, as a result, an analogue for building an intervention process. There is a theoretical framework in which one can gather, interpret, and integrate information. Thus our suggestions for intervention are not merely speculative. They represent sound suggestions based on an enlarging body of information.

But clearly there is much left to do. Repeatedly, we have made the point that the present construction of psychological environment is not and cannot remain the final word on the topic. The methodology has promise. The emergence of a theoretical perspective bodes well for integrating pieces of information from diverse researchers in varied locales, working in different contexts. One issue, already very prominent in classroom level research, is that different goal emphases are likely to affect the quality of motivation. In the research reported here, the focus has been on a limited set of motivational indicators. In the evidence reported in this chapter, the focus has been on motivational cognitions and on student achievement as

indexed by standardized achievement tests. That evidence is not unimportant, but it is not the whole story. Goal patterns that influence scores on achievement tests may not influence deep processing of information, encourage good learning strategies, or creativity. We need to specify in greater detail what kind of school psychological environment we want, and, to do that, a broader range of student motivation and personal investment measures must be considered. As noted earlier, first steps have been taken in this regard.

A broader issue of some interest is whether the approach here is really filling the bill so far as studying school culture is concerned. A psychometric approach does not provide the richness of information that qualitative approaches provide. But a psychometric approach provides a technology that can be widely used and broadly useful. It provides information that is replicable and encourages the integration of information from many different quarters. Standardized procedures encourage a group effort in understanding a complex problem and that provides hope for progress in this area of research. Moreover, the focus on goals, motivation, and student investment may be too limiting for some purposes, but one does have to begin somewhere and it

may be argued that this, indeed, is a very good place to begin.

In any event, we conclude with the thought that some progress has been made on a complex question. Perhaps a fitting basis has been laid for an empirically grounded perspective on leadership.

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