# Teacher Community in Urban Elementary Schools:
# The Role of Leadership and Bureaucratic Accountability[1]

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**Abstract**: The purpose of this study is to determine the effect of principal leadership and accountability policies on teachers' sense of community. This study is situated within the research and policy/practice discourse over the importance of schools developing a professional community of teachers who share common values, cooperate in support of these values, and a have sense of mutual accountability as a means of improving student achievement. However, to date, few studies have examined the effect of leadership practices and accountability policies on teacher communities, and these studies do not conceptualize and measure teacher community in line with theories of community. Additionally, there is a pervasive and mostly untested belief by advocates of teacher professionalization that top-down management, standards, and accountability policies are antithetical to teacher communities. Data for this study come from the National Center for Education Statistics' (NCES) Schools and Staffing Survey (1999-2000). A two-level multilevel regression analysis was used with a public school urban elementary (K-5)

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subset of the SASS data. Principal leadership has a very strong positive effect on teacher community—the strongest effect of any policy-amenable variable. Significant principal actions include: recognizing teacher effort and communicating expectations; and a principal's direct efforts to build community among teachers. The effect of teacher classroom control and policy influence is significant, but reduced by measures of principal leadership. Teachers' use of standards is associated with a sense of community, but a somewhat limited measure of school performance-based accountability has no association.
**Keywords**: teacher collaboration; school administration; teacher administrator relationship; school policy; teacher autonomy; elementary schools; and urban schools.

## Comunidad educativa en las escuelas primarias urbanas: El papel del liderazgo y la rendición de cuentas burocráticas

**Resumen:** El objetivo de este estudio es determinar el efecto del liderazgo de los directores/as de escuelas y de las políticas de rendición de cuentas en la percepción de los docentes sobre el sentido de comunidad. Este estudio se alinea con las investigaciones que rescatan la importancia de que las escuelas desarrollen una comunidad profesional donde los/as profesores/as comparten valores comunes, cooperan para mantener esos valores, y tienen un percepción de responsabilidad mutua como medio para mejorar el rendimiento escolar. Sin embargo, hasta ahora, pocos estudios investigaron el efecto de las prácticas de liderazgo y políticas de rendición de cuentas en comunidades docentes, y estos estudios no conceptualizaron y evaluaron comunidades docentes siguiendo teorías sobre comunidad. Por otra parte, hay una la creencia común, y, en general no probada, entre los partidarios de la profesionalización docente que sistemas de gestión verticales, normas y las políticas de rendición de cuentas son antitéticos con comunidades docentes. Los datos de este estudio se obtuvieron del Centro Nacional de Estadísticas de la Educación (NCES) y el Estudio de Escuelas y Personal (SASS) (1999-2000). Un análisis de dos niveles de una regresión multinivel fue hecho con una escuela primaria pública urbana (K-5) de un subgrupo de datos SASS. Este estudio concluye que el liderazgo de el/la directora/a tiene un efecto positivo muy fuerte en la comunidad educativa, el efecto más fuerte que cualquier otra variable política. Las acciones relevantes de un director/a son: el reconocimiento del esfuerzo de los docentes y la comunicación de expectativas; y los esfuerzos directos de los directores/as para construir una comunidad entre los docentes. El efecto de los profesores para controlar las aulas y la influencia de la política son significativos, pero reducidos debido a la acción el liderazgo de los directores/as. El uso de normas por los docentes se asocia a una concepción de comunidad, pero medidas estrechas de rendición de cuentas del desempeño de escolar no tienen ninguna asociación.
**Palabras clave:** colaboración docente; gestión escolar; relación docente- administrador; política escolar; autonomía docente.

## Comunidade docente nas escolas elementares urbanas: O papel da liderança e accountability burocrática

**Resumo**: O objetivo deste estudo é determinar o efeito das principais políticas de liderança e accountability na percepção docente de comunidade. Este estudo está inserido na pesquisa e no discurso da política/prática sobre a importância das escolas desenvolverem uma comunidade profissional de professores que compartilham valores comuns, cooperam para a manutenção destes valores, e possuem uma percepção de accountability mútua como meio de melhorar o aproveitamento do aluno. Entretanto, até agora, poucos estudos investigaram o efeito das práticas de liderança e políticas de accountability nas comunidades docentes, e estes estudos não conceituam e avaliam a comunidade docente conforme as teorias de comunidade. Ademais, existe uma crença comum e, em geral não testada, entre os apoiadores da profissionalização docente de que o controle

de gerenciamento, padrões e políticas de accountability são antiéticas em relação às comunidades docentes. Os dados deste estudo foram extraídos do National Center for Education Statistics' (NCES) Schools e Staffing Survey (1999-2000). Uma análise regressiva em dois níveis foi feita junto ao subgrupo dos dados do SASS de escolas elementares urbanas (K-5). O estudo conclui que a liderança do diretor exerce um efeito positivo muito forte sobre a comunidade docente- efeito este mais forte do que qualquer outra variável de política receptiva. As ações relevantes do diretor incluem: o reconhecimento do esforço do professor e das expectativas de comunicação; e os esforços diretos de um diretor para construir uma comunidade entre os professores. O efeito do controle do professor de sala de sula e da influência da política é significativo, porém reduzido devido a medidas de liderança do diretor. O uso de padrões pelos professores está associado a uma percepção de comunidade, mas uma política de certa forma limitada da accountability com base na atuação não tem associação.
**Palavras-chave:** colaboração docente; administração escolar; relação professor-administrador; política escolar; autonomia docente.

# Introduction[2]

> The conditions of order and tightness in organizations exist as much in the mind as they do in the field of action. (Weick, 1985, pp. 127-128)

This paper contributes to the growing empirical base on developing and sustaining teacher communities and the underexplored role of principal leadership and accountability in this process. Specifically, I examine the relationship between teachers' sense of community[3] and principal leadership behaviors, teachers' use of state standards. and whether or not a school had performance goals and was required to meet them. The latter two are somewhat limited but compelling indicators of bureaucratic accountability (O'Loughlin, 1990).[4] Data for this study come from the National Center for Education Statistics' (NCES) Schools and Staffing Survey (SASS) (1999). There are more recent administrations of this survey. However, they do not include the measures of bureaucratic accountability captured during the 1999 administration, and therefore they do not allow for a test of both school level variation in the imposition or adoption of state content standards and pre-NCLB performance-based accountability. A subset of public urban elementary (K-5) schools and teachers

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[3] I use this phrase purposefully and in place of the more prevalent "teacher professional communities" for both theoretical and empirical reasons that I lay out in more detail later in the paper. However, when appropriate (e.g., referring to previous research), I also use "teacher community" and "teacher professional community". This variable comes from three indicators in the National Center for Education Statistics' School and Staffing Survey. Specifically, they include the degree of agreement on a four point scale (strongly disagree to strongly agree): 1) Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes; 2) Most of my colleagues share my beliefs and values about what the central mission of the school should be; and 3) There is a great deal of cooperative effort among the staff members.

[4] The measures of bureaucratic accountability in the analyses in this paper are not ideal (See appendix A for the specific measures used in this analysis and the methods section for more details on the limitations of these measures). Regardless, I retain this phrase to distinguish from professional accountability that accrues to a close knit social network.

from the SASS data comprise the sample, and a two-level multilevel regression analysis is used to examine the relationship between leadership practices and accountability policies on teachers' sense of community.

This study is situated within the discourse over the importance of schools developing and capitalizing upon a professional community of teachers who share common values, cooperate in support of these values, and have a sense of mutual accountability to the members and values of the community as a means of improving teaching and learning. Previous research has demonstrated that teacher community within schools has a positive effect on student achievement (Newman & Associates, 1996; Lee & Smith, 1996), teacher instructional practices (Galluchi, 2003), organizational learning (Bryk, Camburn, & Louis, 1999), and teacher commitment (Louis, Kruse, & Bryk, 1995; Pang, 2003). The importance of professional learning communities for organizational learning has also been demonstrated in other organizations (e.g., Brown & Duguid, 1991). Coleman and Hoffer's (1987) research also demonstrated that a school-wide sense of community (including school staff, parents, and students), which they found Catholic schools have more of, is associated with reducing racial and socio-economic disparities in student achievement.

However, to date, there are only a handful of research studies that have examined what specific organizational policies, structures, or leadership activities may have an effect on teacher communities, information that may be useful to educational leaders, policy makers, and practitioners.[5] As Hord (1997) noted almost 10 years ago in her review of this literature, "There are… few models and little clear information to guide the creation of professional learning communities" (p. 53). This situation has improved somewhat since her review, as some research has emerged (e.g., Bryk, Camburn, & Louis, 1999; Cannata, 2007; Grodsky & Gamoran, 2003; Ingersoll, 2003; Louis, Marks, & Kruse, 1996; McLaughlin & Talbert, 1993). This research has several limitations, some of which I address with this current study. These limitations include: a lack of generalizability due to non-representative or localized samples (e.g., Bryk, Camburn, & Louis, 1999; Louis, Marks, & Kruse, 1996; McLaughlin & Talbert, 1993); a focus on non-traditional schools (e.g., Cannata, 2007); measures of teacher community that are inconsistent with theoretical work on what social structures constitute community (e.g., Bryk, Camburn, & Louis, 1999; Cannata, 2007; Grodsky & Gamoran, 2003; Louis, Marks, & Kruse, 1996; McLaughlin & Talbert, 1993); underspecified analytical models that do not include important predictors of teacher community, including leadership or accountability (e.g., Cannata, 2007; Grodsky & Gamoran, 2003; Ingersoll, 2003). There have been some studies that have examined the relationship between leadership and teacher community, but in addition to the limitations noted above, these studies include in their regression models very limited variables on leadership behaviors (e.g., Bryk, Camburn, & Louis, 1999; Cannata, 2007; Louis, Marks, & Kruse, 1996). None of the current research tests the effects of accountability measures on teacher community. How teacher community is conceptualized and measured in these studies is also problematic, which I discuss in more detail later in this manuscript.

It is also important to situate this analysis within larger debates about the role of both leadership (top-down vs. bottom-up) and teacher professionalization in developing and sustaining teacher community. Within the related literature on teacher professionalization, there is a pervasive and mostly untested belief that top-down management, standards, and accountability policies are antithetical to teacher community (e.g., Cooper, 1988; Rosenholtz, 1991; Sarason, 1990). There is some question as to the accuracy of this assumption and some research and theory that actually contradicts it, suggesting that leaders play an important role in reducing ambiguity and creating a common culture in organizations that can facilitate professional communities (e.g., Rowan, 1990;

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[5] I use the term "effect" in the traditional statistical sense and do not mean to suggest causation, as the analyses in this paper are based on cross-sectional data.

Schein, 1992; Weick, 1985). The study that is described in this paper is motivated by a desire to better understand the degree to which claims in the teacher professionalization literature that hierarchies in schools should be flattened and teacher control and influence increased (e.g., Darling-Hammond & Wise, 1985) are on target in terms of helping teacher communities to flourish.

In this paper, I address the following questions using multilevel regression with the SASS data. What is the effect of principal leadership activities on teachers' sense of community? What is the effect of content standards and accountability policies on teachers' sense of community? What are the relative magnitudes of the effects of teacher control and influence, principal leadership, and accountability policies on teachers' sense of community?

# Literature Review

## Theoretical Background

A community exists when a group of people share a culture bound by geography or adherence to a similar interest. The somewhat unique culture consists of shared beliefs, values, symbols (e.g., language), meanings, and behaviors. Communities vary in the degree to which their culture is shared and its breadth and depth among members, the degree to which they identify themselves with this culture, and the strength of the cultural norms on the personally held and enacted views and behavior of members. The pull of shared cultural beliefs, values, and norms on individuals can be thought of as a binding mechanism. For the communal culture to be successful in binding its members to this culture, there must be closure of social networks through relatively frequent interaction between community members. This interaction and closure allows for the emergence of personal reputations and therefore a sense of mutual accountability and reciprocity among people in an organization.

Five of the most common features of community from contemporary theorists include shared beliefs, interaction and participation, interdependence, concern for individual and minority views, and meaningful relationships (Westheimer, 1999). Additionally, reciprocity and mutual need tend to be central to many definitions of community (Westheimer, 1999). Etzioni (2003) adds an important missing element to these definitions when he argues that to earn the appellation *community*, groups must be able to exert moral influence and extract compliance from members.

According to Etzioni (2003), there are two primary expectations placed on members of a community—mutual accountability and reciprocity. Members are expected to hold common beliefs, follow community norms, and to (re)enforce the community boundaries. Although these community boundaries are fluid to some degree, they are comprised of the community's culture of shared beliefs, values, norms, and meanings. Members may be sanctioned or alienated for violating community norms. It is other members' obligation to enforce these norms, tied up with a sense of moral duty and their own identity. The need to hold others accountable to community standards is tied to an individual's identity, and linked to a shared identity and organizational or community history (Etzioni, 2003), which suggests that if a person senses that the community's norms are being violated, they themselves are being violated and their whole worldview is being challenged. The response to this sense of identity disequilibrium is often to force the person breaking community norms to conform.

## Defining Teacher Community

In this paper, I build on this theoretical foundation of what constitutes community and the strength of community—the degree to which members feel that there is a shared culture, mutual accountability for enforcing these norms, and reciprocity/cooperation. To represent this essence of

community, I will primarily use the phrase *teachers' sense of community*. I sometimes use of the phrase *teacher community* (or *communities*) when it is more grammatically or contextually appropriate, such as when making comparisons between this and related studies or when specifically referring to other research as this is more consistent with their usage. Both terms are similar to what previous researchers have variously labeled *communities of (instructional) practice*, *professional learning communities*, and even *teacher work groups*.

To identify some of the differences between these terms, I compare how previous researchers have variously conceptualized teacher community with how I argue it should be conceptualized. Although there have been several attempts to develop measures for teacher community, I will only focus on a few that are representative of the field. Louis and Marks (1998) use a definition that identifies five elements of practice as constituting a school-wide "teacher professional community:" shared values, focus on student learning, collaboration, deprivatized practice, and reflective dialogue. Secada and Adajian (1997) include the following elements: a shared sense of purpose with a focus on learning of the subject (math in their case) coordinated effort to improve student learning; collaborative professional learning around the content or instruction, and collective control over curricular matters. Grodsky and Gamoran (2003) integrate these two approaches by adding teacher control to the Louis and Marks (1998) definition.

The primary definitional distinction between previous measures and the one used in the analyses for this paper is that I stick to the core outcomes of community processes (a shared culture, mutual accountability, and reciprocity) in line with theoretical treatments of this topic. Unlike the measures described in the previous paragraph, I do not include organizational structures or policies as part of my conceptualization and measurement of teacher community. Instead, I include them as predictors of teachers' perceptions of the strength of their professional community. I depart from this previous work because I contend that a shared culture that exerts influence on individual values, behavior, and identity may or may not arise from particular organizational structures or policies. For example, a policy that requires teachers to meet regularly in grade level teams may but will not necessarily lead to a strong sense of community. Teacher classroom control and policy influence have been included in previous measures of teacher community. However, again, teacher control and influence may influence teachers' sense of community, but they are not indicators of such community themselves.

**Previous Research on Teacher Community**

Based on her review of the research literature on teacher professional communities, Morrissey (2000) argues, "While research repeatedly underscores the need for more schools to function as learning communities, what is not so clear are the specific actions taken to develop such a community within schools" (p. 34). As previously noted, there have been some studies that attempt to identify and test predictors of teacher community. Table 1 provides an overview of this research. Additional limitations of this research not already noted in the introduction to this paper are detailed in the following sections.

*Table 1*
Previous survey research on predictors of teacher community

| Study | Dependent Variable | Policy Amenable Variables Tested | Method | Results |
|---|---|---|---|---|
| Lee & Smith (1996) | Collective Teacher Responsibility | -Average staff cooperation<br>-Average teacher control<br>-School size (number of students) | ANOVA | Schools with high levels of collective teacher responsibility differed significantly from those with low levels by more than a *SD* for control and by 1 *SD* for cooperation. |
| Louis, Marks, and Kruse (1996) | Teacher Professional Community[1] | Structures:<br>-size<br>-staffing complexity<br>-scheduled planning time<br>-teacher empowerment<br>Human & social resources:<br>-supportive principal<br>-feedback from parents and colleagues<br>-focused professional development | HLM<br>Two separate models: 1 for structures and 1 for human and social resources. | Planning time had the strongest effect in the 1st model, explaining 70.5% of the between-school variance. Empowerment explained 49% and staffing complexity 18%. Size was not significant. In the 2nd model all of these predictors were significant and explained 18, 12, & 34 % of the between school variance respectively. |
| Bryk, Camburn, and Louis (1999) | Teacher Professional Community[2] | -Small school size<br>-Principal supervision<br>-Facilitative principal leadership<br>-Teacher trust | HLM | The strongest predictor was teacher trust. All but school size were significant in their final model. Principal supervision and facilitative leadership both had a positive effect. |
| Grodsky & Gamoran (1999) | Teacher Professional Community[3] | -School size (number of teachers)<br>-School based PD<br>-Non school based PD | HLM | The effect of school size is small but significant. PD only explains .5% of the variance. Non-school based PD is not statistically significant, whereas school based PD with a coefficient of .088 at the teacher level which translates into 14% of a SD increase in professional community and .06 at the school level. |
| Ingersoll (2003) | Teacher to Teacher Conflict[4] | -Teacher social and instructional control in the classroom<br>-Teacher social and instructional policy influence in the school | Multi-level—SAS Proc Mixed (Two separate models.) | In both models, both areas of control were positive and significant, with control over social issues (i.e., discipline and tracking) having a much stronger effect. |

1 Includes indicators for shared norms and values, collective focus on student learning, collaboration, deprivatized practice, and reflective dialogue.

2 Includes indicators for focus on student learning, staff collegiality/collaboration, deprivatized practice, and reflective dialogue, similar to Louis, Marks, and Kruse (1996), but also includes collective responsibility for school operations and improvement, and teacher socialization.

3 Less comprehensive (does not include reflective practice), but includes shared values, collaboration, and teacher influence.

4 Very different measure. Comes from the 1993–1994 SASS, and is similar to the one used in this study. Although labeled "teacher conflict," if direction switch could be teacher cooperation. Two indicators comprise this measure: a teacher's sense of cooperative effort among staff and staff agreement on the central mission of the school.

## Pathways to Teacher Community: Principal Leadership and Employee Accountability

The cultivation of teacher community involves several overlapping and mutually reinforcing processes: the communication or teaching of the organization's culture; buy-in to this culture; reinforcement of the culture's beliefs and norms by teachers who come to attach their own identity to it, and in the process adopt its values, norms, and beliefs; interactions between members increase and broaden, with a resultant growth in shared meanings and language, facilitating flows of information and organizational learning; and an emerging sense of trust and mutual responsibility and commitment among those who have come to identify with the community. In the following sections, I explore some of the research and theory around these processes that may affect teachers' sense of community that I formulate into hypotheses tested for this study and later reported in this paper.

*Previous research on the effects of principal leadership on teacher community.* In general, formal leaders matter. As argued in his review of the research on school leadership, Leithwood (n.d.) explains that the combined direct and indirect effects of school leadership are somewhat small but educationally significant, as it explains about a quarter of the total across-school variation. Importantly, in his conceptual model of how leadership operates indirectly to affect student achievement, he explains that a primary pathway for this impact is through their effect on teacher communities.

Research in education has found that there are substantial differences in the leadership between schools with strong and weak professional communities (Louis, Marks, & Kruse, 1996). However, their index of leadership measures is more about his or her interest in innovation and restructuring, and their sample comes from schools engaged in reforms focused on teacher collaboration. Bryk, Camburn, and Louis (1999) specifically test the effects of principal supervision and facilitative principal leadership on their measure of teacher professional community. Both principal supervision and facilitative principal leadership were positively associated with their measure of teacher professional community. Despite these positive results, the indicators comprising facilitative principal leadership are poorly worded questions, with multiple issues embedded in one survey question, making interpretation difficult.

Louis and Kruse (1995) identified six ways school leaders develop professional community, three of which are particularly relevant to the study described in this paper: *leadership at the center*, which involves a pervasive physical presence, accessibility, sharing leadership, and advancing conversations about teaching and learning; *teacher's classroom support*, which involves the promotion of a climate where instruction is viewed as problematic so that the provision of assistance, from wherever it is needed is available for teachers to improve their instruction; and *a vision of professional community*, based on a "process of communicating ideas, ideals, shared concerns, and interests" (p. 216). This framework provides more specific guidance for practice, but is primarily based on qualitative research.

*Leadership styles and practices conducive to community building.* Given the current organization of schools, where teachers primarily work in isolation as much of their "free time" need for either instructional planning, grading, or additional school duties (Sizer, 1984), it is unlikely that even under the most decentralized conditions, it would be easy for teachers themselves to create the organizational and other conditions necessary for the cultivation of a strong community. Principals have this time, however, and they also have a bird's eye view of the organization that can enable them to focus on the creation of a communal culture. Principals also regularly communicate through formal and informal means with all organizational members. How this access and power is wielded likely has some impact on the cultivation of a common school culture and teacher's sense of

community as evidenced by affiliation with that culture. Youngs and King (2002) point out that the difference between the efforts of principals in schools with strong and weak teacher communities "involve how school leaders enact their roles and the relationships they establish, as opposed to how their roles are formally defined" (p. 648). In other words, their actual behaviors are most important. In the explication of research and theory that follows, I argue that a principal's work to define, communicate, and (re)enforce their vision of the culture of the school through policies and structures that promote substantive interaction with and between teachers, such as professional development or teacher workgroups, generates a sense of solidarity, and supports teachers in achieving this mission.

Gamoran, Secada, and Marret (2000) follow the research of Rowan (1990) and argue that if teachers are faced with complex instructional tasks, they are more likely to interact with other teachers to try to understand and address these problems, beginning to form a professional community. They contend that it is the role of school leaders to help facilitate this problematizing of instruction through professional development or other means, as many teachers may struggle with and therefore avoid more complex instructional approaches. The implication here is that a solely bottom-up approach is not sufficient to create a sense of community for teachers. Rather, it is a process that likely benefits from leadership direction and intervention to overcome the traditional professional culture of schools, which has been characterized by Lortie (1975) and others as isolationist. For instance, Schein's (1992) work clearly points to the role of leaders in developing and shaping the culture and therefore, a sense of community in an organization and explores ways that this can be done through influence over the mission and culture of the organization.

School leaders can potentially influence the development of a coherent and shared organizational culture and therefore, an individual's sense of community, characterized by shared mental schema based on common symbols, values, and norms. Schein (1992) focuses on the role of formal organizational leaders and argues that a leader interested in changing or improving an organization must become a cultural leader, which requires understanding what culture is and how it operates specifically within one's organization. Part of what is important in this leadership process is fostering norms within the community that encourage a sense of mutual accountability, cooperation, and trust within an organization. These characteristics are hallmarks of social capital. Halverson (2003) argues that teacher "professional community is a form of social capital that results, in part, from the work of school leaders to design and implement facilitating structural networks among teachers" (p. 2).

Drawing on the work of Durkheim (1912/1965), Goffman (1967), and others, Collins (2003) has developed a theory of the micro-level functioning of social interaction as it contributes to group affiliation (sense of community). This theory may provide some insight into how a principal can foster teacher community. Of particular interest is Collins' elaboration of the role of interaction rituals (IR), which can be as simple and informal as a chance encounter at the grocery store or as complex and formal as a presidential inauguration, in producing what he labels emotional energy (EE). In cases of successful interaction rituals, high EE is produced, and there accrues a sense of social solidarity and an accompanying set of symbols to which participants ascribe positive meaning. Successful IRs, which produce high levels of EE and social solidarity, in turn drive individual decisions to pursue or avoid certain social situations in the market for EE (IR chains)—they continue to pursue similar IRs where EE was high and bring to these IRs symbols associated with past similar IRs. Translated into the context of teacher communities, it seems likely that such social solidarity would be produced around conjoint activities to plan a successfully executed lesson, solve a problem related to a student or lesson, or similar activities.

The result of such "interaction ritual chains" is a sense of shared culture and its accompanying normative pressures (mutual obligation and reciprocity) around common values related to working toward high levels of teaching and learning. Consequently, there is greater social closure as the networks of teachers begin to become tighter through increased interaction. School leaders can potentially play an important role in this chain to facilitate successful IRs when there may be history or isolationism and a lack of common symbols among teachers. Actions that help to forge common symbols and create a common culture and thereby reduce ambiguity increase the likelihood of successful interactions (Weick, 1985) and a sense of community.

This previous research on leadership conducive to facilitating teacher communities suggests several hypotheses that I test in my analyses. These include the following: leadership activities that directly and actively promote community building, such as informal gatherings, staff development, or team building exercises are likely to promote a sense of community among teachers; leadership activities that promote a common school mission or goals and facilitate achievement of this mission are likely to promote a sense of community among teachers; leadership activities where the principal participates directly with teachers in improving instruction are likely to promote a sense of community among teachers; leadership activities that signal desirable cultural beliefs and practices are likely to promote a sense of community among teachers.

**Bureaucratic Accountability**

As I have previously discussed, no published studies have explicitly examined the effects of bureaucratic accountability on teacher community. Some strongly contend that the standards and performance-based accountability policies implemented in most of the fifty states are harmful to teacher community, teacher commitment, and student achievement. Mathison and Freeman (2003) summarize this view from their review of research of its negative effects in Kentucky—one of the states viewed as an exemplar of standards and accountability policies: "The current standards based reform movement with its clear specification of content, pedagogy, and assessments adds to these demands, increases authoritarianism, and further erodes teachers' sense of professionalism" (p. 7). This negative impact on teachers' sense of professionalism from performance based accountability policy like No Child Left Behind (NCLB) in particular may serve to undermine teachers' sense of community. Under this accountability pressure, the goals and instructional practices being imposed upon them are no longer developed internally from the needs of teachers and their students and therefore, less likely to be shared.  Although not directly about the effect on teachers' sense of community, Cuban's (2009) research in particular goes against the grain to demonstrate that performance-based accountability has done little to alter some of the fundamental aspects of instruction and the slow but steady movement toward more progressive forms of teaching. This finding suggests a neutral effect. Alternately, it is possible that if these accountability measures are strong, rather than divide teachers who have a history of organizing and cooperating for their rights, such measures may actually serve to galvanize teachers to work together to fight against standards and accountability policies. This emergence of a strengthened community under duress has a long history for a variety of ethnic and other place-based or kinship communities (Steinberg, 1989). Although, possibly conducive to community, this reactive approach may be negatively associated with organizational goals as conceived at the management or policy level.

It is also possible that accountability policies may lead to productive and positive actions conducive to a sense of community as Rowan (1990) found in his discussion of related research. Perhaps most importantly, a clear delineation of standards for teaching or learning that most states have produced may help to reduce ambiguity in organizational goals and processes and thereby facilitate the tightening of coupling between member activities and outcomes. Another benefit

would be the development of a common language (symbols) brought about by widely shared or overlapping goals and activities, which is vital for the formation of community. As Weick (1985) points out, such ambiguity reduction may productively feed upon itself, further encouraging interactions and the building of common understanding among teachers. This process would seem to be at the core of developing a strong community. This point is related to the theory of solidarity (Collins, 2003) outlined in the previous section. Through the process of problematizing instruction and forging new common language and goals around instruction, accountability policies forcing teachers to grapple with and apply new content standards may create a stronger sense of community.

As both sides of the possible effect of accountability measures seem equally convincing, I defer assumptions about the direction of the effect and suggest a neutral hypothesis: accountability measures may have either a positive or negative effect on teachers' sense of community.

# Data and Methods

## Data

Data for this study are taken from the National Center for Educational Statistic's (NCES) School and Staffing Survey's (SASS) administration during the 1999-2000 school year. The SASS is one the nation's most extensive surveys of elementary and secondary public, private, and charter schools, gathering information on a range of characteristics of teachers, principals, schools, and school districts through a complex stratified random sample design. Public school data come from a random sample of schools, stratified by state, sector, and school level. After adjusting for over-sampling of minority populations, data are nationally representative for all school and teacher level analyses. Surveys were obtained from approximately 5,465 public school districts, 9,893 public schools, 9,893 public school principals, and 56,354 public school teachers. The unweighted average response rate for the public school, principal, and teacher surveys (the surveys used for the analyses in this paper) is 86.8%. Information about NCES's handling of missing data can be found in Gruber et al. (2002).

The sample for this study is limited to urban elementary (K-5) public schools (n=918) and teachers (n=3,588), although listwise deletion reduces the sample to 3,327 in the analyses. I have chosen to use this subset of the SASS data for several reasons. Restricting the dataset in this way will result in less variability and a more sensitive analysis. Examining variation within only one level of K-12 public schools and within urban communities has the advantage of removing two of the typically strongest predictors of variation in teacher communities in previous research (school level and urbanicity) and thus decreasing the likelihood of confounding effects with school level and locale and making it possible to capture the effects of policy relevant predictors. There is also a benefit to examining only one school level as differences between elementary and high schools are so wide as to prohibit useful policy relevant generalizations. Additionally, there has been less empirical work done at the elementary level. Limiting the data to an urban subset will be useful for similar reasons, but will also help to highlight possible means of boosting levels of teacher community where previous research has demonstrated lower levels of teacher community exist (Coleman & Hoffer, 1987; Corcoran, Walker, & White, 1988; Hord, 1997).

## Variables

*Dependent variable.* I draw on the previous research to some extent for the measure of teacher community in this paper. However, as noted previously, how I define teacher community is more narrowly focused and grounded in theory about community than most previous studies. This measure includes only those indicators that provide evidence of a shared culture and a sense of

obligation to the norms and members of the community in terms of reciprocity/cooperation. It does not include structural or policy indicators, such as teacher control or teacher collaboration policies, as I believe they are necessary but not sufficient measures of the more subjective sense of the strength of community. Such close alignment to the definition of community developed from theory also ensures greater construct validity. Table 2 provides the details of the specific indicators from the SASS used in creating the composite variable for teachers' sense of community.

*Table 2*

Measures of teacher community: Indicators from the School and Staffing Survey

| |
|---|
| Do you agree or disagree with each of the following statements? (Four-point scale— strongly disagree to strongly agree): |
| 1) Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes. (T0308) |
| 2) Most of my colleagues share my beliefs and values about what the central mission of the school should be. (T0309) |
| 3) There is a great deal of cooperative effort among the staff members. (T0311) |
| 4) I make a conscious effort to coordinate the content of my courses with that of other teachers. (T0316)* |

*Note that this indicator is not included in the measure of teachers' sense of community for analyses in this paper due to its poor factor loading (See Table 3).

An exploratory factor analysis was conducted with four potential variables that are closely aligned with the definition of the teacher community. The results of this analysis are contained in Table 3. It is clear from the factor loadings that variable T0316 (teachers coordinating the content of their instruction) does not load onto the single factor emerging from this analysis. It is possible that unlike the other measures, such coordination may represent more compliance with policy than a manifestation of an actual sense of community. Therefore, this indicator has been removed from this index, leaving it with only three indicators. These indicators fit together conceptually and are supported by similar use in the previous literature (See Table 4 for more details). The reliability (Cronbach's alpha) for these three items is .733. The mean of these three items is used to create an index score for each teacher.

*Table 3*

Exploratory factor analysis loadings

| Schools & Staffing Survey | | |
|---|---|---|
| Item Number | Label | Factor Loading |
| T0309 | Agree – colleagues share beliefs | .736 |
| T0308 | Agree – staff cooperation | .704 |
| T0311 | Agree - teachers enforce rules | .649 |
| T0316 | Agree – coordinate content | .289 |

Although this index may have good construct or content validity as demonstrated by its coherence with the definition of community laid out in the theoretical section, it is only consists of three items, and its reliability and validity may be questioned. It is likely that other indicators could be included in this index that would improve its psychometric properties. However, use of the SASS data limit the possibilities to information capture via the surveys, the primary purpose of which was not to measure teacher community. I will attempt to support its use below by further examining its validity and reliability.

Following Grodsky and Gamoran (2003), I also pursue an indirect strategy of construct validity by assessing the degree of correspondence between some of the predictors of teacher community used both in my analysis and those of others listed in Table 4. At least three other studies that have used the same or similar indicators in their dependent variable indices for each of the indicators used in this study. However, as noted in my previous critique of these measures, they also include a number of other indicators that I would argue represent measures of interaction or control, but not a sense of community. Once these structural or policy variables are stripped away, there is an even greater overlap with my measure. For instance, for Louis, Marks, and Kruse (1996), their five-factor professional community index only has two factors that are really related to a sense of community. Of these two factors, I would argue that all but three indicators should be eliminated for construct validity reasons, therefore leaving what would likely turn out to be a single factor with three indicators that have the exact same wording as the indicators used in this study. Interestingly, though, they include the same indicator about coordinating content (T0316) that I removed from the teacher community index due to its low factor loading (see Table 3).

*Table 4*
Items included in the composite measure of professional community[1]

| Variable | Frequencies | | | | Other Studies[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Strongly Disagree | Somewhat Disagree | Somewhat Agree | Strongly Agree | G&G[3] | LMK | S&A | T&M |
| Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes. | 379 | 723 | 1454 | 1032 | X | * | | * |
| Most of my colleagues share my beliefs and values about what the central mission of the school should be. | 129 | 412 | 1735 | 1312 | X | X | * | X |
| There is a great deal of cooperative effort among the staff members. | 203 | 598 | 1534 | 1253 | X | X | | * |

[1] This table is adapted from Grodsky and Gamoran (2003)
[2] Studies are G&G = Grodsky and Gamoran (2003); LMK = Louis, Marks, and Kruse (1996); S&A = Secada and Adaijian (1997); T&M = Talbert and McLaughlin (1994)
[3] X = identical item; * = similar item

These arguments about content validity may be unconvincing as the index may still lack strong validity. Therefore, I attempt to assess its predictive validity by comparison with a study that used the exact same index as a predictor of teacher satisfaction (Sentovich, 2004) and in my own limited OLS regression model. Both results are similar suggesting strong predictive validity for a relevant outcome. First, I briefly review the theoretical model upon which this analysis of predictive validity is based. I then briefly describe the contents of this model and the associated results. Collins' (2003) theory of interaction rituals, discussed previously, is most illustrative here. This general theory can be applied to teachers, in that momentary solidarity and longer term sense of community lead to greater satisfaction and ultimately to decisions to continue teaching in this particular school, although recognizing that there are some constraints such as the availability of other jobs (social situations) and other important factors that may influence satisfaction such as salary or student

behavior. Nonetheless, a teacher's sense of community should be an important predictor in their satisfaction.

Sentovich's (2004) multi-level analysis using the same index of teacher community (albeit labeled collegiality) as the one used in this study found in her very well specified model including most currently hypothesized predictors of teacher satisfaction, that teacher's sense of community was second only to teachers' perception of management in its effect on satisfaction. It accounts for 27% of the variance between schools and 15% of the variance within schools compared to 33% and 24% for administrative support. In a less well specified OLS model, controlling for a teacher's race, degree level, gender, and number of years teaching at their current school, I found that teachers' sense of community was both statistically and practically significant with the strongest standardized coefficient in the model (.474), a standard error of .001, and a p-value less than .001.

Reliability of the teacher sense of community index is assessed in three ways: 1) its alpha (.733), 2) its exploratory factor loadings, which was already noted (See Table 2), and 3) a correlation matrix, whose results are briefly noted here. The correlation matrix of these three indicators reveals that all indicators are positively correlated with moderate statistically significant correlations ranging from .465 to .509.

Confirmatory factor analysis would provide more convincing measures of the goodness of fit of these three indicators. However unfortunately, the fit of the three item index cannot be tested using confirmatory factor analysis because it is just identified. Nevertheless, I present the measures of fit for the initially proposed four item index as they may be instructive and provide some justification for the reliability of this measure (See Table 5). Note that the model chi-square is barely significant at .043, suggesting that the model be rejected. Nevertheless, the overall model chi-square test was a function of the sample size and the large model chi-square value might be just a result of the large sample size of the present study (Bollen & Long, 1993). However, there are several reasons that the chi-square statistic may be misleading and it is suggested by Schumaker & Lomax (2004) that other fit statistics be used, especially in the case where the p-value is so close to the cutoff of .05. In contrast, both the RMSEA (Root Mean Square Error of Approximation), which at .025 is well below the cutoff of .05 (Schumaker & Lomax, 2004). Browne and Cudeck (1993) recommended that RMSEA equal to or less than 0.05 indicates a model with adequate fit. The CFI (Bentler's Comparative Fit Index) of .998 is very close to the upward bound of 1 and above the more stringent cutoff of .95 also suggested by Schumaker & Lomax (2004). Hu and Bentler (1999) also recommend that CFI equal to or larger than 0.95 is an indication of a good fit model.

*Table 5*
Alpha and Proposed One Factor Confirmatory Model
(T0308, T0309, T0311, T0316)

| | |
|---|---|
| n | 3588.0 |
| Alpha | .678 |
| CMIN | 6.276 |
| df | 2.0 |
| PValue | .043 |
| RMSEA | .025 |
| CFI | .998 |

*Predictors.* Detailed information about all independent variables included in the analyses can be found in Appendix A. Their means and standard deviations are in Appendix B, although I do not include teacher level variables in this table as they are group mean centered and means are 0.

Measures of principal leadership and accountability via school requirement for meeting performance goals and teachers adoption of standards are the focus of this research. Principal leadership is captured through SASS's teacher survey, where teachers assess on a four point agreement scale the degree to which they perceive the principal communicates expectations, is supportive, enforces discipline, is kind, recognizes staff for their work, recognizes staff for their work, and talks with teachers about his or her instructional practices, which I label perception of management . Four other principal assessed activities also capture leadership practices: the frequency with which they attempt to build community, engage in joint professional development with teachers, frequency that they promoted the mission of the school, frequency that they supervise staff, and the frequency that they initiate professional development.

I conceptually group together two measures under the broad heading of bureaucratic accountability. However, one of the measures, which I refer to as accountability pressure, is based on an item from the SASS school survey that assess whether or not a school had performance goals and was required to meet them. This variable captures pre-NCLB the effects of performance-based accountability, albeit without any sense of the variation in the severity of any consequences for not meeting these goals, which is a one drawback to these variable. School determined performance goals are also potentially more watered down than current NCLB goals, based strictly on performance on state tests. Nevertheless, this variable likely represents one of the only attempts on a national scale to determine whether there are differences between schools who report having this type of accountability and those who do not. Such an analysis is not currently possible and later administrations of SASS from 2003 and 2007 do not include this measure as NCLB was already in place. The degree to which a teacher reports that state standards guide his or her practice represents accountability achieved in terms of control over the focus of the work of teachers and thus represents an interesting opportunity to assess the degree to which standards adoption are associated with teachers' sense of community.

There are a number of previously tested and hypothesized policies and structures that are likely predictors of teachers' sense of community. For the purposes of this paper, these policy and structural variables are included as controls and will not be the focus of the findings or discussion. These policy and structural variables included in the models are: planning time, collaborative instructional policies, professional development, collaborative professional development structures, and professional development autonomy and utility. Grossman, Wineburg, and Woolworth (2000) cite the lack of time as one of the greatest barriers to the development of teacher communities, and in their limited sample, Louis, Marks, and Kruse (1996) found that scheduled planning time had the largest effect size (.87) of any of the variables that they tested on teacher professional community. Although, there are a number of possibilities for collaborative instructional policies, team and/or interdisciplinary teaching (teaching roles that are interdependent) have been found to be associated with teachers' sense of community (Louis & Kruse, 1995; Louis & Marks, 1998). Louis, Marks, and Kruse (1998) found that "focused professional development," had a positive effect on teacher community, and Grodsky and Gamoran (2003) found that school sponsored professional development has a strong and significant effect on teacher community, in contrast to non-school sponsored professional development which does not. Professional development that actively involves participants in problem solving and joint learning through research, mentoring, and other forms of active collaboration are more likely to have an impact on what teachers learn and believe, and to foster experiences that bond teachers to each other (Hord, 1997). How focused professional development is, which is often linked to how much influence teachers have in determining its substance and method, has been shown to positively affect teacher professional community (Louis, Marks, & Kruse, 1998).

For teacher community, there are a number of explanatory factors other than policies, structures, and leadership that may influence the development of teacher community. These explanatory variables are not typically policy amenable and must be controlled for in analyses as they may explain the variance in teachers' sense of community within and across schools. School size and socio-economic status, through the school's percentage of students eligible for free/reduced lunch were found in prior research to be related to teacher community (Grodsky & Gamoran, 1999) and will therefore be included as controls. Teachers' gender has been found to be a strong predictor of the level of teacher community in other studies (e.g., Louis, Marks, and Kruse, 1996), and I will control for it as well. Although somewhat amenable to policy decisions, teachers' years of experience may influence the level of teacher community and will serve as a control. Whether or not a teacher has a master's degree may also have some influence on their perception of and participation in a teacher community. Unfortunately, the SASS does not include student achievement information at the individual or school level, and therefore, such measures will not be included in the analyses.

**Methods**

The analysis for this research involves two series of staged multilevel regression models applied to SASS data for urban elementary teachers. To test the association between teachers' sense of community and both principal leadership practices and bureaucratic accountability, while controlling for school and teacher characteristics, this anaylsis uses the SPSS/MIXED procedure. A multilevel regression model is the best analysis procedure for the SASS data and for answering the research questions outlined earlier in this paper, as the data is hierarchically organized, with teachers having been sampled within schools, leading to clustering of data and making OLS regression techniques inappropriate; individual teachers sampled within a school share some similarities and are not independent of each other, which leads to a violation of a fundamental assumption in OLS regression—independence of observations (Raudenbush & Bryk, 2002); previous research has demonstrated that teachers' sense of community is affected by both individual teacher level and school level variables; and teacher community is both an individual teacher construct and a community/school level construct–this method will be able to determine how much variance can be explained at each of these levels.

The multilevel analyses used in this study have two levels. The teacher or individual (level-1) is nested within a school level (level-2). The analysis conducted here examines how the individual teacher level outcome (teachers' sense of community) is associated with both individual-level characteristics (e.g., ethnicity, gender, and degree attained) and school-level characteristics (e.g., percent of students in poverty, school size/number of teachers, characteristics of professional development, and the mean of all teacher level variables). The multilevel model on which the analyses are based is an extension of the OLS model. The generic equations below illustrate this relationship (notation according to Raudenbush & Bryk, 2002):

*Individual-level model (Level-1).* Either

$$Y_{ij} = \beta_{oj} + \beta_{1j}(X_{1ij} - \overline{X}_{1j}) + \beta_{2j}(X_{2ij} - \overline{X}_{2j}) + ... + \beta_{mj}(X_{mij} - \overline{X}_{mj}) + r_{ij} \qquad [1.1]$$

Or

$$Y_{ij} = \beta_{oj} + \sum_{k=1}^{m} \beta_{kj}((X_k)_{ij} - \overline{(X_k)}_j) + r_{ij}$$

where, there are *m* level-1 covariates, $(X_k)_{ij}$ is the kth level-1 covariate for teacher *i* in school *j*. $\overline{(X_k)}_j$ is the school mean of *k*th level-1 covariate for teachers in school *j*. $(X_{ij} - \overline{X}_j)$ is the group mean centered individual-level predictor variables. $Y_{ij}$ is the outcome for teacher *i* in school *j*. In the case of this study, the sense of community (Y) of any one teacher (*i*) in any one school (*j*) is

a linear additive function. $b_{0j}$ is the average outcome across teachers within school $j$ holding group-centered covariates equal to 0. $b_{kj}$ is the individual-level predictor coefficients. $r_{ij}$ is individual-level error term with $r_{ij} \sim N(0, \sigma^2)$.

*School-level model (Level-2):*

$$\beta_{oj} = \gamma_{00} + \gamma_{01}(\overline{X}_{1j}) + \ldots + \gamma_{0m}(\overline{X}_{mj}) + \gamma_{0.m+1}(Z_{m+1.j}) + \ldots + \gamma_{0p}(Z_{pj}) + u_{0j} \qquad [1.2]$$

$$B_{1j} = \gamma_{10}$$

$$B_{2j} = \gamma_{20}$$

$$B_{nj} = \gamma_{n0}$$

Or

$$\beta_{oj} = \gamma_{00} + \sum_{k=1}^{m} \gamma_{0k}(\overline{(X_k)}_j) + \sum_{q=m+1}^{p} \gamma_{0q}(Z_q)_j + u_{0j}$$

$$\beta_{nj} = \gamma_{n0}$$

$$u_{0j} \sim N(0, \tau)$$

$(\overline{(X_k)}_j)$ is the group means of level-1 covariates, where there are $m$ group means of level-2 covariates. $(Z_q)_j$ is the $j$th level-2 covariate for school $j$, where there are $p$-$m$ level-2 covariates.

The average sense of community ($b_{oj}$) of any one school ($j$) is the sum of the overall average outcome of individuals across schools holding the other covariate equal to 0 ($\gamma_{00}$), the effect of group means of level-1 covariates $(\overline{(X_k)}_j)$, the effect of level-2 covariates $(Z_q)_j$, and a random error term in the intercept ($u_{0j}$) with $u_{0j} \sim N(0, \tau)$. These equations (1.1 and 1.2) represent the general modeling approach upon which this analysis builds.

It is likely that teacher community does not vary randomly across schools, due to the supposition that certain demographic and structural factors are associated with similar levels of teacher community. Additionally, certain organizational characteristics such as structure or climate have similar influences on persons within the organization, in this case, schools. Therefore, for this and all other models used in the multilevel regression analyses, only the school intercept is allowed to vary randomly across schools and all other level one coefficients remain constant.

For the overall analysis, this paper uses a sequence of staged models for the purpose of calculating the proportion of variance explained by the introduction of variables in the sequence of staged models and comparing the size of coefficients for different variables. This is primarily done to determine if the inclusion of leadership or other predictors mediate the effect of teacher control. To determine the degree to which sense of community is an individual or group level/contextual construct, I calculated the percent of variance for teachers' sense of community at the teacher (level-1) and school (level-2) levels and grouped mean center explanatory variables to determine contextual effects, which has implications for interpretation of both level-1 and level-2 variables

Interpretation of the intercepts and level-1 and level-2 coefficients is as follows. Under group mean centering, the level-1 intercept is the expected value of the outcome variable when all explanatory variables have their group mean value (Bryk & Raudenbush, 1992). More practically, each of the j level-1 intercepts represents the average sense of community for school j. The variance

of the level-1 intercepts is equal to the between-school variance in sense of community. Therefore, the level-2 regression coefficients represent the school level relationship between the school level predictor and the school average sense of community. The level-1 coefficients represent the individual relationship between the teacher level predictors ($X_{ij}$) and individual teachers' sense of community ($Y_{ij}$). Functionally, the interpretations are very similar to those for OLS for the coefficients at level-1. A one-point increase in each teacher level variable (X) leads to a corresponding level-1 coefficient equivalent change in the sense of community for individual teachers. For level-2, a one-point increase in the school level variable (Z) leads to the corresponding level-2 coefficient equivalent change in the average sense of community for each school.

        In this analysis, the level-1 variables are group mean centered, and these same variables are also reintroduced at level-2 as group means. Group mean centering of individual teacher level variables is constructed by computing the individual deviation score, which involves subtracting the teachers' individual score for a particular variable from the average for his or her school. These variables can be interpreted as a teacher's relative standing within his or her school (the group in this case). There are both theoretical and empirical reasons that justify this choice of parameterizing the models. The use of multilevel regression analysis of clustered data allows examination of the effect of context versus individual characteristics on an outcome measured at the lowest level. The importance of context for organizational and school effects research in education has been well established, and one of the primary means of testing the effect of context is through the use of group mean centered level-1 variables (Raudenbush & Bryk, 2002). Kreft, de Leeuw, and Aiken (1994) provide additional reasoning used by theory of action researchers to justify group mean centering, and Hox (2002) grounds this reasoning in testing the "frog pond effect." There are additional empirical reasons for using group mean centering, related to interpretation of the intercept (Hox, 2002) and better parameter estimation (Raudenbush, 1989). As there are several types of centering choices available, for fixed coefficient models like the ones used in this study, group mean centering is the preferred choice as it separates the between-group variation from the within-group variation (Kreft, Leeuw, & Aiken, 1994).

        The models developed for this analysis are very large, which is partly due to the inclusion of both level-1 group mean centered variables and their corresponding group means. This may raise concerns about parsimony. However, Raudenbush (1989) points out that lack of parsimony will matter little when the number of level 2 units is large and there are only a few random coefficients. As the number of level-2 units in this analysis is 934, parsimony is not a concern.

## Findings

        In this section, I attempt to address the previously posed questions and related hypotheses about the relationship between leadership and accountability policies and teachers' sense of community through two staged multilevel regression analyses (see Tables 6 and 7 below for the multilevel analysis results). I review the results first in the order of the sequence of models, and then review the results and provide additional discussion by the major groups of predictors as they are listed in Table 6 and as relevant to the questions and hypotheses posed earlier.

*Table 6*

Multi-level Models for Teachers' Sense of Community

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|---|---|---|---|---|---|---|---|---|
| | *B* | SE | *B* | SE | *B* | SE | *B*[2] | SE |
| **Teacher Level**[1] | | | | | | | | |
| Teacher race (white=1) | -0.07* | .033 | -0.02 | .031 | -0.001 | 0.03 | -0.004 | 0.03 |
| Masters Degree or more | -0.01 | .026 | -0.01 | .025 | -0.02 | 0.03 | -0.0002 | 0.02 |
| Teacher Gender (male=1) | -0.06 | .033 | -0.06 | .031 | -0.02 | 0.03 | -0.03 | 0.03 |
| Years at current school | 0.01** | .002 | 0.01** | .002 | 0.004** | 0.002 | 0.01*** (0.06) | 0.001 |
| *Teacher Control & Influence* | | | | | | | | |
| Teacher Classroom Control | | | 0.09*** | .018 | 0.08*** | 0.02 | 0.04** (0.04) | 0.02 |
| Teacher's Influence on School Policies | | | 0.23*** | .016 | 0.21*** | 0.02 | 0.06*** (0.07) | 0.02 |
| *Facilitating Activities* | | | | | | | | |
| Percentage Planning Time | | | | | -0.001 | 0.002 | -0.002 | 0.002 |
| Research Participation | | | | | -0.02 | 0.03 | -0.02 | 0.02 |
| Scheduled Collaboration Participation | | | | | 0.01 | 0.03 | -0.001 | 0.03 |
| Mentoring Participation | | | | | -0.01 | 0.03 | -0.002 | 0.02 |
| PD In-depth study | | | | | -0.01 | 0.03 | -0.01 | 0.02 |
| PD Perceived Useful | | | | | 0.10*** | 0.02 | 0.06*** (0.07) | 0.01 |
| *Accountability* | | | | | | | | |
| Standards Guide Teacher Practice | | | | | 0.05*** | 0.01 | 0.04** (0.04) | 0.01 |
| *Perception of School Leaders Style and Practices* | | | | | | | | |
| Perception of Management | | | | | | | 0.48*** (0.39) | 0.02 |
| *School Level* | | | | | | | | |
| Percentage Poverty | -0.001 | 0.001 | -0.00 | 0.001 | -0.00 | 0.001 | -0.001 | 0.001 |
| Percentage Minority Population | -0.002*** | 0.001 | -0.002*** | 0.001 | -0.002*** | 0.001 | -0.001* (-0.11) | 0.001 |
| Number of teachers | -0.003*** | 0.001 | -0.004*** | 0.001 | -0.003*** | 0.001 | -0.003*** (-0.20) | 0.001 |
| Proportion of White Teachers | -0.01 | 0.06 | 0.03 | 0.06 | 0.05 | 0.06 | 0.06 | 0.05 |
| Proportion Tchrs with Masters | 0.01 | 0.05 | 0.01 | 0.05 | 0.03 | 0.05 | 0.01 | 0.04 |
| Proportion Male Teachers | -0.27*** | 0.07 | -0.28*** | 0.07 | -0.24*** | 0.07 | -0.24***(-0.14) | 0.06 |
| Mean Years at current school | 0.01** | 0.000 | 0.01** | 0.003 | 0.01* | 0.003 | 0.01*** (0.13) | 0.003 |
| *Teacher Control & Influence* | | | | | | | | |
| Mean Teacher Classroom Control | | | 0.04 | 0.03 | 0.03 | 0.04 | 0.003 | 0.03 |
| Mean Teacher's Influence on School Policies | | | 0.25*** | 0.03 | 0.22*** | 0.03 | 0.08** (0.14) | 0.03 |
| *Facilitating Structures and Practices* | | | | | | | | |
| School Mean percent planning time | | | | | -0.001 | 0.003 | 0.001 | 0.003 |
| Interdisciplinary teaching | | | | | -0.04 | 0.03 | -0.02 | 0.03 |
| Paired or team teaching | | | | | 0.02 | 0.03 | 0.02 | 0.03 |
| Grades subdivided-SLCs | | | | | -0.003 | 0.03 | 0.01 | 0.02 |
| Proportion Research Participation | | | | | 0.01 | 0.05 | 0.03 | 0.05 |
| Proportion Scheduled Collaboration Participation | | | | | -0.004 | 0.07 | -0.07 | 0.06 |
| Proportion Mentoring Participation | | | | | -0.02 | 0.05 | -0.03 | 0.05 |
| Proportion PD In-depth study | | | | | -0.02 | 0.06 | 0.06 | 0.05 |
| PD Autonomy | | | | | 0.04* | 0.02 | 0.04* (0.09) | 0.02 |
| Mean  PD Perceived Useful | | | | | 0.08** | 0.03 | 0.03 | 0.03 |
| *Accountability* | | | | | | | | |
| Accountability Pressure | | | | | -0.05 | 0.04 | -0.05 | 0.03 |
| Mean Standards Guide Teacher Practice | | | | | 0.06* | 0.03 | 0.04 | 0.02 |
| *Leadership Style and Practices* | | | | | | | | |
| Community Building Frequency | | | | | | | 0.05*** (0.15) | 0.02 |
| Joint PD Participation Frequency | | | | | | | 0.01 | 0.02 |
| Frequency Mission Achievement | | | | | | | 0.01 | 0.02 |
| Supervision of Staff Frequency | | | | | | | -0.01 | 0.02 |
| Frequency initiates PD | | | | | | | -0.03 | 0.02 |
| Mean Teacher Perception of Mgmt. | | | | | | | 0.49*** (0.73) | 0.03 |
| Variance Comp. Teacher Level | 0.39 | | 0.35 | | 0.34 | | 0.27 | |
| Percentage Variance Explained | 1.0 | | 11.0 | | 14.0 | | 31.0 | |
| Variance Comp. School Level | 0.07 | | 0.06 | | 0.06 | | 0.04 | |
| Percentage Variance Explained | 26.0 | | 36.0 | | 38.0 | | 60.0 | |

*=<.05; **=<.01; ***=<.001

1 - All teacher level variables have been group mean centered. 2 – Standardized coefficients are included for significant effects in parentheses.

**Percentage of Variance in Teachers' Sense of Community between Schools**

Prior to the analyzing any multilevel regression results, it is necessary to determine the extent to which there is sufficient variance between schools to conduct an analysis where one of the primary questions is the extent to which school level (level-2) variables influence teachers' sense of community, which is measured at the teacher level (level-1). Using the estimates of covariance parameters from the null model (not presented Table 6 or 7), it is possible to determine the amount of variation in teachers' sense of community between and within schools. From calculating .0897/.0897 + .3895, we find that 18.7% of the variance of teachers' sense of community lies between schools, and thus approximately 81% (which includes measurement error) is within schools.

This finding is fairly consistent with previous research that has used representative samples of teachers. Louis, Marks, and Kruse (1996) reported that 40% of the variance in professional community is between schools. However, the sample that they used as previously noted is drawn from schools engaged in ambitious reform, and is therefore not representative, but biased toward schools more likely to have strong teacher communities necessary to implement these reforms. In a study where Rowan, Raudenbush, and Kang (1991) examined the variance between schools of several contextual variables, they found that 16% of the variance of teacher cooperation occurred between schools. Talbert and McClaughlin (1994) found that 25% of the variance in teacher community was between schools in their sample of 16 secondary schools. Grodsky and Gamoran (2003) found that 19.4% of the variance is between schools in the 1993–1994 sample of SASS public and private school teachers. Although only about 19% of the variance in the sample for this study lies between schools, it is likely sufficient for the purposes of the analyses, although it does open to question the extent to which teachers' sense of community is a school level construct rather than an individual teacher one. It is also possible that there are limitations in the data to be able to reliably estimate this measure at the school level, and/or the model for measuring teachers' sense of community could have been mis-specified. I address this issue further in the limitations section at the end of this paper.

*Model 1.* This model includes the primary teacher and school level controls for the analyses. As a group, they account for 26% of the between school variance of teachers' sense of community, but only 1% of the within school variance, suggesting a primarily contextual effect of these variables. In other words, characteristics of the faculty as a whole such as the proportion of male teachers within a school have more of an effect on teachers' sense of community than whether or not an individual teacher is male or female. White teachers appear to have less of a sense of a community than non-white teachers. As the proportion of male teachers in each school increases by one percentage point, average sense of community goes down by almost three-tenths of one-point on the four-point scale, which is a very substantial effect. The number of years that a teacher has been in a school does appear to have a very small individual contextual effect, as this variable is significant at both levels—a one-point increase in the average number of years for teachers in a school leads to a 0.008 change in the average sense of community for each school, a very small change substantively. In terms of strictly school level effects, two variables appear to be significant predictors of teachers' sense of community, the percentage of the student population in the school that is non-white and the total number of teachers in the school. In terms of the percentage of minority students, the coefficient demonstrates that as the percentage of minority students in the school increases by 10%, teachers' sense of community drops by two-hundredths of one-point on the teacher community scale. The number of teachers in a school, which is a proxy for school size, also has a significant and negative effect on teachers' average sense of community. For every 10

additional teachers in a school, teachers' average sense of community drops by only three-hundredths, which again is not very substantial, but worth noting.

*Model 2*. This model only adds the individual and school-level effects of teachers' perceptions of the degree to which they have control over their classroom policies and their influence over school-wide policies. As both levels of these effects have a strong effect, they add to the percentage of variance explained at the teacher level by an additional 10% and at the school level by an additional 10%. Teacher control clearly appears to be an individual teacher effect as it is not significant at the school level. However, the effect at the teacher level is only moderate. For a one-point increase in the five-point control scale, teachers' sense of community increases by nine-hundredths of one-point. There is a marginally greater school level effect of teachers' perception of their influence over school policy on teachers' sense of community, as it is a strong predictor at both level-1 and level-2. As a school's mean perception of teacher influence on policy increases by one-point on a five-point scale, teachers' sense of community increases by a quarter of one-point on this four-point scale. The effect of teacher race does drop by about a fourth and is no longer significant, suggesting that teachers' perception of classroom control and influence, individually and as means for each school covaries with whether or not a teacher is a member of a minority race group.

*Model 3*. Model 3 introduces a number of variables that represent teacher activities in collaborative structures or the structures themselves and measures of whether or not a school had accountability goals and was required to meet them and the degree to which a teacher feels that he/she had adopted state standards. As a whole, all of these variables add little explanatory power to account for the variance in teachers' sense of community at either level-1 or level-2, 3% at level-1 and 2% at level-2. What's most striking about this model is the number of structures and teacher participation in these structures that despite been claimed in previous research and theory to have an effect on teacher community, are not significant. Professional development utility appears to be primarily an individual teacher effect. As teachers feel that their professional development increased in utility by one-point on a four-point scale, teachers' sense of community increased by one-tenth, which is a moderate and notable effect.

Importantly in terms of the focus of this study, the degree to which teachers felt that their practice was guided by standards appears to be a marginally greater school level effect, suggesting that as the average perception of standard compliance increases in a school by one-point, the average sense of community in the school increases by .06, which is not a very substantial effect.

*Model 4*. Model 4 represents the full model, testing all of the hypothesized effects, primarily adding variables that capture the effects of principals' practices as reported by the principals themselves and as perceived by teachers of their own principal. These variables account for more of the variance than any of the other models. At the teacher level, they account for an additional 17%, and at the school level, they account for an additional 22%. Importantly, the effect of principal leadership appears to be more important to teachers' sense of community than their perception of classroom control and policy influence. Not only do these leadership regression coefficients account for more of the variance, but they also significantly reduce all of the relevant teacher classroom control and policy influence variables, in some cases, reducing them by more than half. They also account for the predictive power of teachers' perception of professional development utility at both the individual and school level, where for the school mean, the effect is rendered insignificant. The effect at the teacher and school level are very close, but the effect at the school level is marginally stronger. A one-point increase in a teachers' average perception of principal leadership on a four point scale leads to approximately a half point change in the average sense of community for each school. Not surprisingly, the frequency with which a principal attempts to build a community among teachers has a statistically significant, although fairly weak effect on teachers' sense of community

The size of the school, as indicated by the number of teachers in the school, is predictably significant and negatively correlated with teachers' sense of community. Compared to other covariates, it has the third largest impact on teachers' sense of community. This finding is consistent with that of Bryk, Camburn, and Louis (1999) and Grodsky and Gamoran (2003). This finding can be explained in terms of the limits on interaction and familiarity with others within large organizations. As the number of teachers increases in a school, it is more difficult for them to come to know and interact with other teachers, and therefore, the sense of connectedness and opportunity for cooperation with these other teachers diminishes.

## Discussion

In the next several sections, I discuss the findings from Table 6 further by making comparisons among models by directly addressing the research questions and related hypotheses. I also attempt to tie my findings to those of previous research and theory in an effort to account for the various relationships.

### Accountability Measures

The effect of accountability policies that require schools to set and meet performance goals on these schools is not statistically significant. These findings suggest but do not confirm that fears and proclamations that such policies will limit teacher community (e.g., Cooper, 1988; Rosenholtz, 1991; Sarason, 1990) are unfounded. In other words, policies that hold schools accountable for meeting performance goals in urban elementary schools may not have a deleterious effect on teachers' sense of community. However, the negative direction of the relationship is consistent with opponents of accountability and suggests that additional research needs to be conducted to make a more definitive determination of its effect on teachers' sense of community.

On the other hand, the degree to which a teacher reports having adopted state imposed content and skill standards is significant and positively related to teachers' sense of community at both teacher and school levels, except for in Model 4 at the school level. Both coefficients drop a bit between models 3 and 4 suggesting that leadership mediates this effect. In the final model, for every point increase from the school mean on a five-point scale of teachers' assessment of their implementation of standards, their sense of community increases by 0.035 on this four-point scale. As suggested previously, there are reasonably good arguments to support hypotheses of both a negative and positive influence of bureaucratically imposed measures such as standardization of teaching and learning content. In this case, it is clear that for urban elementary teachers, the implementation of standards is weakly but significantly associated with their sense of community. This finding supports theory that suggests that organizational practices that serve to reduce ambiguity, clarify goals, and provide a common stock of symbols may be beneficial in fostering a sense of community within the workplace (e.g., Weick, 1985).

There are several likely explanations of this relationship between teachers reported adoption of standards (essentially, a proxy for implementation of this policy) and their sense of community. One that I have already laid out is that under situations of outside demands to alter their core practice to conform to expectations from the state and/or district, teachers may respond by closing ranks in resistance to the policy, and thereby increasing their sense of connectedness and community. It is also possible that there are positive or constructive interpretations to this finding, rather than the interpretation that community forms in the context of perceived adversity. In 1999–2000 when this survey was being administered, every state except Iowa had set or was in the process of setting common academic standards for students and yet many states were at the beginning stages

of having schools and districts implement these standards (American Federation of Teachers, 1999). Consequently for this sample, interacting with colleagues to understand and implement standards may have led to a feeling that teachers were cooperating more, and it also likely developed a more coherent set of values around the core mission of a school in which these cooperating teachers worked.

This process possibly began to develop what Lortie (1975) called a "shared technical culture." Little (1982) argues that "the more concrete the language known to, and commanded by teachers and others for the description, analysis, interpretation, and evaluation of teaching practice, the greater the probable utility of the interaction and the greater the potential influence on teachers' practices" (p. 334). Standards provide such common language and what Weick (1985) would label "shared meaning." Weick in particular would likely see such a process as significantly reducing the ambiguity present in the loosely coupled system of a school by fostering shared goals and common symbols. These newly acquired or reaffirmed shared goals and symbols further might facilitate increased cooperation and ambiguity reduction among teachers by making future interaction more possible, thereby tightening the coupling of the organization. This coupling and related sense of community is potentially being facilitated by the hierarchical actions of forcing teachers to grapple with and implement these bureaucratic measures to control and limit their practice. The conclusion to be drawn from this finding is that top-down policies that encourage (re)examination of the core practices may foster a sense of community among teachers by providing them the opportunity to interact and build a common store of language, practices, and develop a sense of trust and mutual respect and accountability.

**Teacher Control and Influence**

Teacher classroom control and school-wide policy influence have strong and statistically significant effects on teachers' sense of community at both the teacher and school levels, except for classroom control at the teacher level. Ingersoll (2003) also found similar effects of teacher classroom control and policy influence on teacher cooperation/conflict, albeit with a less specified model. However, as he put classroom control and policy influence into separate models, it is not possible to get a relative sense of the impact of control versus influence on teacher community, which I am able to do here. Model 2 shows that the impact of policy influence on teachers' sense of community is almost nine times that of control over classroom issues at the school level and more than two times at the teacher level. Both forms of control/influence account for 10% of the teacher level variance and 10% of the between school variance. The reduction in the strength of the control and influence variables when professional development and standards adoption are introduced in Model 3, and the very sharp reduction (by more than half) when teacher's perception of leadership is introduced in Model 4 raises important questions about the preeminence attached to control and empowerment within the teacher professionalization literature.

A primary goal for teachers, as for all humans, is to achieve a sense of social solidarity with fellow teachers and students, and this need for solidarity drives human behavior and decision-making (Collins, 2004) or achieve a sense of belonging (Slavin, 2003). Control and influence likely facilitate teachers' attempts to fulfill these basic drives. Therefore, it follows that teachers who report greater levels of control and influence have a stronger sense of community. However, I would suggest that this analysis demonstrates that if the principal is satisfying this need for solidarity and sense of community through the clarity provided by the goals, symbols, and professional and organizational values and norms that they attempt to instill as cultural leaders, then teacher control may be less important in this regard.

**Principal Leadership**

Overall, the indicators of principal activities and approaches to leadership account for an additional 17 % of the variance at the classroom or teacher level and an additional 16% of the variance at the school level—the most of any group of variables (Model 4). Teachers' perception of management practices and the frequency with which a principal initiates community-building activities drive most of this effect. It seems reasonable to expect that when a principal believes that he/she is attempting to support a teacher community that there is a corresponding positive effect on teachers' sense of community. The frequency of community building activities by a principal has a statistically significant but small effect on teachers' sense of community. As a principal moves one-point on the frequency scale for community building, teachers' sense of community goes up .05 or less than one tenth of one-point on the four-point teacher community scale. This is a vague and highly subjective indicator, and we do not know exactly what principals think are community-building activities from the survey—we only know the frequency. What principals think works to build a community may vary widely and may certainly not be an activity or practice that is conducive to community-building. However, this positive correlation suggests that on average, principals in urban elementary schools may be reasonably adept cultural leaders. When they think they are doing something to promote community building, there is an associated increase in the sense of community among teachers in their school. Community building activities involve highly skilled and nuanced interpretation of social cues and situations and correspondingly astute actions. It involves the work of a cultural leader (Schein, 1992), or one who is aware of the organization's culture and of his or her actions on that culture, especially as it affects employees' sense of community and commitment to the organization.

Several other activities, hypothesized to have a positive effect on teachers' sense of community have no significant effect in the final model. These include joint professional development participation, mission building activities, supervision of teachers, and the frequency with which a principal initiates professional development. The standard errors are low enough for the first three of these covariates that we can safely presume that for urban elementary teachers, there is no association between these principal initiated activities and teacher community. For the frequency with which a principal initiates professional development, more research is needed to rule this indicator out as a statistically significant predictor. It is somewhat surprising that these activities, which arguably can be useful in establishing a clear and coherent culture for a school and thus facilitating teachers' sense of community, have no independent association with teachers' sense of community. Most importantly, these are activities through which a principal can discuss issues of instructional practice and make clear his or her expectations regarding the culture of the school for teachers. Examination of the effects of the management perception variable may help to explain why there is no effect of these principal activities. Briefly, these non-significant activities are from items in the principal survey and as previously noted, they simply measure the frequency of an activity, but not its perceived usefulness or impact. The management perception variable[6] on the other hand is taken from items in the teacher survey and captures teachers' assessment of the effectiveness of these types of activities.        The very robust effect of the teachers' perception of management variable at both levels suggests that what matters is not the frequency of principal activities to build community, but how these and other actions are perceived by teachers. This variable is an averaged index of six indicators from the teacher survey, where they have rated on a four-point scale the degree to which the principal communicates expectations, the principal is supportive, the principal is kind, the principal recognizes staff for their work, and the principal talks

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[6] The correlations of the six indicators that comprise this index range from .413 (Principal discusses practices and Principal is supportive) to .636 (Principal communicates expectations and Principal is kind).

with teachers about his or her instructional practices. The results from Model 4 indicate that at the teacher level, for every one point increase in agreement for a teacher of their perception of the principal's management from the school mean, teachers' sense of community goes up by about half of one-point on a four-point scale—a very substantial result for educational research. The effect of the school mean is similar to the level one effect. This variable accounts for somewhat less than 17% of the within school and 22% of the between school variance.

As this effect is so substantial and is comprised of several related but somewhat disparate indicators, it is worth disentangling the effects of individual indicators to get a better sense of what leadership practices matter the most in terms of their association with teachers' sense of community. To pursue this aim, I have run a series of regression models that include all of the community, school, and teacher controls from the previous models in Table 6, and then I test the effect of each of the indicators comprising the management perception index individually. I chose not to use an additive staged approach, as the overlap between the indicators would make interpretation difficult since some of them are highly correlated. The results are located in Table 7.

The results from these additional regression analyses, listed in Table 7 reveal that the individual indicators that comprise the perception of management index all have standardized coefficients stronger than any of the other covariates in the four models listed in Table 6, except of course for the management index. The results for each indicator at both the teacher level and the school mean level are fairly close, suggesting that there is both an individual and group effect. Comparison of t-values reveals that the teacher level effect of the principal recognizing the staff for their work has the strongest effect of any of these measures (Model 5). The school mean of whether or not a principal is supportive has the weakest effect (Model 2).

As there are limited findings in the research literature on the effects of principal leadership on teacher community, the effects of all of these specific variables do not have a specific reference to which to compare the effects. However, Louis, Marks, and Kruse (1996) did test out the effects of a variable for principal support, and found similar results. They report that a supportive school principal accounted for 18% of the between school variance, whereas, the similar variable used in this study accounted for an additional 12% of the between school variance, and therefore a somewhat less robust effect at this level.

*Table 7*
## Multi-level Models for Teachers' Sense of Community: Leadership Influences

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE | B | SE |
| **TEACHER LEVEL** | | | | | | | | | | | | |
| *Teacher Characteristics* | | | | | | | | | | | | |
| Teacher race (white=1) | -0.04 | 0.03 | -0.05 | 0.03 | -0.05 | 0.03 | -0.03 | 0.03 | -0.04 | 0.03 | -0.03 | 0.03 |
| Masters or more | 0.01 | 0.02 | -0.003 | 0.02 | -0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.004 | 0.02 |
| Teacher Gender (male=1) | -0.02 | 0.03 | -0.07* | 0.03 | -0.05 | 0.03 | -0.05 | 0.03 | -0.07* | 0.03 | -0.07* | 0.03 |
| Years at current school | 0.01*** | 0.002 | 0.01*** | 0.002 | 0.01*** | 0.002 | 0.01*** | 0.002 | 0.01*** | 0.002 | 0.004** | 0.002 |
| *Teacher Perceptions of Management* | | | | | | | | | | | | |
| Principal Communicates Expectations | 0.33*** | 0.02 | | | | | | | | | | |
| Principal is Supportive | | | 0.27*** | 0.01 | | | | | | | | |
| Principal Enforces Discipline | | | | | 0.31*** | 0.01 | | | | | | |
| Principal is Kind | | | | | | | 0.36*** | 0.01 | | | | |
| Principal Recognizes Staff | | | | | | | | | 0.34*** | 0.01 | | |
| Principal Discusses Instructional Practice | | | | | | | | | | | 0.25*** | 0.01 |
| **SCHOOL LEVEL** | | | | | | | | | | | | |
| Percentage Poverty | -0.001 | 0.001 | -0.000 | 0.001 | -0.001 | 0.001 | -0.001 | 0.001 | -0.001 | 0.001 | -0.001 | 0.001 |
| Percentage minority population | -0.002*** | 0.001 | -0.002*** | 0.001 | -0.001** | 0.001 | -0.002*** | 0.001 | -0.001*** | 0.001 | -0.002*** | 0.001 |
| Number of teachers | -0.004*** | 0.001 | -0.004*** | 0.001 | -0.003*** | 0.001 | -0.004*** | 0.001 | -0.003*** | 0.001 | -0.002*** | 0.001 |
| Mean Teacher race | 0.05 | 0.052 | -0.003 | 0.05 | -0.01 | 0.05 | 0.04 | 0.05 | 0.06 | 0.05 | 0.07 | 0.05 |
| Mean Masters Degree + | 0.01 | 0.04 | -0.001 | 0.05 | 0.03 | 0.04 | -0.001 | 0.04 | -0.01 | 0.040 | 0.01 | 0.04 |
| Mean Teacher Gender | -0.22*** | 0.06 | -0.30*** | 0.07 | -0.28*** | 0.06 | -0.24*** | 0.06 | -0.26*** | 0.06 | -0.27*** | 0.06 |
| Mean Years at current school | 0.01* | 0.003 | 0.01** | 0.003 | 0.01** | 0.003 | 0.01*** | 0.003 | 0.01*** | 0.003 | 0.01** | 0.003 |
| *Teacher Perceptions of Management—School Means* | | | | | | | | | | | | |
| Principal Communicates Expectations | 0.32*** | 0.02 | | | | | | | | | | |
| Principal is Supportive | | | 0.26*** | 0.02 | | | | | | | | |
| Principal Enforces Discipline | | | | | 0.34*** | 0.02 | | | | | | |
| Principal is Kind | | | | | | | 0.38*** | 0.02 | | | | |
| Principal Recognizes Staff | | | | | | | | | 0.40*** | 0.02 | | |
| Principal Discusses Instructional Practice | | | | | | | | | | | 0.29*** | 0.02 |
| Variance Component Teacher Level | 0.33 | | 0.34 | | 0.33 | | 0.31 | | 0.31 | | 0.34 | |
| Percentage Variance Explained | 15.0 | | 14.0 | | 16.0 | | 21.0 | | 21.0 | | 13.0 | |
| Variance Component School Level | 0.05 | | 0.06 | | 0.05 | | 0.05 | | 0.04 | | 0.05 | |
| Percentage Variance Explained | 48.0 | | 38.0 | | 50.0 | | 50.0 | | 60.0 | | 44.0 | |

*=<.05; **=<.01; ***=<.001

**Study Limitations**

There are two primary limitations to this study that need to be considered as they may impact the validity of the findings. They include a dependent variable measuring teachers' sense of community that includes only three indicators and thus may lack adequate validity and reliability and the finding that only 18.7% of the variance lies between schools, throwing into question the degree to which teachers' sense of community is a school-level construct. It is possible, that due to the constraints of using the SASS data, the dependent variable may be mis- or underspecified. Although I argue the indicators used in the measure map well onto the theory of community, it is likely that other indicators along similar dimensions to the degree of shared culture, mutual accountability, and reciprocity/cooperation would improve the validity and reliability of this measure. Consequently, this misspecification could undermine both construct and statistical conclusion validity. In terms of the later, this would occur by biasing estimates of the relationships between my primary constructs, thereby threatening both internal and external validity (MacKenzie, 2003). In regards to the low between school variance, it is possible that there was substantial measurement error in the school level measures. Even though the Cronbach's alpha at the individual teacher level was .73, suggesting a reasonable reliability, the reliability of the school-level estimates (intraclass correlation) was only .43. This could mean that standard errors of the school level estimates could be inflated along with estimates of between school variance.

# Conclusions

The results of the analysis in this study suggest that school leadership is an important predictor of teachers' sense of community and that bureaucratic accountability, at the very least, does not appear to have a negative effect. State initiated bureaucratic accountability to impose instructional standards on teachers has a positive relationship with teachers' sense of community. Schools who report being held accountable for performance goals appear to be no different from schools who report not having this type of accountability in terms of their teachers' sense of community, which has implications for critics of NCLB performance-based accountability. However, this finding requires additional research given the limitations of the measure noted previously.

Principal activities to promote a sense of community have a statistically significant although not particularly strong effect on teachers' sense of community, suggesting that principals have an understanding of what builds community among teachers. Teachers' perception of the leadership of their principal in terms of whether or not he/she communicates expectations, is supportive, enforces discipline, is kind, recognizes staff for their work, and discusses instructional practice have a very strong and statistically significant effect on teachers' sense of community. Teachers' perception of principal leadership has the strongest of any policy amenable effect on teachers' sense of community. This relationship is not an artifact of being an index of several indicators as additional analyses reveal that the individual indicators all have similarly strong effects. Principal community building efforts and teachers' perception of principal management account for a large amount of the effect of teacher control and policy influence—about half of the effect of classroom control and three-fourths of the effect of policy influence. Principal community building and teachers' perception of principal management also account for about half of the effect of the perceived usefulness of professional development and about 20% of the effect of whether or not teachers teach to state standards.

From these results, it is clear that leadership matters for teachers' sense of community, and compared to several other policies hypothesized to be associated with teacher community, teacher perceptions of principal leadership seems to matter the most. That the effect of this leadership variable is based on measures of teachers' perceptions rather than more direct measures of principal activities, such as the frequency with which they conduct supervision for instance, is important. This finding suggests that it is not what principals do or say they do, but how what they do is perceived by teachers, which in essence is likely just a better means of capturing their actual practices. This finding also better captures the effect of what they do as it is associated with teachers' sense of community and as such may be a promising way to study the association between principal leadership and teacher community in the future with additional variables included from theoretical models of community building and social capital. It would also be interesting for future research to investigate exactly what principals do that they believe builds teacher community and study the effect of these specific activities.

In light of these substantial effects of principal leadership on teachers' sense of community, it is worth revisiting the theory underlying the relationship between organizational leaders' action and a sense of community among employees. Generally, there seem to be two pathways through which leaders can operate to develop and sustain community: the role of leader in providing cultural leadership through a wide range of actions that signal and facilitate a shared professional culture; and the role of the leader in promoting a positive climate that addresses the emotional needs of teachers.

A principal can play a role in helping to provide coherence and clarity to community beliefs, values, and norms by their actions—a cultural leader in Schein's (1992) terms. These actions include both direct and indirect means to provide for the development of common symbols (e.g., language or artifacts) to facilitate cultural coherence and mark the boundaries of this professional culture in the school through actions that recognize the productive activities of teachers, communicate expectations, and discuss instructional practice. Important among these activities is the principal's role in providing rewards and communicating expectations for teacher behavior, particularly around instructional issues, which provide an anchor to a teacher culture. These actions, particularly the ability to provide rewards, have been recognized by researchers in business organizations as one of the essential activities that a leader can enact to shape a culture (e.g., Deal & Peterson, 2003; Schein, 1992). A principal that consistently rewards teachers for their effort not only has happier teachers who likely exert more effort as they feel appreciated, but they likely have a clearer sense of what is expected of them in terms of their behavior and what should be valued within the school organization.

Collins (2004) work on the success of interaction rituals to create a sense of solidarity among participants is also instructive here. Principals are in a unique position to enact such school-wide interaction rituals through faculty meetings, professional development days, and other activities. They are also uniquely located in the planning and conduct of these activities to help to create successful rituals that foster shared symbols and emotional energy, both of which will contribute the tools necessary to foster ongoing localized interaction rituals and a sense of school-wide community among teachers beyond these immediate events.

The work of Fullan (2002) and Kouzes and Posner (2002) help to illustrate the second pathway noted above—the role of the leader in promoting a positive climate that addresses the emotional needs of teachers. They argue that leaders must attend to the heart and soul of an organization as positive interpersonal relationships between employees are central to organizational success. Similarly, the analyses in this paper indicate that \the principal who is kind and rewards teacher efforts has a strong positive effect on teachers' sense of community. Although knowing that there is a relationship does not explain the process of how leaders, who attend to the emotional side

of organizational operations, promote a sense of community. Research has demonstrated that demoralized employees are more likely to be in conflict with each other, potentially undermining a sense of community (Baron, 1988). It is likely that a principal who attends to promoting a positive climate and good interpersonal relations between all employees is more likely to have a group of teachers that is happy (not demoralized), as leadership has been clearly demonstrated to impact teacher satisfaction (Pang, 2003: Sentovich, 2004). Employees are also more content when there is clarity in terms of what is expected of them and how to measure success (Rowan, 1990). Employees are happy because they feel that their work is appreciated (Kouzes & Posner, 2002). This chain of causation from leadership to contentment to a sense of community appears logical, but is not part of the analysis in this paper, and therefore, future research could help test this relationship.

The finding in this study that the use of imposed state standards (a form of bureaucratic accountability) by teachers is positively associated with teachers' sense of community is in contrast to many advocates of professionalization of teachers' work who have focused on increasing teacher control and reducing bureaucratic accountability. Critics of such measures have predicted negative effects would emerge from such top-down measures, including increased alienation (discontentment) and turnover (e.g., Darling-Hammond & Wise, 1985; Jones, Jones, & Hargrove, 2003; Smith, 1991). The likely answer for why such a bureaucratic mechanism positively effects teacher community emerges from two areas previously discussed in this paper: First, it provides coherence and shared symbols (language) around which teachers can come together and increase their cooperation and feel on a similar path with other teachers. In addition, implementing standards in most schools and districts has been accompanied by a great deal of focused professional development (Swanson & Stevenson, 2002), facilitating the development of shared symbols and artifacts. Having to enact standards in schools has created a problem of practice, which Gamoran, Secada, and Marret (2000) argue helps to foster a teacher community. Having greater clarity in terms of the operative goals and procedures has also been linked to reducing the ambiguity present in an organization that may limit worker interaction (Weick, 1985), and thereby a sense of community.

I am not suggesting that the findings from this study demonstrate that teachers' control, policy influence, and leadership do not matter, but that they do not appear to matter as much to fostering teachers' sense of community within the current model of public schooling, as principal leadership and bureaucratic approaches to standardization. But instead of an either/or approach, similar to Hoy and Sweetland (2001), I suggest that what is needed is an enabling bureaucracy that understands how to promote a coherent culture through community building activities such as consistent reforms, providing a sense of order and reducing ambiguity, supporting teachers, and handing over leadership and control to teachers in areas where it may matter the most, such as in professional development activities. As Hoy and Sweetland (2001) note about the research on bureaucratic mechanisms in organizations: "The dark side reveals a bureaucracy that alienates, breeds dissatisfaction, hinders creativity, and demoralizes employees. The bright side shows a bureaucracy that guides behavior, clarifies responsibility, reduces stress, and enables individuals to feel and be more effective" (p. 297). In this way, a sense of community will more likely be fostered among teachers, and all of the positive outcomes associated with a strong communal culture will more likely accrue to students within these schools.

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Appendix
Subsidiary information

*Table A-1.*
Definitions of Measures Used in the Multi-Level Regression Analysis

| | |
|---|---|
| TEACHER LEVEL[7] | |
| Teacher race (white=1) | Dichotomous--1=white and 0=minority |
| Masters Degree or more | Dichotomous--0=bachelors degree or less and 1=master's or above. |
| Teacher Gender (male=1) | Dichotomous--1=male and 0=female |
| Years at current school | Number of years a teacher has been at a current school |
| *Teacher Control & Influence* | |
| Teacher Classroom Control ($\alpha$=.774) | Mean of teacher rated control Over: Selecting Materials, Selecting Content, Selecting Technique, Evaluating Students, Discipline, Homework. 1=No Control, 5=Complete Control. |
| Teacher's Influence on School Policies ($\alpha$=.825) | Mean of teacher rated teacher school-wide influence over setting discipline policy, determining inservice PD content, hiring new teachers, deciding on budget expenditures, evaluating teachers, establishing curriculum, and setting performance standards. 1=No Control, 5=Complete Control. |
| *Facilitating Activities* | |
| Percentage Planning Time | Percentage of a teachers time allotted for planning |
| Research Participation | Dichotomous--participated in individual or collaborative research on a topic of interest to you professionally in past 12 months, 1=yes |
| Scheduled Collaboration Participation | Dichotomous--Participated in regularly scheduled collaboration with other teachers on issues of instruction in past 12 months, 1=yes |
| Mentoring Participation | Dichotomous--Participated in mentoring and/or peer observation as part of formal arrangement of school/district in past 12 months, 1=yes |
| PD In-depth study | Dichotomous- Participated in any professional development activities that focused on in-depth study of the content in your MAIN teaching assignment, 1=yes |
| PD Perceived Useful | How useful all PD over the past 12 months-1=not useful, 4=very useful |
| *Accountability* | |
| Standards Guide Teacher Practice | Standards guide a teacher's practice (1=never/5=always). Using the scale 1-5, where 1 is "Not at all" and 5 is "To a great extent," to what extent do you use state standards to guide your instructional practice in your main teaching assignment field? |
| *Perception of School Leaders Style and Practices* | |
| Perception of | An index comprised of the following indicators: |

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[7] All teacher level variables have been group mean centered and come from the SASS teacher survey.

| Management (α=.857) | Teachers' assessment of the degree to which the principal communicates expectations, 1=strongly disagree, 4=strongly agree |
| | Teachers' assessment of the degree to which the principal is supportive, 1=strongly disagree, 4=strongly agree |
| | Teachers' assessment of the degree to which the principal enforces discipline, 1=strongly disagree, 4=strongly agree |
| | Teachers' assessment of the degree to which the principal is kind, 1=strongly disagree, 4=strongly agree |
| | Teachers' assessment of the degree to which the principal recognizes staff for their work, 1=strongly disagree, 4=strongly agree |
| | Teachers' assessment of the degree to which the principal talks with teachers about his or her instructional practices, 1=strongly disagree, 4=strongly agree |

SCHOOL LEVEL

| Percentage Poverty | Percentage of students in a school eligible for free/reduced lunch (SASS school survey) |
| Percentage Minority Population | The percentage of minority students in the school (SASS school survey) |
| Number of teachers | The total number of teachers full and part-time at the school (SASS school survey) |
| Proportion Minority Teachers | Dichotomous--1=white and 0=minority |
| Proportion with Masters | Dichotomous--0=bachelors degree or less and 1=master's or above. |
| Proportion Male Teachers | Dichotomous--1=male; 0=female |
| Mean Years at current school | Average number of years all teachers in a school been at a current school |

*Teacher Control & Influence*

| Mean Teacher Classroom Control | Mean of teacher rated control over: Selecting Materials, Selecting Content, Selecting Technique, Evaluating Students, Discipline, Homework. 1=No Control, 5=Complete Control. |
| Mean Teacher's Influence on School Policies | Mean of teacher rated teacher school-wide influence over 7 items |

*Facilitating Structures and Practices*

| School mean percentage planning time | Percentage of a teachers time allotted for planning |
| Interdisciplinary teaching | Dichotomous variable, 1= has Interdisciplinary teaching and 0= no Interdisciplinary teaching (SASS School Survey) |
| Paired or team teaching | Dichotomous variable, 1= has Paired or team teaching and 0= no Paired or team teaching (SASS School Survey) |
| Grades subdivided-Small learning communities | Dichotomous variable, 1= Grades subdivided-Small learning communities and 0= grades not subdivided (SASS School Survey) |
| Proportion Research Participation | Dichotomous--participated in individual or collaborative research on a topic of interest to you professionally in past 12 months, 1=yes |
| Proportion Scheduled | Dichotomous--Participated in regularly scheduled collaboration |

| | |
|---|---|
| Collaboration Participation | with other teachers on issues of instruction in past 12 months, 1=yes |
| Proportion Mentoring Participation | Dichotomous--Participated in mentoring and/or peer observation as part of formal arrangement of school/district in past 12 months, 1=yes |
| Proportion PD In-depth study | Dichotomous- Participated in any professional development activities that focused on in-depth study of the content in your MAIN teaching assignment, 1=yes |
| PD Autonomy (α=.691) | An index of the following items (SASS principal survey): <br> - How often is professional development for teachers at this school-Presented by teachers in this school or district?  1= Never, 5=Always <br> - How often is professional development for teachers at this school planned by teachers in this school or district? Frequency 1=Never, 5=always |
| Mean PD Perceived Useful | School mean for how useful all PD over the past 12 months-1=not useful, 4=very useful |

*Accountability*

| | |
|---|---|
| Accountability Pressure | School performance goals. 0=School had no required performance goals and 1=School had performance goals and was required to meet them (SASS School Survey) |
| Mean Standards Guide Teacher Practice | Standards guide a teacher's practice (1=never/5=always). Using the scale 1-5, where 1 is "Not at all" and 5 is "To a great extent," to what extent do you use state standards to guide your instructional practice in your main teaching assignment field? |

*Leadership Style and Practices*

| | |
|---|---|
| Community Building Frequency | In the last month, how frequently the principal builds professional community among faculty and staff: 1=never, 2= 1 or 2x/per month, 3= 1 or 2x per week, 4= every day. (SASS principal survey) |
| Joint PD Participation Frequency | How often in the past 12 months principal participated in PD with teachers: 1=never, 2=1 or 2x, 3=4 or 5x, 4=6 or more. (SASS principal survey) |
| Frequency Mission Achievement | In the last month, approximately how often did you promote achievement of the school's mission through such activities as consensus building, planning, obtaining resources, monitoring progress, etc.-- 1=never, 2= 1 or 2x/per month, 3= 1 or 2x per week, 4= every day. (SASS principal survey) |
| Supervision of Staff Frequency | Frequency that principal supervises staff: 1=never, 2= 1 or 2x/per month, 3= 1 or 2x per week, 4= every day. (SASS principal survey) |
| Frequency initiates PD | In the last month, how often principal provides and engages staff in PD: 1=never, 2= 1 or 2x/per month, 3= 1 or 2x per week, 4= every day. (SASS principal survey) |
| Mean Teacher Perception of Management | School mean for an index comprised of the following indicators: <br> -Teachers' assessment of the degree to which the principal communicates expectations, 1=strongly disagree, 4=strongly agree <br> - Teachers' assessment of the degree to which the principal is supportive, 1=strongly disagree, 4=strongly agree |

- Teachers' assessment of the degree to which the principal enforces discipline, 1=strongly disagree, 4=strongly agree
- Teachers' assessment of the degree to which the principal is kind, 1=strongly disagree, 4=strongly agree
- Teachers' assessment of the degree to which the principal recognizes staff for their work, 1=strongly disagree, 4=strongly agree
- Teachers' assessment of the degree to which the principal talks with teachers about his or her instructional practices, 1=strongly disagree, 4=strongly agree

*Table A-2.*

Means and Standard Deviations for Measures Used in the Multi-Level Regression Analysis

|  | Mean | Standard Deviation |
|---|---|---|
| TEACHER LEVEL[8] |  |  |
| Teachers' sense of community | 3.00 | .71 |
| SCHOOL LEVEL |  |  |
| Percentage Poverty | 58.23 | 29.57 |
| Percentage Minority Population | 59.80 | 32.36 |
| Number of teachers | 42.34 | 19.88 |
| Percentage Minority Teachers | .68 | .32 |
| Percentage with Masters | .48 | .30 |
| Percentage Male Teachers | .17 | .20 |
| Mean Years at current school | 8.01 | 4.47 |
| Teacher Control & Influence |  |  |
| Mean Teacher Classroom Control | 3.85 | .44 |
| Mean Teacher's Influence on School Policies | 2.48 | .55 |
| Facilitating Structures and Practices |  |  |
| School Mean percentage planning time | 9.63 | 3.98 |
| Interdisciplinary teaching | .52 | .50 |
| Paired or team teaching | .56 | .50 |
| Grades subdivided-Small learning communities | .29 | .45 |
| Percentage Male Teachers | .46 | .28 |
| Percentage Scheduled Collaboration Participation | .79 | .21 |
| Percentage Mentoring Participation | .45 | .28 |
| Percentage PD In-depth study | .68 | .26 |
| PD Autonomy | 3.68 | .72 |
| Mean PD Perceived Useful | 3.74 | .54 |
| Accountability |  |  |
| Accountability Pressure | .90 | .30 |
| Mean Standards Guide Teacher Practice | 4.23 | .57 |
| Leadership Style and Practices |  |  |
| Community Building Frequency | 3.16 | .85 |
| Joint PD Participation Frequency | 3.50 | .66 |
| Frequency Mission Achievement | 3.28 | .81 |
| Supervision of Staff Frequency | 3.43 | .74 |
| Frequency initiates PD | 2.50 | .69 |
| Mean Teacher Perception of Management | 3.04 | .45 |

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[8] All teacher level variables have been group mean centered and come from the SASS teacher survey.

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