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A STUDY OF TEACHER LEADERSHIP AND ITS RELATIONSHIP WITH SCHOOL CLIMATE IN AMERICAN PUBLIC SCHOOLS: FINDINGS FROM SASS 2003-2004

by

Donghai Xie

A Dissertation
Submitted to the
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Dr. Patricia Reeves, Advisor

Western Michigan University
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A STUDY OF TEACHER LEADERSHIP AND ITS RELATIONSHIP WITH SCHOOL CLIMATE IN AMERICAN PUBLIC SCHOOLS: FINDINGS FROM SASS 2003-2004

Donghai Xie, Ph.D.

Western Michigan University, 2007

This study made inquiry into teacher leadership and its relationship with school climate in American public schools by using the data from SASS 2003-04 by National Center for Education Statistics. The study was focused on the statistical assessment of public school teachers' perceptions of teacher leadership in the areas of school operation and classroom operation. Another aspect to be inquired was teachers' perceptions of school climate in the dimensions of school leadership and teacher collaboration.

The results of descriptive analyses in the study indicated that the majority of public school teachers did not consider they had much influence over the areas of school operation; however, they felt they had a great deal of control over the areas of classroom operation. With regard to school climate, teachers were satisfied about their school leadership. The results from discriminant function analysis indicated that school teachers' perceptions of school climate and teacher leadership could statistically reflect their school membership (elementary and secondary schools). The results from canonical correlation analysis revealed a statistically significant relationship between teacher leadership and school climate. The dimension of school leadership in the School
Climate variable and the areas of school operation in the Teacher Leadership variable were the major components that contributed most to the multivariate relationship.

This study has provided support to the existing literature on the factors that affect teacher leadership development. It adds to the knowledge base in the field of teacher leadership and its relationship with school climate with quantifiable evidence at a national level. The findings of this study also pose a challenge to the previous literature regarding the notion that teacher leadership was flourishing in American schools. This study has suggested that there seems to be a latent conceptual gap between what researchers consider to be effective school leadership including substantial support of teacher leadership and what school teachers consider to be supportive principal behaviors excluding the elements of involving teachers in the school decision-making process.
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Donghai Xie
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CHAPTER I

INTRODUCTION

Background of the Study

In an era of high accountability, teacher quality and student achievement have been on the school improvement agenda. The accountability requirements of the No Child Left Behind Act of 2001 have placed heavy pressure on school leadership for overall school improvement. Today school leaders can no longer play a single role as decision makers in dealing with the pressure for accountability in improving teacher quality and student achievement (Beachum & Dentith, 2004). Researchers and educators consider that leadership in a school is no longer limited to the principal but is stretched across individuals in and out of the school organization (Hargreaves & Fink, 2006).

It has been long accepted that school teachers are generally charged with responsibility for teaching and learning in the classroom, and school principals are charged with the organizational development that facilitates teaching and learning, i.e. instructional leadership. Recent research studies, however, argue that, with the high accountability demands, the number of administrative tasks a principal undertakes leaves insufficient time in the day to complete the necessary leadership activities. This is due, in large part, to evidence that dealing with the more mundane responsibilities and accountabilities takes away time and effort from instructional leadership (Camburn,
Developing teacher leaders and involving teachers in the decision-making process have become proactive responses to the high-stakes demands on principals for enhancing teacher performance and student achievement. This has led to recent research focusing on facilitating leadership capacity to achieve whole-school success (Crowther, Kaagan, Ferguson, & Hann, 2002; Lambert, 1998; Sledge & Morehead, 2006).

Teacher performance is closely related to student achievement in schools. This relation is determined, in part, by the organizational climate in which teachers work (Hoy, Hannum, & Tschannen-Moran, 1998). In teacher leadership research literature much has been written about conditions that support and challenge teacher leadership (York-Barr & Duke, 2004).

York-Barr and Duke (2004) synthesized three categories of conditions that influence teacher leadership. These include school culture, roles and relationship, and structures. A key factor that is influential is the extent to which school administrators are able to develop the conditions conducive to fostering teacher leaders to share the leadership responsibilities. This factor is within the scope of school culture and school climate.

The literature on conditions that support teacher leadership describes many characteristics that correspond to characteristics discussed in the literature on school climate and school culture. The correspondence between discussions of factors and characteristics associated with teacher leadership and elements used in the literature to describe dimensions of school climate suggest that it may be useful to further explore the
relationship between teacher leadership and school climate. This examination may, in fact, isolate generalizable factors associated with both teacher leadership and school climate.

School climate and school culture are two different concepts (Denison, 1996; Houtte, 2005; Hoy, 1990). This study has placed focus on the school climate concept and its relationship with teacher leadership.

Studies of School Climate

In the past few decades organizational climate in a school has been explored and conceptualized in hundreds of studies (Hoy, Hoffman, Sabo, & Bliss, 1996; Owens, 2001). According to Owens (2001), organizational climate in schools may be defined as the study of perceptions that organizational members in schools have of various aspects of the environment in the school organization. When talking about the research on organizational climate, Owens states that studies of organizational climate depend heavily on inquiring into the perceptions of participants. This has led to the use of questionnaires in which respondents are asked directly about their perceptions of relevant topical aspects in this field.

Definitions of school climate have been varied ever since it was first quantifiably examined by Halpin and Croft (1963) in the early 60s of the 20th century with their Organizational Climate Description Questionnaire (OCDQ). There has been extensive research on identifying the dimensions that comprise school climate. Some of the researchers explored school climate by looking into the conditions of school safety (e.g., Anderson, 1998; Hernandez & Seem, 2004; Welsh, 2000). Others related school climate
to students’ perceptions of their schooling experiences and student performance (e.g., Haynes, Emmons, & Comer, 1993; McEvoy & Welker, 2000). Many more placed focus on school’s internal characteristics, teachers’ perceptions of environmental press and school leadership (e.g., Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Hoffman, et al., 1996; Hoy & Tarter, 1997; Owens, 2001; Stockton & Cage, 2000; Tagiuri, 1968). Since organizational climate in a school is related to individuals’ shared perceptions of the organization, assessment of the climate is rather a straightforward process (Owens, 2001). Researchers have developed various kinds of measures of school climate, with extensive use of quantitative survey instruments to gather and analyze data from the organizational people (Hoy & Tarter, 1997). The most influential instrument is that of Halpin and Croft’s Organizational Climate Description Questionnaire (OCDQ).

Based on the OCDQ, Halpin and Croft’s pioneer study on school climate was conducted to capture the important elements of school climate. Their research was intended to identify important aspects that pertain to teacher-teacher and teacher-principal interactions. The survey instrument they developed has been widely used in subsequent studies on school climate by other educators and researchers (Anderson, 1982; Hoy & Tarter, 1997).

Subsequently, Hoy, Tarter, and Bliss (1990) and Hoy, Tarter, and Kottkamp (1991) asserted inadequacy in OCDQ by Halpin and Croft. They developed three revised OCDQ versions and three Organization Health Inventory (OHI) versions for elementary, middle, and high schools. These instruments identify two principal frameworks for studying school climate: openness and health of schools. Both frameworks measure aspects of the working environment of schools. An open climate is supposed to have
teacher-teacher and teacher-principal interactions that are genuine and open. Teachers and principals in the school are supportive, receptive to each other's ideas (Hoy, Hoffman, et al., 1996). A healthy climate is viewed as comprising seven crucial dimensions: institutional integrity, principal influence, consideration, initiating structure, resource support, morale, and academic emphasis (Hoy & Forsyth, 1986).

Other noticeable instruments for measuring school climate include those developed by the National Study of School Evaluation (NSSE), and the Comprehensive Assessment of School Environments (CASE) developed by the National Association of Secondary School Principals (NASSP). These survey instruments cover various aspects of school organizations with different inventories and survey versions, though the objectives of certain instruments may not be climate-oriented.

Certainly the past researchers on organizational climate have contributed much insight to the body of knowledge in this field. Quite a number of contemporary researchers (e.g., Glisson & James, 2002; James & Jones, 1974; James & Tetrick, 1986; Ostroff, Kinicki, & Tamkins, 2003; Schulte, Ostroff, & Kinicki, 2006) studying conceptualization and construct of climate have noticed that there is a distinction between organizational climate and psychological climate. These two constructs differ in that psychological climate focuses on individual-level climate. It pertains to how individual members in the organization perceive organizational practices in psychological terms such as individual needs and affective satisfaction. The perceptions in the individual level can be of disparity and incongruity even though individual members are exposed to the same working environment (Van-Horn, 2003). Organizational climate, referring to the group or organizational level, focuses on the shared perceptions of the working
between psychological climates and organizational climates has gained general
acceptance (Schulte et al., 2006). It is still, however, found that some research studies
blur the distinction of these constructs when they trace the history of the study of
organizational climate.

This study follows the construct of organizational climate at the organizational
level with focus on the shared perceptions of the organizational members.

Studies of Teacher Leadership

Morgan (1997) in his Images of Organization articulates his contribution to the
leadership theory that leadership can only be understood in relation to shared or invested
meanings within an organization. In leadership theory, teacher leadership is often
explained within the scope of distributed leadership (Harris, 2003; Spillane, 2006).
Distributed leadership and teacher leadership are concepts sharing entangled meanings in
a co-dependent relationship (Rutherford, 2006).

The leadership redefined theory has presented to us various discourses favoring
teacher leadership development (Lambert, 2003a). The recent development of distributed
leadership reflects a view that every person in one way or another can demonstrate
leadership (Katzenmeyer, & Moller, 2001). Although this view does not mean that
everyone can be a leader, it indicates a form of leadership with more democratic and
collective features (Goleman, 2002).

The concept of leadership capacity developed by Lambert (1998, 2003a) has
received increasing attention from educators and school administrators. This
organizational concept renders focus on the framework of broad-based participation and skillful involvement of teachers, students and parents in the work of school leadership. Within this concept teacher leaders are the key players of the leadership team and they play a leading role in such leadership capacity.

School leadership roles and functions have changed as leadership practice takes shape in the interaction of leaders, teachers and their situations (Gronn, 2002; Spillane, 2006). In terms of teacher leadership roles, Dana and Bourisaw (2006), based on Barth’s study (2001) on teacher leadership roles in schools, suggested 10 areas of teacher leader involvement: choosing textbooks and instructional materials, shaping the curriculum, setting standards for student behavior, deciding whether students are tracked into special classes, designing staff development and in-service program, setting promotion and retention policies, deciding school budgets, evaluating teacher performance, selecting new teachers, and selecting new administrators.

While discussions of what comprises the teacher leadership role gain general consensus among researchers and educators, many research studies have found that theories and models of teacher leadership have significantly contributed to the renewal processes in today’s schools (Beachum, & Dentith, 2004). Teacher leadership has been promoted as a way of developing organizational capacity (Timperley, 2005). It has been linked with the prominent element of school reform and policy rhetoric (Little, 2003), student academic performances (Wynne, 2001), sustainable school improvement (Hargreaves & Fink, 2006; Lambert, 2003a; Murphy, 2005), and teacher quality (York-Barr & Duke, 2004).
In the existing literature on factors that relate to teacher leadership development, Griffith (1999) argued that organizational literature has recognized leadership as an essential element in determining organizational climate and productivity. By the same token, organizational climate has also been recognized as a powerful element in determining leadership effectiveness. Frost (2003) advanced the idea that if teacher leadership flourishes, a climate should exist to favor teacher leadership authority. Research on teacher leadership needs to explore the sources of authority that teachers can draw upon and how this relates to the organizational environment in which they work.

These arguments are powerful theoretical statements but lack sufficient empirical study support. It is, therefore, of significance to embark on a study with nationally-based data information regarding what has been known about teacher leadership and how it relates to school climate in American public schools.

Statement of the Problem

The concept of teacher leadership has been advocated for more than two decades in the field of education, and research literature has been replete with teacher leadership (Frost, 2003). This, however, does not mean that schools in America have successfully implemented teacher leadership. Qualitative studies which describe dimensions of teacher leadership, teacher leader characteristics, and conditions that promote and challenge teacher leadership have been extensively documented in the research literature. Yet, very few educational research studies have quantifiably explored teacher leadership and the relationship between school climate and teacher leadership. York-Barr and Duke (2004) conducted a synthesis of 140 literature pieces published from 1980 to 2004. In their study
teacher leadership, shared decision-making and teacher professionalism were identified as key terms when such sources addressed roles and responsibilities of teachers beyond the classroom instruction. They claimed that very few of these studies on involvement of teachers in the decision-making process in school improvement employed quantitative research methodology. York-Barr and Duke, as well as Frost, argued that research on teacher leadership will need to explore the conditions of teacher leadership existence and how its development is related to the organizational environment in which teachers work.

Despite agreement in research documents favoring teacher leadership that contributes to school sustainable improvement, there is an obvious lack of quantifiable evidence in this field, especially statistical evidence at a national level. One may cautiously raise questions regarding whether the phenomena of flourishing teacher leadership development in public schools are not simply coincidence. The problem addressed in this study is the need to statistically investigate teacher leadership and the factors that influence teacher leadership. School climate is the primary factor under study.

This study on teacher leadership and its relationship with school climate is focused on teachers' perceptions of their school organizations. A portion of items in the Public School Teacher Questionnaire, 2003-04 School and Staffing Survey (SASS), has touched upon this topic. This includes items that investigate the school climate in the extent that teachers perceive about school leadership and teacher collaboration as well as the extent to which teachers are involved in the areas of school decision-making process.
Purpose of the Study

The purpose of this study is threefold: to examine (a) public school teachers’ perceptions of teacher leadership and school climate, (b) their possible differential perceptions of teacher leadership and school climate by school levels (elementary and secondary schools), and (c) the relationship between teacher leadership and school climate.

The results of the study provide nationally-based data information about the status quo in teacher leadership and its relationship with school climate in American public schools. It provides useful evidence to educators and policy makers in their efforts to enhance teacher leadership development and improve school reform. This study is guided by the following research questions.

Research Questions

Research Question 1: How did American school teachers perceive school climate in their school organizations?

Research Question 1.1: Can teachers’ perceptions of school climate be distinguished by the school levels (elementary and secondary schools) in which they work?

Research Question 2: How did American school teachers perceive teacher leadership in their school organizations?
Research Question 2.2: Can teachers’ perceptions on their leadership be distinguished by the school levels (elementary and secondary schools) in which they work?

Research Question 3: What is the relationship between the components of school climate and the components of teacher leadership as perceived by public school teachers?

Significance of the Study

In the 1970s, Burns’ (1978) transformational leadership theory established a landmark in defining the relationship between organizational leaders and followers. One of the perspectives in transformational leadership theory is to empower others in an effort to bring about major change in the organizational improvement (Leithwood, Begley, & Cousins, 1992). This has had a great impact on the development of educational leadership theory. The evolution of school leadership concept has challenged notions of a principal as the visionary leader of the school. A wide range of research literature on the development of school leadership has documented the association of teacher leadership with successful school improvement.

In the current theory of educational leadership, rhetoric has placed emphasis on the importance of involving teachers in the school decision-making process for improving school effectiveness (Fullan, 2001). Sergiovanni’s (2001) concept of leadership density reflects that a large number of people are involved in the work of others. This indicates that people in the organization are trusted, involved in decision making, exposed to new ideas and participating in knowledge creation and transfer.
Paralleled with Sergiovanni’s leadership density is the concept of leadership capacity by Lambert (1998, 2003a), which advocates the skillful involvement of teachers, students and parents in the work of school leadership, in which teacher leaders are the key players of the leadership team. These concepts, however, never stand alone in the current school leadership theory.

Distributed leadership perspectives suggest that teacher leadership is a form of agency that can be widely shared or distributed within and across an organization, thus directly challenging more conventional forms of leadership practice (Spillane, Halverson, & Diamond, 2001). Another leadership perspective called teacher empowerment has been documented as a positive link with school improvement in instruction and student learning (Shen, 2001), and the participatory decision-making structures and curriculum improvement (Marks & Louis, 1999).

Synthesizing discourses among advocates of educational leadership, teacher leadership, distributed leadership and teacher empowerment contributed to one common theme that school culture or school climate should be taken as a cause, an object, or an effect of school improvement.

Early research on school climate suggested a number of characteristics that are conducive to facilitating teacher’s professional development and student achievement (Hoy & Forsyth, 1986; Sweetland & Hoy, 2000). Survey instruments applied to investigate the impact of school climate on school effectiveness have been developed. These instruments are designed to support various research endeavors in studying factors that relate to educational reform (Sweetland & Hoy, 2000). Exploring the relationship
between teacher leadership and school climate provides support to the research efforts of study on teacher leadership among researchers and educators.

The present study has highly contributed to the current knowledge base of teacher leadership, distributed leadership and teacher empowerment. It has the following characteristics.

Recently numerous studies relevant to this field have appeared in publications and doctoral dissertations. Most of these studies grounded on qualitative case analyses bear common limitations in terms of generalization. The findings are usually based on a narrow range of variables and factors within a limited context (York-Barr & Duke, 2004). Factors and challenges that influence teacher leadership have not yet extensively and quantifiably presented in teacher leadership literature. Therefore it is significant to provide quantifiable evidence to assess the current leadership theory about teacher leadership. This quantitative study has also addressed the void of quantifiable information regarding teacher leadership and its relationship with school climate in American public schools.

By studying teacher leadership and its relationship with school climate as perceived by classroom teachers of different school levels, the findings of this study have presented an empirical picture of the situation of teacher leadership practice and school climate in American public schools. Furthermore this study has contributed to improving educational policy for teacher quality and school improvement with data at a national level. This study is established on a theoretical orientation.

In sum, this study has contributed to the knowledge base with quantifiable information about teacher leadership and its relationship with school climate. It has
provided support and critiques for the previous research literature on teacher leadership with statistical evidence at a national level, and also provided educators and policy makers with the much needed evidence regarding how school teachers perceived teacher leadership and school climate in American public schools.

Conceptual Framework

The teacher leadership construct for this study is based on the current teacher leadership literature by numerous noted researchers. Katzenmeyer and Moller (2001) defined that "teachers who are leaders lead within and beyond the classroom, identify with and contribute to a community of teacher learners and leaders, and influence others toward improved educational practice" (p. 5). Dana and Bourisaw (2006), and Barth's (2001) study on teacher leadership roles in school suggested 10 areas of teacher leader involvement, which are similar to the SASS questionnaire items. These research perspectives provide a general framework for this study to select variables in SASS to construct the teacher leadership variable with the relevant components as perceived by public school teachers.

Regarding the school climate construct, numerous studies by Halpin and Croft (1963) and Hoy and his colleagues (1986, 1990, 1996, 1997; Sweetland & Hoy, 2000) indicate that school leadership has an impact on the development of a school climate. These researchers argue that school climate can be measured from a variety of perspectives but the major components are principal-teacher interactions and teacher-teacher interactions. The focus of the conceptual framework in this study is initiated from Sweetland and Hoy's (2000) study that the factors of teacher-teacher interaction and
teacher-principal interaction are likely to be the major dimensions of school climate. This assertion is also supported by Calabrese’s (2002) notion that effective leadership is a power-driven core component of the organizational health.

School climate has been commonly used but there is no commonly agreed-upon definition of school climate (Johnson & Stevens, 2006). Glick (1985) argued that selection of variables of climate dimensions would be associated with researchers’ criteria and objectives. This study is grounded on the research literature for creating the variables of school climate and teacher leadership from SASS 2003-2004 Teacher Survey Questionnaire. In establishing the framework for this study, the definition for school climate was taken from research conducted by Halpin and Croft (1963), and Hoy and his colleagues (1986, 1996, 1997; Sweetland & Hoy, 2000), and framework of teacher leadership roles by Barth (2001), and Dana and Bourisaw’s studies, (2006, p. 87) (see Figure 1).

In terms of research methodology needed to illustrate the conceptual framework, a pilot test was conducted using SASS 1999-2000 dataset. The results of exploratory factor analyses have helped to identify the items for school climate and teacher leadership from SASS 2003-04 Teacher Survey Questionnaire. Items that are related to school leadership and teacher collaboration were chosen to construct the variable of School Climate. The items related to decision making in the areas of school operation and classroom operation were taken to form the variable of Teacher Leadership. The variable of School Climate is constructed with multiple items from the Questionnaire. Likewise the variable of Teacher Leadership is so designed. Thus a multilevel phenomenon exists regarding the analysis of the relationship between the components of these two variables. The relationship between
Figure 1. Conceptual Framework of School Climate and Teacher Leadership
school climate and teacher leadership by school teachers of different school levels may also be of multiple facets. Therefore a multivariate analysis of variance is required for this study.

Limitations of the Study

This study involved a large national dataset characteristic of a complex and stratified sample design. There are several inherent limitations that must be considered.

The first set of limitations relates to the application of pure quantitative research design. While the attempt was made to obtain quantifiable evidence for testing and developing teacher leadership theory, a lack of qualitative information to simultaneously support the statistical findings might possibly reduce the significant contribution it makes to the knowledge base.

The second set of limitations relates to the measures of school climate and teacher leadership. These measures were confined to the selected question items available in the Questionnaire. The scope and the content of the variable construct are not as encompassing as those in similar investigations. For example, the school climate measures included two dimensions consisting of 10 components. This will not provide a complete assessment of every aspect of school climate. However the large sample size can provide statistically significant information regarding the research interest under study has provided useful information regarding the major dimensions of school climate as put forth in the previous literature.

The third set of limitations relates to the research process. The study was based on a single means of investigating the perceptions of teacher leadership and its relationship
with school climate. These findings may not precisely reflect the current situation in the existing public schools regarding the school climate and teacher leadership development. As survey research studies usually have the limitations in content validity, this study has the same limitation in that the content in the questionnaire may not reflect the actual thinking by the teachers regarding the aspects and content of school climate and teacher leadership. Still the large sample size employed in this study would help reduce the deficiency.

Finally, in dealing with oversampling and clustering of observations in the large sample design, this study conducted its analysis by assessing each parameter with a more conservative critical alpha value (e.g., \( \alpha < .001 \) rather than .05) as recommended by Hahs-Vaughn (2005) and Thomas and Heck (2001). However, this study was not undertaken with the most desirable solution as recommended. As measurement errors may occur, the potential bias regarding the analysis results should be taken into consideration. Future research regarding this educational issue may involve longitudinal inquiry into more variables concerning the constructs of school climate and teacher leadership and look in-depth the association between factors that influence teacher leadership in American public schools.

Organization of the Study

This study is organized into five chapters. Chapter I presents the introduction of the study, which consists of the background of the study, the purpose of the study, the research questions, rationale for the study, conceptual framework and limitations of the study. Chapter II is the review of literature containing introduction, outline of literature
references, organizational climate and school climate, school culture and school climate comparison, teacher leadership, distributed leadership, teacher empowerment, factors that influence teacher leadership, and summary of the literature review. Chapter III addresses the methodology applied to this study, including data source, sample, instrumentation, measures and variables, data analysis and summary of the methodology. Chapter IV provides data analysis results. Discussion, conclusion and implications, questions raised from the study and recommendations for future research are presented in Chapter V.
CHAPTER II

REVIEW OF THE LITERATURE

Research studies on the relationship between teacher leadership and school climate have been very few. This is especially true regarding those studies using nationally based data support. The disparity of definitions for school climate has guided the attention of the current research into its impact on various issues in education with different dimensions. Research into the redefined leadership theory has mainly concluded that teacher leadership is related to school improvement, enhanced teacher quality and student achievement.

Regarding methodological application in empirical studies, qualitative studies on teacher leadership and its relationship with school culture have recently emerged, however, quantitative studies on teacher leadership are far from noticeable (York-Barr & Duke, 2004). Such studies linked to school climate are even fewer in quantity.

Many researchers argue that as important elements of culture are subtle, unseen, and far from self-evident, collecting, sorting, and summarizing data by a printed questionnaire and statistical analysis of the responses to these elements becomes hardly appropriate for describing and assessing school culture (e.g., Denison, 1996; Owens, 2001; Schein, 1985, 1992, 1999). Studies of school climate are concrete. They deal with perceptions of organizational members and identify patterns of perceived behavior,
therefore, it is appropriate for these studies to examine rationale patterns with survey research techniques (Hoy & Tarter, 1997).

The literature review of this study mainly pertains to the perspectives about the related definitions, assessment rationale and methodological traditions. It is focused on reviewing dimensions of school climate and teacher leadership as described by relevant educators and researchers. The purpose of this review is to collect relevant research literature to justify the significance of this study on the statistical assessment of teacher leadership and its relationship with school climate. Table 1 provides a general outline of the literature reviewed.

Organizational Climate and School Climate

*Historical Background Studies*

Research on organizational climate can be traced back to the 1950s as social scientists attempted to capture the variations in organizational environment that were related to individual behaviors in the business field, particularly on employee morale, productivity, and turnover (Anderson, 1982; Hoy & Tarter, 1997). While business and industrial organizations were exploring the relationship between situational characteristics and individual behaviors, educators and psychologists were beginning to explore the impact of organizational environment on personality characteristics (Halpin & Croft, 1963; Pace & Stern, 1958).

Pace and Stern (1958) are said to be the first to conduct research on school climate in college context with their Activities Index (AI) and College Characteristics
Index (CCI) (Fisher, Docker, & Fraser, 1986). The AI is primarily a measure of the individual reporting about himself. The CCI is a measure of college environment independent of the personality of the respondent. The researchers used these two instruments to study student and staff perceptions of the environments of colleges and universities (Fisher et al., 1986; Johnson & Stevens, 2006). The CCI was designed to measure the degree of environmental “press” corresponding to each of the 30 individual needs assessed by the AI (Saunders, 1969).

Table 1

Outlines of Literature Review

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Table 1—Continued

| | Distributed leadership perspective | (Copland, 2003; Goldstein, 2003; Gronn, 2002; Harris, 2003; Muijs & Harris, 2007; Rutherford, 2006; Spillane, 2006; Spillane, Halverson, & Diamond, 2001, 2004; Timperley, 2005)
| | Teacher empowerment perspective | (Maeroff (1988; Marks, & Louis, 1999; Robbins, 1994; Scarnati & Scarnati, 2002; Schermerhorn, Hunt, & Osborn, 1994; Shen, 2001; Short & Rinehart, 1992; Wall & Rinehart, 1997; Wan, 2005)
| | Factors influencing distributed leadership and teacher leadership | (Aarons & Sawitzky, 2006; Barth, 2001, Dana & Bourisaw, 2006; Gilson & James, 2002; Maslowsk, 2006; Rousseau, 1988; Verbeke, Volgering, & Hessels, 1998; Wasley, 1991)

IV. Summary of the literature review

Pace and Stern’s study placed more focus on psychological climate, a construct intended to explain an individual’s motivational and affective reactions to organizational
change (Parker et al., 2003). Their discourse relied on the notion that individuals would respond differently to environmental press according to their individual needs. An important distinction between psychological climate and organizational climate is that individuals' own perceptions of the work environment constitute psychological climate at the individual level of analysis, whereas organizational climate exists when members within a unit or organization agree on their perceptions of the work context (Glisson & James, 2002; Van-Horn, 2003). Put in another way, psychological climate is a property of the individual, but when shared across individuals within an organization, the aggregate of the responses represents the construct of group-level organizational climate (Glisson & James, 2002; Schulte et al., 2006; Van-Horn, 2003).

Out of the scope of studies on psychological climate, the Organizational Climate Description Questionnaire (OCDQ) developed by Halpin and Croft (1963) is considered among the first survey instruments for assessing organizational climate in a school (Hoy & Tarter, 1997; Owens, 2001). Halpin and Croft's study on school climate in the elementary school context was based on a group-level construct. It was intended to obtain through quantitative approaches the degree to which the perceptions of school climate were shared by school members.

Prior to the development of the survey instrument, Halpin and Croft found, after constant visits to schools, that there were enormous differences among schools in terms of the "feel" of the school. In one school, teachers and the principal displayed zestful confidence in what they were doing and enjoyed working with each other. In a second school, the look of dissatisfaction among teachers was obvious. The principal tried to conceal his incompetence in leadership behind a cloak of authority. Teachers with
negative attitudes toward the school situation rendered their unhappiness to students. In turn the students responded with a mood of despair. In a third school, there was neither joy nor despair filling the school. There as just a show of hollow ritual. Halpin and Croft asserted that each school had its own “personality,” characteristic of the effects resulting from the teacher-teacher and principal-teacher interactions. The conceptual framework of their OCDQ instrument for assessing school climate was therefore mainly built on the social behaviors of the teachers and the principal in the school. Their study of the organizational climate in a school is closely related to collective perceptions of teachers about the school environment. Halpin and Croft are considered the pioneers in the field of school climate study (Hoy & Forsyth, 1986; Owens, 2001; Sweetland & Hoy, 2000).

**How Organizational Climate Has Been Defined**

Definitions for organizational climate are numerous as reflected in the research efforts on this topic. Researchers in this field hold different focuses in their interpretations. As James and Jones (1974) claimed more than thirty years ago, conceptual and operational definitions of organizational climate were highly diverse and even contradictory. They asserted that climate was initially used as a general notion to express the enduring quality of organizational life, but researchers had their own wording for interpretations as well as definitions.

Forehand and Gilmer (1964) defined organizational climate as “a set of characteristics that describe an organization and that (a) distinguish the organization from other organizations, (b) are relatively enduring over time, and (c) influence the behavior of people in the organization” (p. 362). They asserted that dimensions of organizational
variation which were included in organizational climate were: size, structure, systems complexity, leadership style, and goal directions.

Campbell, Dunnette, Lawler, and Weick (1970) put forward another encompassing picture of the organizational climate regarding its definition. They defined organizational climate as “a set of attributes specific to a particular organization that may be induced from the way the organization deals with its members and its environment” (p. 390). They identified the following four dimensions of organizational climate: (a) individual autonomy, which is based on the factors of individual responsibility, agent independence, rules orientation, and opportunities for exercising individual initiative; (b) the degree of structure imposed upon the position, which is based on the factors of structure, managerial structure, and closeness of supervision; (c) reward orientation, which is based on the factors of reward, general satisfaction, promotion achievement orientation, and being profit minded and sales oriented; (d) consideration, warmth, and support, which is based on the factors of managerial support, nurturance of subordinates, and warmth and support.

In defining organizational climate, Campbell and his colleagues deal more with the individual level and individual differences in perceptions and attitudes towards the factors of organizational operation. Their focus of organizational climate dimensions is obviously dispersed from that of Forehand and Gilmer’s.

Pritchard and Karasick (1973), after reviewing a number of previous studies on organizational climate, defined organizational climate:

A relatively enduring quality of an organization’s internal environment distinguishing it from other organizations; (a) which results from the behavior and policies of members of organizations, especially top management; (b) which is
perceived by members of the organization; (c) which serves as a basis for interpreting the situation; and (d) acts as a source of pressure for directing activity. (p. 126)

The definition of organizational climate by Pritchard and Karasick placed more emphasis on organizational expectations than other counterparts.

Contemporary researchers (e.g., Hoy et al., 1986, 1996, 1998; Owens, 2001) on organizational climate basically followed the tone of the previous researchers in defining organizational climate. They share more similarities in the definition than disparity.

Hoy et al. (1998) defined organizational climate as “the set of internal characteristics that distinguishes one organization from another and influences the behavior of organizational members” (p. 337). Owens (2001) roughly put it as “the study of the perceptions of participants of certain intangible aspects of the environment” (p. 174). He also used such terms as “atmosphere,” “personality,” “tone,” or “ethos” to describe the unique characteristics and the internal quality of the organization experienced by its members.

Definitions of organizational climate by the past and present researchers show the following commonly accepted characteristics: organizational climate normally is the enduring quality of the organizational environment and the study of it is based on the perceptions of the organizational members about various aspects of the organization.

*How School Climate Has Been Defined*

Anderson (1982) noted that school climate research owed much to earlier work on organizational climate in both business and university contexts. The definitions of school climate have been many and they have been as diverse as organizational climate.
Halpin and Croft (1963) defined school as having a climate much as people having “personalities.” The construct of school climate by Halpin and Croft integrated factors of social interaction between school principals and school teachers, and interaction among teachers. These factors related to the extent to which teachers perceived their disengagement from the teaching-learning process, the extent to which they perceived the principal placed burdens on teachers with routine duties, the extent to which teachers felt satisfied with their personal needs and their accomplishments in their work, the extent to which they perceived there were friendly relationships existing in the organization, and the extent to which they perceived the principal was moving the school in the right direction.

Halpin and Croft based the interpretation of school climate on the perceptions of school participants about the principal leadership effectiveness, principal-teacher interaction and teacher-teacher interaction. The focus of the dimensions of school climate by Halpin and Croft has greatly influenced the subsequent research on school climate.

In defining school climate, Owens (2001) took the view of Tagiuri (1968) and described school climate as the characteristics of the total environment in a school building. As Owens observed, Tagiuri asserted that “a particular configuration of enduring characteristics of the ecology, milieu, social system and culture would constitute a climate, as much as a particular configuration of personal characteristics constitute a personality” (p. 5). In this concept, school climate consists of four components: ecology, milieu, social system and culture. Ecology includes building and facilities, technology, information and communication inventions, and pedagogical inventions. Milieu refers to the school human social system factors, which include skills, motivation, job satisfaction,
feelings, values as well as race, socio-economic level of students, educational levels of teachers, and leadership. The component of social system refers to the school organizational structure factor. It includes items of communication patterns, instruction, supervision, administration, support services, pupil personnel services, decision-making practices, the organizational hierarchy, and formal structures. The component of culture includes assumptions, values, norms, beliefs, ways of thinking, behavior patterns, artifacts, history, myths, art, and so on. Tagiuri’s definition of school climate, concurred by Owens and some other researchers, is so encompassing that it almost includes all aspects of an organizational system.

Anderson (1982) supported Tagiuri’s climate model. He argued that Tagiuri’s school climate model reflected the common characteristics that many climate researchers agreed upon. That is school climate includes the total environmental quality within a particular school building.

Interestingly, beyond the common definition, Tagiuri includes culture in the domains of school climate. On the other hand, this definition may present to us the interwoven nature of school climate and school culture. A comparison of the two concepts is placed near the end of this chapter.

In studying school climate, Sergiovanni and Starratt (2002) noted that school climate can provide a reading of how things are going in the school. It is a basis for predicting school consequences and outcomes. School climate should focus on the school’s interpersonal work life as it has influence on teachers, administrators and students. They agreed with the description of “health” metaphor about school climate by Mathew Miles (1965), who stated that the healthy school displays clear and reasonably
accepted goals, effective use of resource, adequate and smooth communication, optimal power equalization that the distribution of influence is relatively equitable between the formal authority and its subordinates. It reflects a sense of togetherness that bonds people together with a feeling of well-being among the staff; self-renewing properties, active response to its environment, and strong problem-solving capacities.

Hoy and his colleagues also contributed to the interpretation of the “health” metaphor about school climate. They asserted that a healthy school will continue to grow and prosper. It may be effective or ineffective on a given day but it will not suffer persistent ineffectiveness (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy & Tarter, 1997).

Based on the organizational “health” definition for school climate, Hoy and his colleagues developed a series of instruments of the Organizational Health Inventory (OHI). Hoy, Hannum, and Tschannen-Moran (1998), Hoy, Hoffman, et al. (1996), and Hoy and Tarter (1997) conducted a series of research studies on the relationship of school climate to the effectiveness of school administration and student achievement in the elementary, middle and high school contexts. They claimed that school climate is the set of internal characteristics that influences the relatively enduring quality of the school environment that is experienced by participants. It is based on their collective perceptions of behavior in schools.

The definition of school climate by Hoy and his colleagues is also reflected in Sergiovanni and Starratt’s (2002) description of the concept of school climate as “collective, born of the sum of teacher perceptions of the interpersonal life of the school as the faculty lives and work together” (p. 316). These researchers transformed and
developed the domains of school climate and articulated its definitions from its traditional interpretation.

In contrast, some researchers developed the definition of school climate based on their purpose of studies. This kind of research intent has added to the variety of ways to define school climate.

For instance, when studying the relationship of student achievement to the elementary school teachers' perceptions of school climate, Johnson and Stevens (2006) asserted that school climate might be called school environment or school-level learning environment. It refers to the social system of shared norms and expectations.

In another study, Parcel et al. (2003) developed a modified climate survey instrument that stemmed from Hoy and his colleagues' revised OCDQ-RE (The Organizational Climate Description Questionnaire for elementary schools) and the OHI-RE (Organization Health Inventory for elementary schools). With the revised instrument, they conducted a research study on the effect of school climate on the institutionalization of the health promotion program called Child and Adolescent Trial for Cardiovascular Health (CATCH). They termed school climate as various physical and psychosocial structures that shape schools' social and physical environments.

Although definitions of school climate are varied, researchers and educators such as Halpin and Croft, Tagiuri, Sergiovanni and Starratt, Hoy and his colleagues, and Owens agree that organizational climate in a school is primarily related to the shared perceptions that people hold in the organization. It is influenced by formal and informal relationships, personalities of participants, and leadership in the organization.
How School Climate Has Been Measured

Owens (2001) claimed that the research studies on school climate mostly depended on the use of questionnaires in which respondents are asked directly about their perceptions of the organization. As organizational climate in a school is related to individuals' shared perceptions of the organization, assessment of the climate is a rather straightforward process. Researchers and educators have developed various kinds of measures of school climate, with extensive use of quantitative survey instruments to gather and analyze data from the school members.

The Organizational Climate Description Questionnaire (OCDQ) developed by Halpin and Croft is mainly targeted at the elementary school context. In the instrument, school staffs are asked to rate the extent to which each statement truly describes the school using a four-point Likert scale. It consists of 64 items with four subscales (disengagement, hindrance, spirit, and intimacy) regarding teacher-teacher interaction and another four (aloofness, production emphasis, thrust, and consideration) regarding teacher-principal interaction in the school. The questionnaire items concerning teacher-teacher interaction can be instanced like "The morale of the teacher is high." Items concerning teacher-principal interaction are stated like "The principal sets an example by working hard." The research results of their project after investigation of 71 elementary schools yielded six types of school climate. They are actually a continuum from open, autonomous, controlled, familiar, paternal, to closed. An open climate is a high degree of authenticity. The principal and teachers are genuine in their behavior. A closed climate involves the presence of a tension in the relationship between the principal and teachers,
with the principal constantly stressing routine duty and the teachers showing little
satisfaction about their school. Halpin and Croft’s OCDQ has been widely used among
researchers and educators during the 1960s and the 1970s (Anderson, 1982; Hoy, Tarter,
& Kottkamp, 1991). It was recognized then as a useful tool to measure school climate in
the elementary context (Hoy & Forsyth, 1986).

OCDQ by Halpin and Croft, however, received criticism. As Hoy, Hoffman, et al.
(1996) put it, in the more than three decades since the OCDQ came into use, schools had
undergone tremendous changes. They argued that the original work by Halpin and Croft
had to be revised and improved if the assessment of school climate under OCDQ
continued to work for school improvement.

Hoy and his colleagues, based on Halpin and Croft’s OCDQ, revised and
developed OCDQ for elementary schools (OCDQ-RE), for middle schools (OCDQ-RM),
and for secondary schools (OCDQ-RS). The three OCDQ revised versions contain 34 to
50 items (varying by the version), which ask the respondents to rate the extent to which
the item statements are true to the school organization.

Hoy and Forsyth (1986) gave a description of the revised Organizational Climate
Description Questionnaire for elementary Schools (OCDQ-RE), which consists of 42
items with six subtests that map a profile of the school climate. They did a second-order
factor analysis of the subtest correlation matrix which confirmed that there are two
underlying general factors. The first factor is formed by teacher behaviors: disengaged,
intimate, and collegial. The second factor is referred to principal behaviors: restrictive,
directive, and supportive. The first factor is characterized by teachers’ interaction with
low disengagement, high intimacy and high collegial relations. This factor indicates an
openness and friendliness in the school faculty relationships. The second factor is characterized by the principal’s leadership with high restrictiveness, high directiveness, and low supportive behaviors. The second factor describes the principal’s leadership in rigidity and closedness; thus it can be named closeness in principal behaviors.

Hoy and his colleagues developed another school climate instrument called Organization Health Inventory (OHI) (Hoy, Tarter, & Kottkamp, 1991). The conceptual framework of organizational health is based on the perspectives of Parsonian social systems theory (Parsons, 1967). Parsons suggested that formal organizations display three levels of responsibility and control over activities to meet their needs. They are technical, managerial, and institutional. The technical level refers to the teaching-learning process in schools, including the dimensions of morale and academic press. Morale relates to the school faculty’s collective spirit and job satisfaction while academic press pertains to the school focuses on academic accomplishments and high expectations. The managerial level mainly refers to the effectiveness of the principal’s leadership. The institutional level refers to the functional connection of schools with the community in terms of legitimacy and community support. The Parsonian perspective provides an integrative scheme for the development of the series of OHI instruments by Hoy and his colleagues (Hoy, Hannum, & Tschannen-Moran, 1998; Sweetland & Hoy, 2000).

The OHI also has separate instruments targeting elementary, middle, and high schools. Hoy, Tarter, and Kottkamp (1991) developed the Organizational Health Inventory for elementary (OHI-E) and for secondary schools (OHI-S), and Hoy and Sabo (1998) for middle schools (OHI-M). From the Parson’s three levels of organizational responsibility, the OHI instruments are organized into seven specific aspects of
organizational health. These dimensions consist of institutional integrity, which refers to the school’s ability to adapt to its environment; principal’s influence, which refers to the principal’s ability to influence the decisions by upper administrations; consideration, which refers to the principal’s leadership behavior that is friendly and open; initiating structure, which refers to the principal’s behavior in developing work relationships with teachers; resource support, which refers to the capacity of providing teachers with the material they need for doing an outstanding job; morale, which refers to a collective sense of friendliness, openness, and trust within the faculty; and academic emphasis, which refers to the extent to which the school is driven by a quest for academic excellence (Hoy, Tarter, & Kottkamp, 1991).

There are 37 to 45 items in the OHI instruments (varying by the version). They were written with short and descriptive statements intended to capture salient aspects of school health. Sample items by Hoy and Tarter (1997) are presented in the following:

The principal is able to influence the actions of superiors.
The principal is impeded by superiors.
The principal treats all faculty members as his or her equal
The principal lets faculty know what is expected of them.
The principal schedules work to be done. (p.109)

Hoy and his colleagues asserted that the organizational health of schools is operationally defined by the seven dimensions of specific interaction patterns among students, teachers, and administrators. They represented the three levels of responsibility and control within the school (Hoy, 1990).

The revised OCDQ and OHI by Hoy and his colleagues are no doubt one of the most encompassing instruments for measuring school climate in the current research
literature. They have been cited many times by different educators and researchers in this field.

Another major survey instrument for measuring school climate was developed by the National Association of Secondary School Principals called the Comprehensive Assessment of School Environments (CASE-1987), including School Climate Survey, Student Satisfaction Survey, Teacher Satisfaction Survey, and Parent Satisfaction Survey. The CASE School Climate Survey taps into 10 dimensions. They are teacher-student relationships, security and maintenance, administration, student academic orientation, student behavioral values, guidance, student-peer relationships, parent and community-school relationships, instructional management, and student activities. It is made up of 55 items and can be administered to students of middle schools and high schools as well as to their parents and teachers. This instrument can be used together with the other three satisfaction survey instruments to obtain comparable cross-group information about school climate, with exception of some particular items that are specially targeted at certain groups (students, parents, and teachers). Howard and Keefe (1991) provided a report on the process of its application and the translation of the assessment data.

Instruments developed to measure school climate have had many different focuses on its dimensions. Anderson (1982) asserted that the field of climate research could be compared to the story of seven blind men giving seven different descriptions of the elephant. His assertion indicates that the emphasis on the climate dimensions is largely based on the researcher's inquiry orientation. It is noticed that the theoretical framework of open versus closed climate developed by Halpin and Croft has gained considerable attention in educational research studies ever since its publication. Although their OCDQ
instrument has received lots of criticism, it has influenced the thinking of researchers of school climate. So far it has been applied to hundreds of research studies on this topic. The original OCDQ has been largely improved by Hoy and his colleagues in their subsequent research efforts.

School Culture and School Climate Comparison

Owens (2001) asserted that "the culture of an organization exerts powerful influence on the development of climate" (p. 151). Contemporary educational researchers normally conceptualize the school context, workplace and working environment with both school culture and school climate.

Many aspects of the two constructs are overlapped when researchers want to study school contexts to capture the nature of the feel or sense of the school organization. Some studies obscured these two concepts and used them together to measure organizational contexts; however, this view has not been accepted by researchers of culture and climate. It is therefore necessary to make a comparison of these two concepts and draw clear references to the theoretical base for this study.

It has been noted that studies on organizational culture look into the depth of tacit assumptions, hidden norms, belief and values, societal influence, history and traditions that are placed at the heart of the people in the organization. On the other hand, studies on organizational climate place focus on the perceptions and patterns of behaviors in the members of the organization (Hoy & Tarter, 1997). It is interesting to note that researchers hold different views on defining and measuring culture and climate.
How Organizational Culture Has Been Defined

Culture is not a new concept. Studies of organizational culture can be traced back to the 1930s and 1940s in the field of business and industry when researchers conceptualized workplace as a culture existing with norms, sentiments, values, and emergent interactions as they attempted to describe the nature and function of the informal organization (Hoy & Tarter, 1997). Berger (1995) estimated that in research literature there were more than 100 definitions for culture.

The study of culture began to capture the attention of researchers in the field of organizational behavior when William Ouchi’s Theory Z (Ouchi, 1981) was published in the 1980s. The significant feature of the Theory Z style of management experienced by the Japanese business organizations is its emphasis on people as a whole, not a half machine from nine to five in the business hours and a half human out of business hours. Ouchi described the organizational culture as systems, ceremonies, and myths underlying the values and beliefs of the members of the organization.

Contemporary culture researchers generally accept Ouchi’s view and define culture as a combination of philosophies, ideologies, ceremonies, rituals, assumptions, values, norms and beliefs, which are shared by the members of the organizations (e.g., Bolman & Deal, 2003; Connor & Lake, 1988; Fullan, 2001; Hoy & Tarter, 1997; Kilmann et al., 1985; Owens, 2001; Schein, 1985). Sample statements of this view can be read in numerous noted publications:
“When culture is linked to social groups such as organizations, it is seen in the anthropological sense as a prevailing set of beliefs and customs that guide the actions of persons within that group” (Carlson, 1996, p. 31).

“Culture dictates the ways in which members of that organization relate to one another” (Kline & Saunders, 1998, p. 24), and would “guide the rules of behavior which had been accepted as legitimate by members of a group” (Owens, 2001, p. 154).

An organizational culture consists mainly of what people believe regarding what works and what does not work (Wilkins & Pattern, 1985). The most frequently cited statement defining culture in a simplistic manner is “the way we do things around here” (Kilmann et al., 1985). Schein (1985) insisted that underlining this manifestation is the behavioral norms, hidden assumptions and values that dominate an organization at a profound level of depth. The most intriguing aspect of culture as a concept is that it points us to phenomena that are below the surface. These facets are powerful in their impact but invisible and unconscious (Schein, 2004).

School culture came to the focus of educational researchers during the 1980s (Deal & Kennedy, 1982). School culture researchers hold similar views on linking culture with school organizational context.

Bush (2003) assumed that beliefs, values and ideology are at the heart of the school organizations. Each school has its distinctive culture which depends on the mix of values, beliefs and norms that prevail in the school. Furthermore, multiple cultures are likely to exist in a school, associated with subunits and operating simultaneously (Bush, 2003; Owens, 2001). Put in a more explicit way, Sergiovanni (1995) described a school organization as managerially loose, but culturally tight.
Hoy, Tarter, and Kottkamp (1991) suggested a synthesis of definitions of school culture. They stated that culture “is a system of shared orientations (norms, core values, and tacit assumptions) held by members, which holds the unit together and gives it a distinct identity” (p. 5).

Various definitions for organizational culture and school culture indicate that culture relates to norms, tacit assumptions, beliefs and values within an organization. Its existence is unseen, hidden in depth and historically bound.

*Distinction Between Culture and Climate*

Research literature has been replete with comparison and contrast between organizational culture and organizational climate. Organizational culture and climate have been found to be distinct and of multidimensional constructs (Glisson & James, 2002).

Some researchers consider the interwoven characteristics of the two concepts and they believe that organizational climate relates to organizational culture as the perceptions of the members in the organization reflect the values and beliefs in the environment of the organization (e.g., Aarons & Sawizky, 2006; Hoy & Tarter, 1997; Owens, 2001). These shared beliefs and norms affect employees’ behaviors and emotional responses to the workplace and thus influence the organizational climate (Aarons & Sawizky, 2006).

Some others asserted that organizational climate’s concept included culture (e.g., Houtte, 2005; Tagiuri, 1968). Many more researchers (e.g., Denison, 1996; Kunda, 1992; Owens, 2001; Schein, 1985, 1990, 2004) hold the view of distinction in the two
conceptual focuses. To compare these two concepts, it is necessary to further explore how researchers define them when a comparison of the two is made.

Culture researchers are more concerned with the evolution of social systems over time. They argue for the importance of a deep understanding of underlying assumptions as well as the insiders’ point of view of the organization. Climate researchers are less concerned with the evolution of the systems but more with the organizational members’ perceptions of observable practices and the procedure of the organizational development. These practices and procedures are close to the surface of the organizational life. They are related to the impact that the organizational systems have on groups and individuals (Denison, 1996; Kunda, 1992; Schein, 1985, 1990, 2004).

Many researchers believe that culture refers to the behavioral norms, assumptions, expectations and beliefs of an organization. It reflects how things are done in an organization. Climate refers to the perceptions of members in the organization that reflect the characteristics of the work environment (Aarons & Sawitzky, 2006; Glisson & James, 2002; Owens, 2001; Verbeke, Volgering, & Hessels, 1998).

In terms of research focus, Hoy and Tarter (1997) asserted that if the research purpose is to identify the underlying forces that motivate behavior in a school, or the values and symbolism of the school, then a cultural approach seems to be preferable. If the focus is to describe the actual behavior of the school people with the purpose of managing and changing it, then a climate approach is more realistic.

Numerous researchers (e.g., Glisson & James, 2002; Hoy et al., 1990, 1996, 1997, 1998; Owens, 2001; Schein, 1985, 1990, 1999, 2004) claimed that the distinction between school culture and school climate can be simply stated: Culture is dealing with
how the things in the school can be done, and school climate is about how the school members feel about the internal environment. At the same time, they recommend employing qualitative and mixed method to study organizational culture and employing quantitative approaches to study organizational climate.

Ways to Study Organizational Culture

Sociologists and anthropologists own much of the credit in their research on organizational culture as they explore something subtle and ambiguous existing in a particular organization. Basically there are two methods for examining organizational culture: quantitative and qualitative. Those favoring positivistic paradigm may use surveys and structured interviews to collect data regarding the aspects of organizational culture, whereas those favoring the paradigms of interpretism and criticism may use qualitative device like observations, document reviews and unstructured interviews (Carlson, 1996).

Researchers using quantitative methods to assess organizational culture are represented by O'Reilly, Chatman, and Caldwell (1991) with their instrument to measure culture via values. The instrument they used is called the Occupational Culture Profile (OCP) which is made up of 54 values statements. The 54 statements are grouped into seven dimensions: Innovation, Stability, Respect for People, Results Orientation, Aggressiveness, Detail Orientation, and Team Orientation. The instrument uses the Q-sort method of data collection to identify the characteristics of values of an organization as well as those of individuals within the organization.
Although OCP has been widely used and later revised (Cable & Judge, 1997) to assess various organizational culture, the reliability of the OCP value dimensions remain in question (Howard, 1998; Vandenberghe, 1999). Furthermore, there is no statistical information about its reliability and validity.

Another noticeable cultural survey instrument was developed by Kilmann and Saxton (1991), which is called The Kilmann-Saxton Cultural-Gap Survey. The Kilmann-Saxton Culture-Gap Survey (CGS) was intended for use in assessing cultural norms. It is a two-step analysis. In Part I of the Survey, the respondents are asked to assess the actual norms they feel that are operating in their work group. In Part II respondents are asked to assess the desired norms they feel that would improve their organization’s performance, job satisfaction, and morale. The differences between these actual and desired norms present “culture-gaps.”

Regardless of the validity and reliability of their cultural instrument, Kilmann and Saxton’s perspective in viewing norms as a basic aspect of organizational culture is supported by some other researchers (e.g., Dyer, 1985; Hoy & Miskel, 1996; Hoy & Tarter, 1997; Schein, 1992). These culture researchers generally agree that culture can be examined in different levels in terms of the cultural abstraction.

At its most abstract, according to Dyer (1985) and Hoy and Tarter (1997), are the basic assumptions about the nature of relationships, human nature, truth, reality, and environment. These researchers contended that these assumptions are unconscious, and hard to identify among the organizational members. The effort to explore these assumptions in depth involves comprehensive data gathering process. These data should
pertain to the history of the organization, critical events, organizational structures, myths and legends.

The shared values are at its middle level of abstraction. They are reflections of the organization’s conceptions of the desirable. This defines why the members of an organization behave the way they do; such as openness, trust, cooperation, intimacy, or teamwork, service. Stories, rituals, ceremonies and symbols are viewed to provide support for these values.

Finally, the behavioral norms are the basic level of the shared orientations of culture. They are unwritten expectations that affect behaviors of the members of the organization. Norms can be understood in terms of cultural aspects in more tangible means. Though obscure, they present a fairly overt picture for people to follow regarding “the way we do things around here.” These norms are more easily changed than values and tacit assumptions. The perspective about defining culture in its levels of abstraction will guide us to a better understanding of the way to study culture.

There are quite a few other survey instruments developed in recent years using quantitative methods to measure organizational culture in schools. They have not, however, received much attention, and are not widely used in relevant research fields.

One of the instruments was called The School Cultural Elements Questionnaire (SCEQ) developed by Cavanagh and Dellar (1996, 1997), which is based on their research in the schools in Australia. The Questionnaire contains two parts, intended to collect the staff’s perceptions of school culture.

The first part of the questionnaire is concerned with what actually took place in school (Actual Form). The second part relates to the perceptions of staff regarding what
the respondents prefer their school to be (Preferred Form). The notion of the SCEQ is similar to the Kilmann-Saxton Cultural-Gap Survey. The original version of the SCEQ has 64 items in the Actual Form, and 64 values in the Preferred Form with eight scales: teacher efficacy; teachers as learners; collegiality; mutual empowerment; collaboration; shared visions; school-wide planning; and transformational leadership. After a pilot study of factor analysis, the final version provides a measure of six dimensions: teacher efficacy, emphasis on learning, collegiality, collaboration, shared planning and transformational leadership. The SCEQ staff survey employs a five point Likert Scale comprising the rating level of “strongly agree,” “agree,” “uncertain,” “disagree,” and “strongly disagree.”

David, Ellett, and Rugutt (1999) modified Cavanagh and Dellar’s SCEQ for use in the United States. Their revised SCEQ contains 78 item statements regarding five measurement dimensions: vision/leadership, collegial teaching and learning, professional commitment, openness, collaboration, and professional relations/interactions. Sample statements in the dimension of vision/leadership are stated like: “Administrators are willing to help teachers when problems arise,” and “Expressions of school’s visions reflect staff consensus” (p. 27).

Maslowski (2006) conducted a review of the existing school culture inventories developed in similar international contexts. These inventories have been used for diagnosing school culture. He developed five criteria for his selection of the inventories under study: first, aiming at measuring basic assumptions, values, norms or cultural artifacts shared by the members of a school; second, assessing different dimensions of school culture; third, explicitly developed for diagnosing the culture of schools; fourth,
directed at organizational processes in schools and addressed to school staff measuring
culture in terms of normative expectations in classrooms or values that teachers showed
in their relationship to students; and, finally, being validated with analysis of reliability
and validity reported in their application.

With these five criteria, six questionnaires are selected in his review: the School
Culture Survey (Edwards, Green, & Lyons, 1996; Saphier & King, 1985; Schweiker-
Marra, 1995); the School Work Culture Profile (Snyder, 1988); the Professional Culture
Questionnaire for Primary Schools (Staessens, 1991); A Questionnaire for Measuring
Organizational Culture in Primary Schools (Houtveen, Voogt, Van der Begt, & Van de
Grift, 1996); the School Values Inventory (Pang, 1996); and the School Cultural
Elements Questionnaire (Cavanagh & Dellar, 1996).

This review critically synthesizes some similarities shared in those inventories
that mostly claimed they were aimed at investigating “the way we do things around here,”
an attempt to measure staff behaviors or school practices. These attempts are implicitly
based on the argument that there is a strong relationship between basic assumptions and
values, and that values are closely related to the actual behaviors of the staff in schools.

Actually Maslowski has cast doubt on these claims in his previous research,
asserting that it is difficult to identify values and norms in school from the actual
behaviors of teachers (Maslowski & Dietvorst, 2000).

*Culture Survey Critiques*

Using quantitative information to study and measure organizational culture has
aroused a lot of controversy in the research circles (e.g., Hoy & Tarter, 1997; Maslowski
Understanding of this comparison will be gained by conducting a further review of the critiques by noted researchers and educators; and thus ascertain how they view the quantitative approaches applied to culture study.

Commenting in a straightforward manner, Schein (1999) contended that using written questionnaires to assess organizational culture will not yield proper validity and reliability of the responses because the researchers do not know what to ask or can not put words to the mouths of the people as to how they view historical events. He claimed that either the researchers or the respondents would be misled by the written questionnaire on the culture contents. Schein (2004) went further on casting doubt of using quantitative instruments like “culture surveys” to study a culture in an organization. His tone of criticism is strong and negative. He claimed that those who said they could improve organizational performance by helping organizations create certain kinds of cultures used very different definitions of culture. These definitions “display not only a superficial and incorrect view of culture, but also a dangerous tendency to evaluate particular cultures in an absolute way . . .” (p. 8).

Another noted researcher, Carlson (1996), commenting in a comparatively milder way but implicitly holding a stand of objection, observed that studying organizational culture should stress the importance of a historical perspective. He held that the exploration of critical incidents which heighten people’s attention may cause considerable amount of reflections. Carlson supported triangulation in terms of ways to examine organizational culture, and advocated viewing an organizational culture from the eyes of its participants by group interviews.
Owens (2001) advanced this view and stated that important elements of culture were subtle, unseen and too familiar for the people in the organization to notice its visibility. Such critical issues as the significant historical events, the influence of the organizational traditions and myths as well as their implications for present-day behaviors could not be expressed within the questionnaire questions or statements. Furthermore it would be impossible to sort and summarize culture norms, beliefs and values in a particular organization in a statistical data language.

Hoy and his colleagues have been studying culture and climate in K-12 school contexts for the past few decades. Their arguments, based on their numerous empirical studies, insisted that studies of culture should focus on assumptions, values, or norms, which have their intellectual roots in anthropology and sociology. It would be better to use ethnographic techniques to study culture (Hoy, 1990; Hoy & Tarter, 1997; Hoy et al., 1991). Their suggestion of studying school culture pointed to the application of qualitative approach rather than quantitative inferences.

Denison (1996) made a comparison of the culture and climate literature published since the early 1980s regarding their definitions of the phenomenon, epistemology and methodologies, and theoretical foundations. He found that numerous articles used quantitative survey instruments to study culture; however, most of these cultural studies were similar to the early research of organizational climate. Though holding a critical view on survey research on culture study, Denison thought that the culture study literature suggested a strong rationale for the continued integration of quantitative and qualitative methodologies. The difference between culture study and climate study existed more on
the different interpretation of an organizational context than on the ways to study an organizational context.

The culture study has spread beyond American educational research circle regarding its methodological application. The recent review of international school culture inventories by Maslowski (2006) indicates that applying qualitative and quantitative techniques to relate staff’s behaviors to school culture is a complicated and challenging endeavor. Yet qualitative researchers will find it easier to interpret their data as they are more familiar with the context of a particular school. Maslowski claimed that the school culture questionnaires under review are neither conducive to directly investigating latent assumptions nor sense-making meaning of events in a school. It can even be questioned as to whether it is suitable to use them to measure the values in a school. Maslowksi pointed out that many research critiques claimed that the questionnaires of this kind “are not directed towards the diagnosis of school cultures, but measure school climate instead” (p. 28). He also concluded that the culture surveys under review are mostly limited to use in the local organizational context thus with little indication of being applicable in other organizational contexts.

Denison’s (1996) vivid description of the ways to study culture and climate may serve well as a conclusion for the comparison of ways to study school culture and school climate. More explicitly, if researchers carry field notes, quotes or stories, and present data with qualitative analysis to support their ideas, then they are studying culture. If researchers carry computer printouts and questionnaires, and present their analysis with quantitative approaches, then they are studying climate.
This study holds to the view that the study of organizational culture is better to employ qualitative or mixed methods to discern more fully the norms and assumptions rooted in the organization. It is inappropriate to employ a survey questionnaire to study organizational culture. The study of organizational climate, on the other hand, can employ quantitative approach to examine the perceptions and patterns of behaviors of the organizational members. The selection of school climate as the major variable for this study is based on the review of a significant amount of climate and culture research literature. The justification is well substantiated.

Teacher Leadership

Leadership Redefined Theories

Leadership has been defined literally in hundreds of ways ever since it appeared about two hundred years ago (Yukl, 1989). It is, however, one of the most observed and least understood phenomena on earth (Burns, 1978).

The traditional framework of leadership was driven by several assumptions, including scientific management, rational decision-making, task structure, cognitive abilities of the leader, leader's traits, dedicated, separated and participatory styles of leaders, X/Y theory, task and relations dichotomies (Starratt, 1993). Simply by concentrating on the leadership of people in certain roles, one may understand their leadership behaviors and their impact on organizational goal attainment (Ogawa & Bossert, 2000). Traditional concepts of leadership were constructed as if styles, skills, leader's individual traits, and function of leadership would be for all of different kinds of
organizations and different situations. They had little to do with followers in terms of exercising leadership. This kind of framework has been largely improved in the current literature on leadership redefined theory.

Lambert (2003b) asserted that traditional leadership study narrows much of the focus on the dispositions, personalities, leader traits, skills, and charismatic features in an individual in positions of formal authority, neglecting the vast majority of the professionals who also play important parts in these assumptions. Those timeworn assumptions have passed to us an assumption that leaders and leadership are the same. If we could find the good qualities and characteristics of the leader, we could locate the problems within leadership.

Lambert’s statement clearly opposes the traditional concept of leadership and points out an innovative view that leaders and leadership can not be taken as the same concept when leadership theory is redefined for interpreting the present organizational leadership behaviors. Lambert’s leadership perspective never stands alone. Supporting discourses can be found in recent leadership literature.

In his *Images of Organization*, Morgan (1997) asserted that leadership can be understood in relationship to shared or invented meanings within an organization. Gardner (2000) claimed that “leadership is the process of persuasion or example by which an individual (or leadership team) induces a group to pursue objectives held by leaders or shared by the leader and his or her followers” (p. 3). Gardner further stated that in the leadership groups and leadership endeavors, individual group members played different roles, and one of them was for the leader.
Gardner's leadership redefined concept implies that leadership is exercised in
group behaviors in which leadership groups, consisting of organizational leaders and
other members, take on different roles. Musjis and Harris (2003) advanced Gardner's idea
and pointed out in particular that leadership can be separated from person, role and status.
Leadership is not a single leader behavior.

The arguments from these researchers and educators definitely have moved away
from the notion of equating leadership with headship (Day, Harris, & Hadfield, 2000). It
primarily relates leadership to the connections among individuals within an organization.
They indicate that leadership is the relationship of group behaviors. These arguments
have great impact on the research conducted in the field of leadership behavior in school
contexts. Previous research in this field has mostly focused on the people holding
positional power, mainly on the chief executive officers. In schools this has been on the
school principals (Lambert, 2003b; Spillane, Halverson, & Diamond, 2004).

American education has long been governed under a mistaken notion that school
leadership was something for administrators to exercise, not for teachers (Sergiovanni &
Starratt, 2002). For instance, Bolman and Deal (1994) cited Michael Scriven's assertion
that leadership skills "are entirely unnecessary for good teaching" (p.1). This simple
statement may have put leadership into the category of school administration.

Current school leadership researchers, however, strongly oppose such a traditional
and narrow view. As Sergiovanni (2001) pointed out, current leadership theories are too
rational to fit the messy world in which schooling actually takes place. He further
interpreted his statement that dealing with the complexities of this world requires teachers
and administrators to exercise leadership together without regard to their positions and personalities, and those mandates.

Sergiovanni (2001) put forward a leadership perspective called leadership density. This concept refers to the extent to which leadership responsibilities and practices are ingrained among the school faculties. The leadership density perspective suggests that the more people in the school who are involved in the leadership roles and responsibilities, the denser is the leadership in the school. High leadership density will display a greater involvement of school members in the engagement of the collaborative work. It will increase the number of people in the trust of shared information, the number of people showing concerns with decision making, the number of people generating new ideas and being exposed to new ideas, and the number of people shouldering responsibilities for school success. Sergiovanni's leadership density perspective has redefined school leadership. Also it has amplified the importance of the teacher leadership behaviors which are tied to school improvement and school success.

The concept of leadership capacity developed by Lambert (1998, 2003b), echoed with leadership density perspective by Sergiovanni, is also one of the current redefined school leadership theories. This organizational concept renders focus on the framework of broad-based participation and skillful involvement of teachers, students and parents in the work of school leadership. Teachers as leaders are the key players of the leadership team.

The broad-based participation carries the notion that if the principal of the school, teachers, parents and students are mostly involved in the work of leadership, then the school will enjoy a high leadership capacity. This broad-based participation facilitates a high student achievement. Such participation should be aligned with skillful involvement
in a focused, productive and collaborative context, otherwise, participation without effective skills and positive collaboration will yield unsatisfying results.

The significant aspect of the new definition of leadership by Lambert (2003b) is to refer to leadership as a relationship with learning. The new assumptions about school leadership are summarized as:

1. Leadership can be understood as reciprocal, purposeful learning in a community.
2. Everyone has the right, responsibility and capacity to be a leader.
3. The adult learning environment in the school and district is the most critical factor in evoking leadership identities and actions.
4. Within that environment, opportunities for skillful participation top the list of priorities.
5. How we define leadership frames how people will participate.
6. Educators are purposeful—leading realizes purpose. (p. 425)

Perspectives of leadership density and leadership capacity have brought a new vision to augment the definition of school leadership. These concepts imply that teacher’s participation in school decision-making process plays an important role in the redefined leadership structure.

Apparently the newly developed leadership theory is in favor of teacher leadership. It is closely associated with the organizational members in the concept that all members can lead in one way or another regarding organizational responsibilities (Katzenmeyer & Moller, 2001). The leadership of a school principal has been tied to the development of teacher leadership for sustainable school improvement and high quality
student performance (Hargreaves & Fink, 2006). For the past several decades, school leadership theory has developed numerous perspectives encompassing teacher leadership as important components.

**Distributed Leadership Perspective**

Research literature on school leadership has documented broad evidence that school principals do not play the single role in exercising school leadership. Teachers, administrators, and other professionals also share the leadership roles (e.g., Barth, 2001; Copland, 2003; Goldstein, 2003; Harris, 2003; Lambert, 2003b; Spillane, 2006; Spillane et al., 2001, 2004).

Distributed leadership encompasses the idea of fostering teacher leaders in schools and it exhibits in a broader conceptual identity (Copland, 2003, Muijs & Harris, 2007). It suggests that we should take leadership practice as the unit of interest and treat teachers as leaders and administrators as leaders simultaneously (Spillane, 2006). Thus, a brief review of the development of distributed leadership will assist further understanding of teacher leadership.

Distributed leadership and teacher leadership are concepts interwoven in a codependent relationship (Rutherford, 2006). Leadership researchers began to develop distributed leadership perspective out of the organizational theory in the 1960s when McGregor's (1960) Theory X and Y assumptions about human motivation emerged (Copland, 2003; Hargreaves & Fink, 2006).

Theory X leaders, as McGregor noted, assume that subordinates are passive and lazy, prefer to be led and directed, but dislike change. On the contrary, Theory Y leaders
are willing to share authority and responsibility, and to enable others to participate in the
decision-making process. The key assumption of Theory Y is that organizational
conditions should be arranged so that individuals can find satisfaction in their work and
achieve their own goals (Bolman & Deal, 2003; Hargreaves & Fink, 2006).

The transformational leadership theory developed by Burns (1978) and further
extended by Bass (1987) served to advance the Theory Y. It articulates a notion that
transforming leaders and followers are tied in a relationship of achieving a common goal
through a process of mutual stimulation and elevation that converts followers into leaders
and leaders into moral agents.

Subsequently some other educational researchers (e.g., Leithwood & Jantzi, 1991;
Leithwood & Steinbach, 1991) applied the transformational leadership perspectives to the
field of education. They were interested in studying the effect of transformational
leadership in schools. Specifically they wanted to determine how school leaders would
facilitate an organizational context in which school leadership would be exercised among
other people. This type of leadership requires that school leaders develop a new way of
thinking about leadership in terms of building a network of interactions. This network can
be distributed across various groups of school members and in different situations
(Copland, 2003; Hargreaves & Fink, 2006).

It has long been the phenomenon that leadership, as Timperley (2005) asserted,
has always been distributed within organizations. It was, however, in the mid-1990s that
the idea of distributed leadership came to be the focus of research in the leadership
literature (Goldstein, 2003; Timperley, 2005).
Copland (2003) made an analytical review of Elmore’s (2000) comprehensive framework of distributed leadership which consists of five domains: policy, professional, system, school, and practice. He commented that Elmore’s idea pushed the leadership function to the field of improving instruction and learning by relocating authority and responsibilities in the daily work of schooling. Building on Elmore’s framework, Copland put forward three arguments for defining distributed leadership.

The first argument is that distributed leadership is collective activities with collective goals. It possesses greater quality and dynamics than the sum of individual efforts. The collective nature of distributed leadership is echoed with the idea of Spillane and his colleagues (2004). It states that distributed leadership activities are “stretched over” people in different roles, functioning with a dynamic interaction between leaders and followers in different situational and social contexts.

The second argument is that distributed leadership involves the spanning of task, responsibility, and power boundaries between traditionally defined organizational roles. In the frame of distributed leadership, the task or problem situation is the determinate of the leader and the follower, but not necessarily the hierarchical position.

The third argument bases distributed leadership on experts rather than hierarchical authority. This argument exhibits agreement with the idea of Bennett, Wise, Woods, and Harvey (2003) in that expertise rather than formal positions in an organization is expected to be the base of leadership authority.

According to Bennett et al. (2003), the expertise impetus in a school is largely located in the professionals instead of centering on principals. The practice of leadership
will require redistribution of power toward those who hold expertise among teachers and principals for the improvement of teaching and learning.

Copland’s study on distributed leadership provides a theoretical base for linking successful school improvement with the practice of distributing leadership tasks among broader professionals holding expertise. The professionals holding expertise will undoubtedly be referred mostly to teachers and teacher leaders in schools. Copland’s perspective on distributed leadership is supported by numerous researchers and educators in the field of school leadership.

After conducting a review of research literature on educational leadership in relation with student learning, Leithwood (2005) put forward his findings regarding distributed leadership. These are empirical responses in favor of Copland’s view on distributed leadership.

Leithwood found that compared with hierarchical forms of leadership, “distributed leadership more accurately reflects the division of labor experienced daily in organizations and reduces the chances of error arising from decisions based on the limited information available to a single leader” (p. 18). He also agreed with Gronn’s (2002) perspective that distributed leadership may provide opportunities for members in the organization to learn from each other through participation in decision making process and commitment to organizational development. He concluded that highly successful school leaders count on leadership contributions from many other people in their schools, and principals typically rely on teacher leaders.

Similarly, Goldstein (2003) also conducted his research on a review of recent distributed leadership literature and identified three models of distributed leadership.
First, leadership is taken as the performance of tasks rather than the holding of roles (Heller & Firestone, 1995); second, leadership is taken as an organization-wide resource of power and influence, the interaction between members of the organization rather than actions of the members (Leithwood & Jantzi, 2000); and thirdly, leadership is taken as a social distribution stretching over two or more people as leaders in their interaction with other people in particular situations (Spillane et al., 2001).

Goldstein conducted a case study of Peer Assistance and Review (PAR), which was intended for shifting leadership responsibility for teacher evaluation in one of the urban K-12 school districts. He found that PAR, as a salient case of distributed leadership, increased teachers’ formal authority in the district organizational structures for teacher evaluation. However, the hierarchical norms in the educational organization, the difficulty of conducting teacher evaluation, and program ambiguity remained as challenges to distributed leadership. Goldstein’s findings indicate that implementing distributed leadership is not a smooth path to school improvement.

In terms of the meaning of distribution of leadership tasks, Harris (2003) asserted that distributed leadership in schools does not equate with delegation of responsible tasks. It does not indicate a form of leadership diffusion losing its distinctive qualities. It is certain that specific functions and responsibilities would be retained in those holding formal positions. Harris also indicated that distribution of the leadership task is not an easy job in schools.

Challenges and questions for distributed leadership remain. For example, questions regarding who exercises the task of distributing leadership, when, where and how are the leadership tasks distributed among the members in the organization
(Hargreaves & Fink, 2006; Harris, 2003). If it is still the case that only the principal in the
school decides on the way of distributing the leadership tasks, distributed leadership of
this form would remain as a type of delegation of leadership tasks (Harris, 2003).

*Teacher Empowerment Perspective*

Teacher empowerment perspective is also in support of distributed leadership and
bears similarities in content structure with teacher leadership. Yet it differs from teacher
leadership in theoretical focuses. It is of significance in exploring teacher empowerment
perspective to assist further understanding of the themes and core values of teacher
leadership.

The concept of teacher empowerment has been another subject of considerable
research in the field of decision-making process in schools since the mid-1980s (Marks,
& Louis, 1999; Shen, 2001; Wan, 2005). This concept parallels with teacher leadership
but springs from the notion of “empowering employees” (Robbins, 1994) in the field of
business. The forms of teacher empowerment are related to teacher leadership and also
placed at the core of distributed leadership theory (Gronn, 2000; Muijs & Harris, 2003).

As early as the 1980s, corporations developed empowerment strategy to cope with
the challenges from the competitive global economy. The purpose of empowering
employees in the circles of business management was to empower individuals, and
encourage team work in solving problems and making proper decisions for improving
processes or products (Scarnati & Scarnati, 2002; Wan, 2005).
The domains of empowerment have been diverse. Nevertheless within educational settings teacher empowerment has gained general acceptance. It bears some similarities with teacher leadership in terms of its dimensions and its implementation.

In the 1980s, Maeroff (1988) indicated several factors related to teacher empowerment. These included active participation in school reform, teacher status, knowledge, and access to decision making process. Subsequently, Short and Rinehart (1992) identified six empirically generated dimensions of teacher empowerment: decision making, professional growth, status, self-efficacy, autonomy, and impact. Wall and Rinehart (1997) found teacher empowerment inclusive of decision making, autonomy, professionalization, status, impact, and self-efficacy. Marks and Louis (1999) listed four separate domains of teacher empowerment which can be operationalized as influence or control in a school context. These included school policy, teacher work life, student experience, and classroom control.

Some other researchers (e.g., Schermerhorn, Hunt, & Osborn, 1994; Sweetland & Hoy, 2000) simply defined teacher empowerment as the process by which administrators share power and help others use it to make decisions affecting themselves and their work. This perspective has gained some popularity in the teacher empowerment research.

In Sweetland and Hoy’s (2000) study of school characteristics and educational outcomes, for instance, the operational definition of teacher empowerment was based on the extent to which teachers were involved in decision making process. In Marks and Louis’s (1999) study of teacher empowerment and the capacity for organizational learning, they argued that the site-based decision making process accompanying decentralization can empower teachers to varying extents. Teacher empowerment in their
study was measured in four domains: influencing school policy, influencing student experiences, teacher work life and classroom control.

A synthesis of teacher empowerment perspectives indicates that teacher empowerment is taken as a leadership approach or a reform strategy which depends on the idea that school improvement can be enhanced by granting power to teachers participating in the decision-making process, which allows the teachers to be engaged in solving problems related to teacher's responsibilities. This empowering strategy is largely decided upon by school principals who are willing to accept the participative decision-making approach.

Similar questions, however, exist with the perspective of teacher empowerment. Harris's (2003) concern for distributed leadership remains the same for the empowerment strategy. This relates to how and when teacher empowerment takes place and how teachers are enabled to have the power. Does teacher empowerment largely depend on the school principal's leadership strategy or leadership style?

Teacher empowerment perspective possesses similar contents with those of teacher leadership but it differs in organizational structure and leadership concept. The empowerment perspective equates school leadership with status, authority and position. Leithwood and Jantzi's (1991) study, for instance, described how school leaders provided opportunities for teachers to be involved in the decision-making process in the school. Their description indicated that it was the school leaders who allowed staff to have the power to lead and manage certain school operational tasks. It was the school leaders who decided to distribute and share the decision-making power with the school staff.
Recent studies of effective leadership as well as teacher leadership, however, do not locate the leadership effectiveness with authority. These studies tend to separate leadership from person and status (Lambert, 2003b; Muijs & Harris, 2007). The distinction between leaders and followers tends to be blurred in the frame of teacher leadership (Harris & Muijs, 2005). Teacher leaders can be identified by school administrators and other teachers. They can be self-proclaimed and take on a variety of roles from global to process-oriented leading change beyond the school walls (Sledge & Morehead, 2006).

These ideas about teacher leadership are the premise for the choice of the term of teacher leadership for this study rather than teacher empowerment. Teacher leadership does not necessarily pertain to positional powers or administration-appointed leading tasks and responsibilities. It is a leadership performance recognized and implemented out of the needs and demands in an educational organization.

*Teacher Leadership Theory*

Teacher leadership is not a new concept but is located in the newly developed redefined leadership theory (Lambert, 2003b). For the past few decades, teacher leadership has been taken as an important element for school reform and school improvement (Little, 2003). As Fullan (1994) claimed that teacher leadership is not for a few, but for all, the majority of teachers in schools must become new professionals.

In the age of high accountability for student achievement, pressure and demands for principals' obligations have been continually expanding, making it difficult for one person to successfully deal with the daily operation of the school with all the complexity
School leadership by its nature is bound to be distributed and teacher leadership thus is not a matter of a teacher leader holding a formal position or whether he or she has been empowered (Frost, 2003; Frost & Durrant, 2002; Leithwood, Jantzi, & Steinbach, 1999). Furthermore, effective leadership, as many researchers and educators (e.g., Day et al., 2000; Harris, 2002; Lambert, 1998; Muijs & Harris, 2007) asserted, is not necessarily associated with authority of one person to lead but can be dispersed among people in the school.

Across the research on school improvement and school leadership, the study of teacher leadership has received more attention than before in both conceptual and empirical research from practitioners and researchers (Muijs & Harris, 2007). Smylie, Conley, and Marks (2002), for instance, in conceptualizing the recently developed form of teacher leadership from leadership theory for the past 10 years, explored three new approaches to teacher leadership. They are (a) teacher research as a form of teacher leadership, (b) different models of distributed leadership, and (c) leadership of self-managed teacher teams.

Their new approaches emphasize the importance of collective versus individual leadership. The new conceptual approaches indicate that leadership is aimed at the level of school, not just at the level of the school classroom, and leadership is focused on developing important aspects of a school organization, its curriculum and instruction, not just on the administrative tasks and positions. The new approaches to teacher leadership intend to shift away from the early teacher leadership initiatives of empowering individual teachers, professionalizing the teaching force and improving teaching performance. The reason for this is because these early initiatives, as claimed by
Lichtenstein, McLaughlin, and Knudsen (1992) and Pounder (1999), were closely associated with role-based leadership, models of work redesign and job enhancement, which are still under the realm of hierarchical leadership.

Another newly developed teacher leadership perspective is related to a cultural perspective of leadership. This perspective looks at teacher leadership development from a cultural context within an organization.

Holding teacher leadership from a cultural or symbolic view, Harris (2003) argued that the shared meanings and values within an organization indicate that leadership is about learning together and constructing meaning and knowledge collaboratively. It is therefore socially constructed and culturally sensitive without distinction of leaders and followers.

Accordingly as Lambert (2003b) put it, when leadership means a person of authority, teachers will not see themselves fit into that image. When leadership is an encompassing culture concept, teachers will see that they belong to this learning community.

Reflecting the effect of the cultural force of leadership, Lambert's (1998, 2005) theory of leadership capacity bonds together all the organizational members in the work of school leadership as a shared belief and value. In this binding culture, Lambert refers leadership to reciprocal, purposeful learning together in the community. Teacher leadership is for school capacity building as broad-based, skillful involvement in the work of leadership. As Lambert (2005) defined, broad-based involvement means extensive involvement of people in the work of leadership in which a pattern of participation is developed to foster lasting and respectful relationship among individuals within the
organization. Skillful involvement refers to the participant's engagement in the work of leadership with their comprehensive understanding, knowledge and skills.

From this point of view by Lambert and others, teacher leadership in cultural perspective is transformed to focus on relationships and collaboration in a learning community (Muijs & Harris, 2003). Teacher leadership exists in a facilitating culture.

Definitions of teacher leadership have presented various descriptions but one common theme held by many is that teacher leaders take on more decision-making responsibilities and activities beyond their classrooms (Barth, 2001; Beachum & Dentith, 2004; Blasé & Blasé, 2000; Dana & Bourisaw, 2006; Fullan & Hargreaves, 1996; Katzenmeyer & Moller, 2001; Rutherford, 2006; Smylie et al., 2002).

York-Barr and Duke (2004) conducted a synthesis of 140 literature pieces published from 1980 to 2004 and their suggested definition of teacher leadership is one of the most encompassing:

Teacher leadership is the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of the school communities to improve teaching and learning practices with the aim of increased student learning and achievement. Such team leadership work involves three intentional development foci: individual development, collaboration or team development, and organizational development. (pp. 287-288)

Yet a considerable amount of research literature describes teacher leadership from its leadership roles and dimensions. This can be identified in some of the most recent research studies.

Lieberman and Walker (2007) simplified teacher leadership roles as designing curricular and instructional programs, working effectively with colleagues and parents,
developing and implementing school-level policies and procedures, and sharing expertise and wisdom of practices with novices.

Day and Harris (2002) depicted four dimensions of teacher leadership roles: First, translating the principles of school improvement into classroom practices; second, teacher leaders’ participation of school development and feeling a sense of ownership; third, serving as important sources of expertise; and last, forging close relationships with individual teachers through which mutual learning takes place.

Katzenmeyer and Moller (2001) described teacher leadership with three main facets. They are: leadership of students or teachers, leadership of operational tasks, and leadership through decision making or partnership.

Illustrating teacher leadership in a more specific manner, Dana and Bourisaw (2006), based on Barth’s (2001) study on teacher leadership roles in schools, suggested 10 areas of teacher leader involvement: choosing textbooks and instructional materials; shaping the curriculum; setting standards for student behavior; deciding whether students are tracked into special classes; designing staff development and in-service program; setting promotion and retention policies; deciding school budgets; evaluating teacher performance; selecting new teachers; and selecting new administrators. They asserted that these roles of teacher leadership are most needed in school improvement.

Wynne (2001), depicting teacher leadership roles with a higher standard, stated that the teacher leaders should demonstrate such leadership behaviors as: to exhibit expertise in their instructions and share that knowledge with other professionals; to be consistently on a professional learning curve; to frequently reflect on their work to stay on the cutting edge of what’s best for children; to engage in continuous action research
projects that examine their effectiveness; to collaborate with their peer, parents, and communities, engaging them in dialogues of open inquiry; to become socially conscious and politically involved; to mentor new teachers; to become more involved at universities in the preparation of pre-service teachers; and to be risk takers who participate in school decisions.

In synthesizing teacher leadership development framework, York-Barr and Duke (2004) identify two frameworks or models in which necessary skills or knowledge that teacher leaders are supposed to know and be able to do. The first one is Rogus's (1988) model of developing teacher leaders in several areas including skills of effective instruction and collaboration, curriculum improvement knowledge, ability of empowering self and others, and developing political support for a change. The second model or framework is from Sherrill's (1999) identification of a set of core competencies. These include exemplary teaching and learning, understanding research about teaching, adult development, knowledge of clinical supervision, guiding colleagues by means of reflection, knowing the teacher preparation curriculum, demonstrating competence in collaborating with higher education faculty, in collecting data from classroom observations, and establishing positive relationships with administrators. Sherrill's framework of teacher leader development seems to encompass all the merits and high stakes qualities we expect of an outstanding teacher in the school but focuses less in the areas of decision-making involvement.

Wynne's and York-Barr and Duke's description of teacher leadership behaviors and responsibilities almost equates teacher leaders with educational researchers, instructional leaders, and school leaders. This teacher leadership model calls for a change
in school leadership governance in order to sustain its process and a bedrock belief in what leaders are doing.

These frameworks are grounded on the previous literature but lack empirical research support. Noteworthy research based on quantifiable evidence on teacher leadership and its development needs extensive conduction. Nevertheless, these theoretical perspectives provide us with a notion that teacher leaders should develop knowledge and competencies in doing more work than other teaching staff in and out of the classroom boundary.

Factors Influencing Distributed Leadership and Teacher Leadership

The research literature on factors that influence distributed leadership and teacher leadership show there is much that favors their development as well as challenges their effectiveness. It is noticed that, for instance, literature on distributed leadership, encompassing teacher leadership, does not generate coherent findings among research studies, or an echo of positive indication.

In distributed leadership literature, Timperley (2005) noted that the agreement that has been reached is that distributed leadership is not simply a form of dividing task responsibilities among individuals who come to play the roles, but rather it emphasizes the dynamic interaction functions across leaders and followers.

After a qualitative study on the key concept related to distributed leadership in seven schools over four consecutive years, however, Timperley found that distributed leadership practice in schools would be a risky business. It would result in incompetence, depending on how the leadership activities stretch over people in the organization.
Timperley’s findings indicate that school administrator’s leadership behavior is one of the factors that influence distributed leadership.

Similarly, Hargreaves and Fink (2006) noted that the overall patterns of distributed leadership practice may hide discrepancies in which distributed leadership may have produced less useful outcomes. They argued that if leadership tasks are distributed to some teachers who are not qualified and have a weak-knowledge base, this distributed leadership practice will “produce only pooled ignorance and prejudice rather than shared knowledge and professionalism” (p. 102). They further pointed out that distributed leadership will not automatically become sustainable leadership. It can be effective or ineffective, and it can come out of a teacher-agreed-upon community, or be imposed by the school principal.

Hargreaves and Fink’s findings imply that teacher’s leadership competence is also a factor that influences distributed leadership effectiveness. This factor also can be related to the influence on teacher leadership.

Spillane (2006) put forward a productive idea of developing distributed leadership, which suggests that the distributed leadership can be implemented with designs of the distribution of leadership responsibilities by the decisions of formal and informal leaders, including school districts and other external agents and agencies. It can come to pass by default in a situation where “savvy administrators, specialists, or teachers may identify an area in which leadership is lacking and step in to fill the vacuum” (p. 45). Also, it can emerge by crisis, in which unanticipated events would call for the distribution of leadership among people concerned.
Spillane’s perspective on how leadership can be distributed in schools gives us a new look on distributed leadership implementation in schools. It partially provides a tentative answer to the questions and concerns from Harris and others about how to exercise distributed leadership in schools. It reflects a viewpoint on the possibility of developing distributed leadership through legitimacy and by consensus among organizational members. His perspective on strategies to implementing distributed leadership also provides indication that school district leadership and school external community can be one of the factors that influence distributed leadership and teacher leadership.

Spillane’s perspective, however, needs more empirical studies to justify its practical significance. As some researchers argued that role-based leadership, individual empowerment or granting leadership roles and positions to other school members pertain to restructuring school, but structural change in a school does not always result in school improvement (Fullan, 2001; Smylie, 1992).

One of the most recent findings about supportive factors that affect teacher leadership development is reported by Muijs and Harris (2007) in their qualitative study on teacher leadership in three schools, where teacher leadership was found to flourish in association with a reculturing and a restructuring context. Their study concluded that a supportive school administration, shared vision among school staff performed in smooth communication and active collaboration, and building trust among leaders and staff play an important role in developing teacher leadership.

Accordingly factors that directly and indirectly influence teacher leadership have been extensively identified among recent teacher leadership literature. York-Barr and
Duke’s (2004) study can be taken as representation. York-Barr and Duke (2004) identified three major influences on teacher leadership in their extensive review of teacher leadership literature. They are school culture and context, roles and relationship, and structure. These factors are interrelated and can be influenced by each other. It is of significance for this study to review how research literature relates the influence of school culture to teacher leadership.

A special note goes to principal-teacher interaction and teacher-teacher leader’s collaboration which reflect a cultural norm of teamwork and openness in a school (Crowther et al., 2002; York-Barr & Duke, 2004). Numerous researchers and educators asserted that teacher-principal relationships exercise strong influence on teacher leadership (Acker-Hocevar & Touchton, 1999; Barth, 2001; Crowther et al., 2002; Hart, 1994; Hoy & Tarter, 1997; Mangin, 2007; Smylie & Brownlee-Conyers, 1992; Rutherford, 2006; Silva, Gimbert, & Nolan, 2000; Terry, 1999; York-Barr & Duke, 2004).

Acker-Hocevar and Touchton (1999) conducted a case study about how teachers described decision-making structure, culture, power, and micropolitics of their work under Florida’s reform. They interviewed those elementary teachers selected as 1996-1997 Teacher of the Year. They found that those teacher leaders who could exert the most agency had the most empowering principals and the least disempowerment in their work. Teacher leaders maintained constant communication with the principal. They were respected and valued by their peers and principal, and were able to work within and beyond the school boundary.
Yet negative influence of such interaction was reported in another case study by Silva et al. (2000). He illustrated a story of how teacher leaders felt frustrated when educational administration emphasized teacher growth but was reluctant to provide opportunities for teachers to participate in the important decision-making process.

Another case study by Hart (1994) presents to us a contrasting outcome in which effective communication plays an important role. Hart’s case study compared two middle schools in the same school district on the effect of school culture and context on a teacher career ladder program. He found that one school with more regular communication between the principal and teacher leaders yielded more positive outcomes for the program, and the other with less communication between the principal and teacher leaders upheld more negative outcomes. Teachers in the latter school felt that individualism and isolation dominated the school norms.

These qualitative research studies indicate that the effectiveness of principal-teacher interaction plays a critical role in developing teacher leadership. It is one of the important factors that can influence teacher leadership.

Some other research studies also listed the effectiveness of teacher-teacher leaders’ collaboration as factors that influence teacher leadership (Katzenmeyer & Moller, 2001; Rutherford, 2006; Sledge & Morehead, 2006; Smylie, 1992, 1997). Rutherford’s (2006) case study on teacher leadership at one elementary school shows an example of this view. Rutherford found that teacher leaders’ effective collaboration with their colleagues enhanced professional development and thus influenced the practice of a much larger group of teachers as well as the new leadership structure. He also found that teacher-teacher leader interaction in the school increased the scope of leadership
influence. Rutherford’s study gave a positive indication that teacher-teacher leader collaboration will extend the collegiality in promoting teacher leadership.

On the contrary, reflecting a long-standing norm of teacher’s role and position residing in the classroom (Lieberman & Miller, 1999; Moller & Katzenmeyer, 1996), Smylie’s (1992) study of relationship between school culture and teacher leadership provides a different view on the effect of the teacher-teacher leader collaboration.

Smylie’s qualitative study on teacher interaction with teacher leaders concerning classroom instructions indicates that collegiality does not necessarily associate with teacher leadership because the professional norm of equality and independence among teachers in a school organization stands in opposition to this newly-established hierarchical relationship. Teacher leaders who assume formal or informal leading position are seen to be out of the field of teaching profession and might create distance or conflict with their teaching colleagues (Darling-Hammond, Bullmaster, & Cobb, 1995; Hargreaves & Fink, 2006; Smylie, 1997).

Hargreaves and Fink (2006) gave a vivid description of such an embarrassing situation which teacher leaders sometimes come across:

Relationship with other colleagues who hadn’t been anointed sometimes turned sour. And when unwanted reforms made teachers feel overloaded, they sometimes turned to or even turned on their newly anointed colleagues, proclaiming, “You’re the new teacher leader, you do it!” (p.108)

In terms of negative influence of teacher-teacher leader collaboration, there always exist leadership-resistant architectures in the school community (Donaldson, 2001). The culture and social norms of individualism, autonomy, and privacy are hidden
but prevailing in the school organization. The history of hierarchical relationship in
schools would hinder collaborative efforts (Smylie et al., 2002).

Factors that influence distributed leadership and teacher leadership are various.
Cultural factors, including principal leadership and teacher-teacher leader collaboration,
constantly examined in qualitative studies, have been found as one of the important
influential elements. These findings, however, do not yield similar and directional results.
The factors identified from these studies need more quantifiable evidence in research to
justify their empirical significance. It is therefore of interest in conducting a study to
quantitatively examine the factors that influence teacher leadership.

Summary of the Literature Review

Review of literature of school climate indicates that study of school climate can be
traced back to the 1960s and survey questionnaire has been the major instrument for
support of the quantitative research in this field. Dimensions of school climate appear to
be broad and varied depending on the research purposes and researcher’s interests, giving
a conclusion of the criteria for the measurement a difficult task. Numerous survey
instruments developed by some well-known researchers, however, indicate that school
leadership and teacher collaboration are important dimensions inclusive in various school
climate instruments.

Studies of organizational culture is also reviewed and compared with
organizational climate regarding its definition and methodological application in
empirical studies. Organizational culture and climate have been found to be two different
concepts (Aarons & Sawitzky, 2006; Glisson & James, 2002). The conceptual variations
of organizational climate and culture discussed in the review of literature can be summarized with Verbeke et al.'s (1998) assertion that “organizational climate is a reflection of the way people perceive and come to describe the characteristics of their environment” (p. 320). It can be also with Rousseau's (1988) statement that “a key element of organizational culture is consensus or shared values and beliefs” (p. 149). The distinction between school culture and school climate can be simply put as culture dealing with how the things in the school can be done, and school climate regarding how the school members feel about the internal environment (Verbeke et al., 1998).

The argument for the variation of the two concepts is also supported by Maslowski's (2006) study. In his study, he claimed that “climate is commonly defined in terms of ‘shared perceptions’ as opposed to ‘shared meanings’ in the conceptualization of culture. This difference is not only rooted in theoretical differences, but also in different methodological traditions” (p. 28).

Many researchers studying culture and climate hold concurring views on ways appropriate to study these two different concepts. Employing qualitative and mixed method to study organizational culture and employing quantitative approaches to study organizational climate have been highly recommended by many contemporary researchers (e.g., Denison, 1996; Glisson & James, 2002; Hoy et al., 1990, 1996, 1997, 1998; Maslowski, 2006; Owens, 2001, Schein, 1985, 1990, 1999).

Research literature about teacher leadership has been closely related to distributed leadership, which is a broader concept concerning those positional roles of middle management and subject leadership. It is “a collaborative leadership that would incorporate teacher leadership” (Muijs & Harris, 2007, p. 113).
Distributed leadership perspective advocates that every member of the organization can, in one way or another, demonstrates leadership (Goleman, 2002; Katzenmeyer & Moller, 2001). It suggests the incorporation of multiple groups of individuals who accept the distribution of leadership responsibilities. It implies that the leadership function is stretched over among the work where leaders of various kinds and in various roles share leadership tasks (Muijs & Harris, 2003). From this view, it is conceptually accepted that teacher leadership is centrally reflected in the distributed leadership theory (Gronn, 2000; Muijs & Harris, 2007).

The concept of teacher empowerment that pertains to the involvement of teachers in the decision-making process in schools has been explored in the review. Generally speaking, teacher empowerment is taken as a leadership approach or a reform strategy that school improvement can be enhanced by granting power to teachers participating in the decision-making process in solving problems related to teacher’s responsibilities. Teacher empowerment may be associated with the influence of the administrative leadership while teacher leadership theory emphasizes that teacher leaders have the ability to encourage their colleagues to “do things they wouldn’t ordinarily do without the influence of the leader” (Wasley, 1991, p. 170). The forms of empowerment and agency, which are also at the core of distributed leadership theory, are closely related to teacher leadership (Muijs & Harris, 2003).

For the past few decades researchers and educators have exerted much effort in defining teacher leadership, however, emergent teacher leadership research studies show that teacher leadership appears in a variety of forms (Lieberman & Walker, 2007; York-Barr & Duke, 2004). Consequently, study of teacher leadership for school improvement
has received more attention than before in both conceptual and empirical research studies in school education.

Smylie et al. (2002) conceptualized three new approaches to teacher leadership: teacher research as a form of teacher leadership, different models of distributed leadership and leadership of self-managed teacher teams. Some other researchers explored teacher leadership from a cultural or symbolic view, including Lambert’s leadership capacity which bonds together all the organizational members in the work of school leadership as a shared belief and value.

Yet much more research literature describes teacher leadership from its leadership roles and dimensions. Guiding this study is the advocacy by Dana and Bourisaw (2006), based on Barth’s study (2001) on teacher leadership roles in schools, who suggested 10 areas of teacher leader involvement: choosing textbooks and instructional materials, shaping the curriculum, setting standards for student behavior, deciding whether students are tracked into special classes, designing staff development and in-service program, setting promotion and retention policies, deciding school budgets, evaluating teacher performance, selecting new teachers, and selecting new administrators. They asserted that these roles of teacher leadership are most needed in school improvement.

Factors that influence teacher leadership are identified from recent teacher leadership literature. The three major influences, among others, on teacher leadership categorized by York-Barr and Duke (2004) in their review of 140 pieces of teacher leadership literature can be viewed as representation. These influential factors are school culture and context, roles and relationship, and structure. They are interrelated and can be influenced with each other.
The concepts of school culture and school climate are interwoven. A detailed examination of the influence of school culture on teacher leadership, with focus on principal-teacher interaction and teacher-teacher leader’s collaboration, has been conducted in particular. It is noticed that those qualitative studies from the reviewed literature resulted in various findings inappropriate for generalization. But they provided empirical indications that it is of significance to examine teacher leadership and its relationship with school climate with quantitative methodologies. In the current research literature, there is an obvious void of quantifiable information about teacher leadership and its relationship with school climate in American public schools.

The discourses and perspectives explored in this review of literature are noted examples. They provide important theoretical bases for this study. The conceptual framework of school climate and teacher leadership in this study is supported by the existing literature.
CHAPTER III

METHODOLOGY

The purpose of this study is to quantitatively investigate teacher leadership and its relationship with school climate as perceived by public school teachers in America. Based on the research focus and the rationale for the study, this study employed a survey research design with quantitative approaches applied to each of the research questions.

In terms of survey research, Creswell (2003) cited Babbie’s remark (1990) and claimed that the purpose of survey research is “to generalize from a sample to a population so that inferences can be made about some characteristic, attitude, or behavior of this population” (p. 154). Wiersma (1995) also said survey research generally deals with the incidence, distribution, and relationships of educational, psychological, and sociological variables.

As this study was conducted using the data available from the Schools and Staffing Surveys 2003-04 (SASS) sponsored by the National Center for Education Statistics (NCES), employing survey research design was appropriate. The construct of the two variables, School Climate and Teacher Leadership, was established based on the existing literature. Data from SASS 2003-04 regarding the public school teacher survey file were used for data collection and data analysis. Factor analyses were initially conducted to assess the coherent themes underlying the selected items from the Teacher Survey Questionnaire.
In this chapter, detailed descriptions of the data source, sample, instrumentation, measures and variables, reliability and validity, and data analysis procedures are given.

Data Source

The data for this study were extracted from the 2003-04 Schools and Staffing Surveys (SASS) conducted by the National Center for Education Statistics (NCES). SASS is one of the most extensive sample survey instruments in the nation. It includes six survey components, namely, the School District Survey, the Principal Survey, the School Survey, the Teacher Survey, the School Library Media Center Survey, and the Teacher Follow-up Survey.

So far SASS has been administered for the fifth time, following the previous periods of the administration in school years of 1987-1988, 1990-1991, 1993-1994, and 1999-2000. The 2003-2004 SASS covers three school sectors: public, Bureau of Indian Affairs (BIA), and private (Strizek et al., 2006). This study mainly used 2003-04 SASS data from public schools regarding the teacher survey file. The 2003-04 SASS data on public school teachers contain contents of teachers’ general information, class organization, teachers’ educational background, certification and training, professional development, resources and assessments of students, working conditions, decision making, teacher attitudes and school climate, and general employment information.

SASS data source holds several advantages: First, SASS is among the largest and most extensive survey of its kind in the nation. It is one of the most widely used secondary data sources for research in K-12 education (Cooley & Shen, 2005; Rodriguez-Campos, Rincones-Gomez, & Shen, 2005).
Second, SASS data samples are integrated in terms of survey components. Once the school is selected, its principal and teachers together with the district where the school belongs will be selected as the participants in SASS. Shen and Ma (2006) commented in their recent study that SASS can be hierarchically structured with teachers nested within schools and schools are nested within states. Such interrelated files and components in the datasets with a large sample size provide easy availability for researchers to encompass needed variables for their research interests. Besides, most of the SASS questionnaire items maintain a high level of consistency over the past periods of survey administration. As Zheng (1996) put it when using the SASS data file for his study, the high degree of consistency allows researchers to have various options to perform research studies that are longitudinal or cross-sectional.

Third, SASS has been carefully planned and executed. It creates numerous surveys targeting various facets of K-12 school education. Researchers can select needed variables from the different survey items according to their research focus and methodologies applied to the study.

Sample

This study has targeted the population of American public school teachers. The sample for this study is the participant teachers who responded to the teacher survey questionnaire of the 2003-2004 SASS.
Sample Selection

Selecting the teacher sample in public schools, NCES first asked the sampled schools to complete the Teacher Listing Form (TLF). Demographic information was requested in the form. The school teacher sampling frame was comprised on the obtained information from the TLF. SASS uses a complex and random sample of schools stratified by state, sector, and school levels that provide representative estimates of (a) the nation and each affiliation for private schools, and (b) the nation and each state for public schools (Tourkin et al., 2004).

To obtain a suitable teacher sample from 2003-04 SASS, within each school and teacher stratum, NCES selected sample teachers at a rate that made the overall selection probability approximately constant within strata, ensuring the selection of at least one and no more than 20 teachers per school. The sample selection procedure is described as follows:

First, public schools were stratified into allocation by states and then districts. American Indian schools and certain states were given special treatments. Then schools were sorted by school types (traditional public or public charter); by school levels (elementary, secondary, or combined: non-regular schools, which include special education, vocational, technical, adult education or alternative/continuation grades were included with combined schools.) and by types of location (urbanicity). Each selected school was asked to provide a list of teachers. The lists of teachers from selected schools formed the teacher sampling frame. Within each selected school, teachers were stratified into certain subgroups: (a) Asian or Pacific Islander (API), (b) American Indian or Alaska
Native (AIAN), (c) Taught classes designed for students with limited English proficiency, (d) New, and (e) Experienced. In 2003-04 school year, SASS reached 5,400 public school districts, 13,300 public schools, 13,000 principals and 62,000 teachers. The SASS data in the 2003-04 school year were weighted to represent 88,113 public schools and 3,250,600 full time and part time teachers (Strizek et al., 2006, p. 2).

Sample Design and Weight Treatment

The SASS is a non-simple random sample. That means not all the public school teachers in the United States have an equal chance to be selected. Because conducting a simple random sample is not feasible across the whole country, NCES employed a complex survey sample design where the population interest is stratified on a number of dimensions, and over sampled within certain strata. For instance, Native American schools were over sampled in 1999-2000 SASS data in order to improve the reliability of American Indian or Alaska Native school estimates (Tourkin et al., 2004). The complex sampling strategies NCES employed are to ensure that a satisfactory set number of schools, administrators and teachers in each stratum can be obtained for the entire sample.

These strategies of multistage cluster sampling or stratified sampling, however, have some problems. They create unequal selection probability because the targeting population has been sampled at a different rate. This would cause bias in research results depending on the type of analysis techniques employed (Hahs-Vaughn, 2006; Thomas & Heck, 2001). Moreover, in a non-simple random sampling process, internal homogeneities will exist among sample units, for instance, teachers from the same
districts and schools will share more similar perceptions than those across schools. Thus
the estimates of overall variance of measures will be lower and standard errors will be
smaller than would be the case if a simple random sample was applied (Muthen &
Satorra, 1995).

To address the complexities related to the data collected through stratification or
cluster sampling, sampling weighting techniques in this study has been considered and
used in treatment of data analysis to test and protect against the SASS sampling design
that would probably cause bias in parameter estimates.

It has been noted that estimates based on the raw data in the large complex sample
will be mostly biased in favor of the individual groups that are probably oversampled
(Thomas & Heck, 2001). Weighting techniques have been constantly used to address the
unequal probability of selection regarding the use of national datasets. Some researchers
(e.g., Pfeffermann, 1993) asserted that the frequent use of sampling weights to adjust the
sampling design in research is still a subject of controversy. Many more researchers
encourage using weighting techniques to approximate the population and adjust it down
to the actual sample size for any test of inference (e.g., Hahs-Vaughn, 2005; Poppink &

Normally the basic sample weight is the inverse of the probability of selection that
the observation will be included in the sample (Kaplan & Ferguson, 1999). That is the
product of the school selection probability and the probability of selecting the sample
teachers within the school. Fortunately, SASS has provided a set of weights to adjust for
the unequal probability of selection in the sample design.
Many researchers (e.g., Hahs-Vaughn, 2005; Heck & Mahoe, 2004; Smith & Pratt, 1996; Thomas & Heck, 2001), however, have constantly reported raw weight cannot solve the problem deprived from multistage and clustered sampling strategies. As Hahs-Vaughn (2005) observed, it is possible that the observations within clusters in the large complex sample dataset are more alike in some ways compared with observations in other clusters. Because of the similarities within clusters, the assumption of independence is in question and the true population variance will be underestimated.

Thomas and Heck (2001) suggested four strategies to deal with analysis design for large, stratified and complex sample: (a) using special software package like SUDAAN, (b) adjusting standard error by the square root of design effect (DEFT), (c) adjusting the relative weight to alter the effective sample size, and (d) altering the evaluation criteria (e.g., alpha = .001). This study has applied the treatment of relative weight with a more restricted alpha. That is to calculate the relative weight (relative weight = weight \( n/N \)). NCES provides raw weight information) and adjusts the evaluation criteria (alpha) to a more restricted one. That is alpha \( \alpha = .001 \).

Instrumentation

Instrument Characteristics

The data collection instrument for the SASS 2003-04 Teacher Survey contains 81 questions. It includes contents of teachers’ general information, class organization, teachers’ educational background, certification and training, professional development,
resources and assessments of students, working conditions, decision making, teacher
attitudes and school climate, and general employment information.

According to the report on the characteristics of SASS 2003-04, “the SASS data
were weighted to represent 88,113 public schools educating 47,315,700 students in
grades K-12. About 3,250,600 full-time teachers taught in the public schools” (Strizek et
al., 2006, p. 2). The unweighted response rate for 2003-04 SASS Public School Teacher
Questionnaire is 84% and the base-weighted response rate is 84.8%. The weighted overall
response rate is 75.7%.

Survey Administration

The 2003-04 SASS Public School Teacher Questionnaire was administered by
mailing questionnaire to the sample teachers at their schools. A school coordinator was
appointed for each school to assist with both the distribution of questionnaires and the
follow-up of nonresponding teachers. About one month after the first questionnaire was
mailed out, a second questionnaire was sent to those who had not yet responded. Follow-
up telephone calls were made to those nonrespondents and interviews were attempted to
arrange for a planning, acceptable or free period with the teachers. The survey
administration process by SASS has maintained a high return rate for the past several
survey administrations.

Validity and Reliability

According to Litwin (2003), validity is an important measure of a survey
instrument’s accuracy. Researchers would like their survey instrument to be developed
accurately and to show capability of being justified. Creswell (2003) also states that the instrument validity shows whether researchers can draw meaningful and useful inferences from the scores on the instrument.

In terms of the research instrument’s reliability, Litwin said reliability is a matter of the extent to which the data from statistical measures in the instrument can be reproducible. The SASS Teacher Questionnaire has been systematically planned and conducted. In developing SASS, NCES has produced numerous valid and reliable survey instruments with high consistency in survey contents and focuses. Based on the past experiences by hundreds of researchers and educators using SASS, NCES has improved the quality of instruments of 2003-04 SASS. For instance, questionnaires for charter schools as well as their teachers and principals were administered separately during the 1999-2000 period. In the 2003-04 school year, public charter schools and their staff were incorporated into the public school sector. Some of the problems encountered by researchers from utilizing the past survey instruments have been addressed (Strizek et al., 2006). For instance, in the SASS 1999-2000 public school teacher questionnaire, some of the question items were presented in four point Likert scale and some others in five point Likert scale. This has caused some problems when the research had to employ both scales for statistical analyses. In SASS 2003-2004 public school teacher file, the five-point scale version has been modified to a four point scale. For the past two decades, thousands of research reports and publications using SASS instrument data have been accomplished, indicating that validity and reliability of SASS instruments are highly recognized.
Measures and Variables

The variables of school climate and teacher leadership in this study were extracted from the Public School Teacher Questionnaire items. These items were selected based on the research literature and have been tested by factor analyses.

School Climate

School climate is a broad term. Most research studies on school climate agree that school climate is measurable and that school climate has multi-dimensional characteristics (Parcel et al., 2003). The number of dimensions identified in the previous research, and the way by which they have been measured, however, vary among studies (Greenberg, 2004). School climate in this study is the major independent variable. In the 2003-2004 SASS Public School Teacher Questionnaire, there is a section called Teacher Attitudes and School Climate, in which teachers are asked to rate whether they agree or disagree with the statements about principal leadership, student discipline management, job security, job satisfaction, teacher collaboration, parent support, and working environment.

Based on the current research literature about school climate and the factor analysis result, this study used 10 items from the school climate section and tapped into its two constituent dimensions. They are school leadership and teacher collaboration. The school leadership dimension includes teachers’ perceptions of clear expectations from principal leadership, supportive and encouraging behaviors, management of student conducts, teachers’ perceptions of work recognition and their job satisfaction. The teacher
collaboration dimension includes teachers’ perceptions of the teacher interaction and the level of shared beliefs and values among the school staff. Table 2 illustrates the detailed descriptions of how the school climate variable is constructed from the Public School Teacher Questionnaire items.

Table 2

*Construction of School Climate Variable*

<table>
<thead>
<tr>
<th>School Climate Variable</th>
<th>Teacher Survey Items</th>
</tr>
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<tbody>
<tr>
<td>1. Clear expectations</td>
<td>1. The principal lets staff members know what is expected of them.</td>
</tr>
<tr>
<td>2. Principal support</td>
<td>2. I am given the support I need to teach students with special needs.</td>
</tr>
<tr>
<td>3. Encouraging behaviors</td>
<td>3. The school administration’s behavior toward the staff is supportive and encouraging.</td>
</tr>
<tr>
<td>5. Administration effectiveness</td>
<td>5. Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff.</td>
</tr>
<tr>
<td>6. Work recognition</td>
<td>6. In this school, staff members are recognized for a job well done.</td>
</tr>
<tr>
<td>7. General satisfaction</td>
<td>7. I am generally satisfied with being a teacher at this school.</td>
</tr>
<tr>
<td>8. Cooperative effort</td>
<td>8. There is a great deal of cooperative effort among the staff members.</td>
</tr>
<tr>
<td>9. Shared beliefs and values</td>
<td>9. Most of my colleagues share my beliefs and values about what the central mission of the school should be.</td>
</tr>
<tr>
<td>10. Enforcing rules for students</td>
<td>10. Rules for student behavior are constantly enforced by teachers in this school, even for students who are not in their classes.</td>
</tr>
</tbody>
</table>
Teacher Leadership

The Teacher Leadership variable, served as the dependent variable in this study, was derived from the section of Decision Making in the 2003-04 SASS Public School Teacher Questionnaire. In the questionnaire, teachers are asked to rate how much influence they actually have over school policy at the school in seven areas, and how much actual control they have in the classroom at the school over the six areas of teachers' planning and teaching.

Based on the research literature and the factor analysis results, the Teacher Leadership variable includes all the 13 items in the Decision Making section classified in two major areas: areas of school operation and areas of classroom operation. Table 3 illustrates the detailed descriptions of how the variable of teacher leadership is constructed from the Public School Teacher Questionnaire items.

School Levels

SASS dataset provides variables characterized as questionnaire variables, sampling variables, created variables, weighting variables, and imputation variables. The variable of school levels in this study is one of the sampling variables in the SASS profile named as “School Level” (SCHLEVEL).

According to Strizek and his colleagues (2006), the variable of school level is created according to the grades offered as reported by the school. School levels include Elementary, Secondary and Combined. “A school was coded elementary if it had any of grades K-6 and none of grades 9-12. Secondary schools had any of grades 7-12 and none
Table 3

*Construction Items for Teacher Leadership Variable*

<table>
<thead>
<tr>
<th>Items for Areas of School Operation</th>
<th>Items for Areas of Classroom Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Setting performance standards for students</td>
<td>1. Selecting textbooks and other materials</td>
</tr>
<tr>
<td>2. Establishing curriculum</td>
<td>2. Selecting content, topics, and skills to be taught</td>
</tr>
<tr>
<td>3. Determining the content of professional development program</td>
<td>3. Selecting teaching techniques</td>
</tr>
<tr>
<td>4. Evaluating teachers</td>
<td>4. Evaluating and grading students</td>
</tr>
<tr>
<td>5. Hiring new full-time teachers</td>
<td>5. Disciplining students</td>
</tr>
<tr>
<td>6. Setting discipline policy</td>
<td>6. Determining the amount of homework to be assigned</td>
</tr>
<tr>
<td>7. Deciding how the school budget will be spent</td>
<td></td>
</tr>
</tbody>
</table>

of grades K-6. All other cases were coded as a combined school” (Strizek et al., 2006, p. 202). The variable of school level is categorical in nature as it served as the dependent variable in the analysis using discriminant function techniques. This study excluded the data for the level of combined schools when data analysis was conducted.

Data Analysis

Data analysis included descriptive statistics and inferential statistics. The created relative weight with the alpha level 0.001 was used to perform inferential statistics. Two factor analyses were conducted to examine the latent factors underlying the selected items and to determine whether the existing themes for school climate and teacher leadership were aligned with the literature.
Research Question 1

This question states: How did American public school teachers perceive school climate in their school organizations?

For this research question, descriptive statistic analysis was conducted for each item that makes up the variable of School Climate. Means, standard deviations and rating percentage and frequency statistics were provided. Results gave us general information about how public school teachers rated each component of the variable of School Climate.

Research Question 1.1

Can teachers' perceptions of school climate be distinguished by the school levels (elementary and secondary schools) in which they work?

For this research question discriminant function analysis was performed to determine which components of School Climate (independent variable) contributed most to the discrimination of the two groups of teachers from different school levels (elementary and secondary, dependent variable). According to Tabachnick and Fidell (2001), discriminant function analysis was used to predict group membership from a set of predictor variables. In other words, discriminant function analysis helps to determine which components of School Climate are most related to the teachers’ school membership.

To conduct the discriminant function analysis, first the multivariate test of significance was performed for the overall discrimination between the two groups of
teachers. Next a particular examination was proceeded to see which variables were the statistically significant predictors for the group membership when the test was proved statistically significant. In other words, if the function is statistically significant, then the groups can be classified according to the predictor variable (components of School Climate).

The test of discriminant function analysis has a number of assumptions underlying its use. The one that requires special consideration is homogeneity of variances. Discriminant function analysis is very sensitive to heterogeneity of variance-covariance matrices. Another assumption that should be examined in particular is non-multicollinearity. If one of the independent variables is highly correlated with another, or is a function of other independent variables, the matrix will not have a unique discriminant solution, and the standardized discriminant function coefficients will not reliably assess the relative importance of the predictor variables (Tabachnik & Fidell, 2001). In this study the discriminant function analysis helped to explore to what degree public school teachers differ in their perceptions about their school climate.

Research Question 2

How did American public school teachers perceive teacher leadership in their school organizations?

Corresponding with this question, descriptive statistic analysis was conducted to analyze the two major areas of Teacher Leadership: school operation and classroom operation. The analysis focused on describing the extent to which the public school teachers perceived they could perform teacher leadership roles in the areas of school
operation, and the areas of classroom operation. Means, standard deviations and rating percentage and frequency statistics were provided. The results presented general information about how public school teachers rated each component of the variable of Teacher Leadership.

Research Question 2.1

*Can teachers' perceptions of their leadership be distinguished by the school levels (elementary and secondary schools) in which they work?*

For this question, again discriminant function analysis was performed to determine which components of Teacher Leadership (independent variables) contributed most to the discrimination of the two groups of teachers from different school levels (elementary and secondary, dependent variable). Analysis and consideration of assumptions for this discriminant function analysis were similar to the analysis process for Research Question 1.1.

Research Question 3

*What is the relationship between the components of School Climate and the components of Teacher Leadership as perceived by public school teachers?*

In addressing this research question, canonical correlation analysis was conducted to assess the multivariate relationship between the two sets of variables (School Climate and Teacher Leadership), and to investigate which components from the two variables have made major contributions to the relationship. A canonical correlation is the correlation of two canonical variates, one representing a set of components from the
independent variable (School Climate), the other a set of components from the dependent variable (Teacher Leadership). As Tabachnik and Fidell (2001) stated, canonical correlation can be used to detect which variable on one set is most strongly related to other variables in another set. In this study, canonical correlation analysis helped assess how strongly the group components of School Climate variable on one set were related to the group components of Teacher Leadership variable on the other. Canonical correlation analysis was used here for exploring the relationship but not for predictive purposes.

In conducting this analysis, the assumptions applied to the canonical correlation were taken into careful consideration; these being normality, linearity, homoscedasticity and absence of multicollinearity and singularity. Actually all assumptions related to MANOVA were applied in the canonical correlation analysis (Tabachnik & Fidell, 2001). According to Tabachnik and Fidell, one of the assumptions was related to sample size and outliers. Fortunately sample size and outliers did not cause serious problems for this study. The SASS dataset has been screened and its sample population is sufficiently large enough to yield robust results.

Summary

In this chapter, methodologies applied to the study have been illustrated with descriptions of data source, sample, instrumentation, reliability and validity, measures and variables, and data analysis. This study was intended to examine teacher leadership and its relationship with school climate in American public schools. Data collection and data analysis were based on the 2003-04 SASS dataset. The School Climate variable has tapped into 10 components that relate to school leadership and teacher collaboration. The
Teacher Leadership variable has included two major areas: school operation and classroom operation, containing 13 items from the questionnaire.

Factor analyses and internal reliability tests were conducted to explore the latent factors that construct the variables in this study before the research questions were addressed. There are three major research questions plus two sub-questions for this study. Descriptive statistics were used to respond to the first two major research questions and discriminant function analyses were performed for the respective sub-questions. Finally canonical correlation analysis was employed for Research Question 3. Data used for this study excluded those from the level of the combined school because its group membership was a mixed identity.
CHAPTER IV

RESULTS

The primary purpose of this study was to contribute to the extant literature on teacher leadership and its relationship with school climate in American public schools. The study employed SASS 2003-2004, a national dataset, to conduct multivariate analysis on the contextual items pertaining to the variables of Teacher Leadership and School Climate to investigate how the composite items of Teacher Leadership were associated with those of School Climate. The study also investigated whether there were differences in the perceptions of school climate and teacher leadership between teachers from elementary and secondary schools, and whether the differing perceptions of the two variables could help classify school membership (elementary and secondary schools) in which the teachers worked.

The data from Teacher Questionnaire, Schools and Staffing Survey 2003-2004 School Year were extracted and used for all the analyses. The 10 selected items forming the components of School Climate variable can be categorized into two dimensions: school leadership and teacher collaboration. The 13 selected items forming the components of Teacher Leadership variable can also be categorized into two areas: school operation and classroom operation.

To extend what has been known from prior research studies, I deliberately incorporated four features into the study design. Based on the section titles in the
questionnaire and previous factor analytic work done by other researchers using the previous version of SASS Questionnaire, two factor analyses were first performed to identify the coherent factor components from the selected items and then the coherent components were assessed with reliability testing. The subsequent analyses were all based on the results of factor analyses. The analysis results presented afterwards are in accordance with the order of the research questions for this study.

In this study descriptive statistics presented general information about the means, standard deviations and frequency of ratings for the items of School Climate and Teacher Leadership. Two discriminant function analyses were afterwards performed respectively, using 10 items of the variable of School Climate and the 13 items of the variable of Teacher Leadership as predictors of the group membership. The groups to be discriminated were elementary schools and secondary schools. Finally a canonical correlation analysis was performed to examine the multivariate relationship between the School Climate variable consisting of 10 components and the Teacher Leadership variable consisting of 13 components.

In this study, according to the suggestions by Thomas and Heck (2001) and Hahs-Vaughn (2005) for corrective alternatives for analysis of large-scale secondary and complex sample data, a relative weight was used to adjust the sampling effects of the surveys and an Alpha level of $\alpha < .001$ was used for all the inferential statistics. The relative weight was derived as the product of the raw weight and the ratio of the sample size to the population size [relative weight = raw weight (n/N)] (Hahs-Vaughn, 2005).
Research Questions

1. How did American school teachers perceive School Climate in their school organizations?

1.1. Can teachers' perceptions of School Climate be distinguished by the school levels (elementary and secondary schools) in which they work?

2. How did American school teachers perceive teacher leadership role in their school organizations?

2.2. Can teachers' perceptions of their leadership be distinguished by the school levels (elementary and secondary schools) in which they work?

3. What is the relationship between how teachers perceive the components of School Climate and the components of Teacher Leadership?

Factor Analysis and Reliability Assessment

To better identify the latent factors underlying the selected items from the sections of Decision Making and Teacher Attitudes and School Climate in the Public School Teachers' Questionnaire, SASS 2003-04, a principal components analysis (PCA) with oblique rotation for the 13 items that construct the variable of Teacher Leadership was used to assess the data suitability and the coherent themes. The analysis with oblique approach was chosen because it was assumed that the selected items within a latent construct may be correlated. A conservative criterion loading of .40 was used to determine whether individual items were considered for the given factors to be retained. The SASS 2003-04 dataset has been screened before it reached the registered researchers.
It is believed that the relevant assumptions, such as checking missing data, normality, linearity, and outliers (Tabachnick & Fidell, 2001) have been met for this study. The PCA results yielded a solution of two factors (see Table 4).

Table 4

*Factor Pattern /Structure Coefficients Matrix from PCA with Oblique Rotation: Two-Factor Solution for Teacher Leadership*

<table>
<thead>
<tr>
<th>Items</th>
<th>Item-to-Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0314 Evaluating teachers</td>
<td>.738</td>
</tr>
<tr>
<td>T0316 Setting discipline policy</td>
<td>.705</td>
</tr>
<tr>
<td>T0315 Hiring new full-time teachers</td>
<td>.703</td>
</tr>
<tr>
<td>T0317 Deciding how the school budget will be spent</td>
<td>.686</td>
</tr>
<tr>
<td>T0313 Determining the content of in-service professional development program</td>
<td>.678</td>
</tr>
<tr>
<td>T0311 Setting performance standards for students at this school</td>
<td>.598</td>
</tr>
<tr>
<td>T0312 Establishing curriculum</td>
<td>.530</td>
</tr>
<tr>
<td>T0321 Evaluating and grading students</td>
<td>-.109</td>
</tr>
<tr>
<td>T0320 Selecting teaching techniques</td>
<td>-.041</td>
</tr>
<tr>
<td>T0323 Determining the amount of homework to be assigned</td>
<td>-.120</td>
</tr>
<tr>
<td>T0319 Selecting content, topics, and skills to be taught</td>
<td>.128</td>
</tr>
<tr>
<td>T0322 Disciplining students</td>
<td>.060</td>
</tr>
<tr>
<td>T0318 Selecting textbooks and other instructional materials</td>
<td>.178</td>
</tr>
<tr>
<td>% variance explained</td>
<td>32.13</td>
</tr>
</tbody>
</table>
The item loadings that exceeded .40 for factor 1 included seven items which can be labeled as the areas of school operation. In factor 2, the items that exceeded .40 accounted for the rest of the six items which can be labeled as the areas of classroom operation.

To be more certain with the conceptual clustering level resulting from the factor analysis, the assessment of the reliability in their internal consistency was conducted respectively for the two factors. It was found that the first (seven-item) factor yielded a Cronbach Alpha of 0.81, and the second (six-item) factor was 0.75. As the Cronbach Alphas indicated, the reliability levels were high. Another PCA with oblique rotation approach was conducted to investigate the underlying factors in the 10 items of the School Climate variable set. A conservative criterion loading of .40 was used to determine whether individual items were considered for the given factors to be retained. The PCA results also yielded a solution of two factors (see Table 5).

The item loadings that exceeded .40 for factor 1 included seven items which can be labeled as the dimension of school leadership. In factor 2, the items that exceeded .40 accounted for the rest of the three items which can be labeled as the dimension of teacher collaboration. The assessment of the reliability in their internal consistency yielded a Cronbach Alpha of 0.81 for the first (seven-item) factor and 0.76 for the second (three-item) factor. As the Cronbach Alphas indicated, the reliability levels were high. The subsequent analyses were all based on the factor labels generated from the results of these two factor analyses and the two reliability tests.
Table 5

*Factor Pattern/Structure Coefficients Matrix from PCA with Oblique Rotation: Two-Factor Solution for School Climate*

<table>
<thead>
<tr>
<th>Items</th>
<th>Item-to-Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0331 The school administration’s behavior toward the staff is supportive and encouraging</td>
<td>.906</td>
</tr>
<tr>
<td>T0330 The principal lets staff members know what is expected of them</td>
<td>.821</td>
</tr>
<tr>
<td>T0337 My principal enforces school rules for student conduct and backs me up when I need it.</td>
<td>.778</td>
</tr>
<tr>
<td>T0342 In this school, staff members are recognized for a job well done.</td>
<td>.676</td>
</tr>
<tr>
<td>T0350 I am generally satisfied with being a teacher at this school.</td>
<td>.593</td>
</tr>
<tr>
<td>T0346 I am given the support I need to teach students with special needs.</td>
<td>.466</td>
</tr>
<tr>
<td>T0335 Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff.</td>
<td>.392</td>
</tr>
<tr>
<td>T0339 Most of my colleagues share my beliefs and values about what the central mission of the school should be.</td>
<td>-.112</td>
</tr>
<tr>
<td>T0338 Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their class.</td>
<td>.131</td>
</tr>
<tr>
<td>T0341 There is a great deal of cooperative effort among the staff members.</td>
<td>.184</td>
</tr>
</tbody>
</table>

% Variance explained  
43.48 10.77

Results for Research Question 1

*How did American school teachers perceive School Climate in their school organizations?*
Corresponding with the first research question, descriptive statistic analysis was conducted to explore the mean, standard deviation and response frequency for the items that were composed of the variable of School Climate (see Table 6). These items were chosen from the section of Teacher Attitudes and School Climate in the Questionnaire. Respondents were asked to rate to what extent they agreed or disagreed with those statements. The Likert-scale was ranged from 1 = “Strongly agree, 2 = Somewhat agree, 3 = Somewhat disagree,” to “4 = Strongly disagree.” Descriptive statistic information in Table 6 shows that the overall mean for all the items is 1.81 with a standard deviation of 0.82.

The frequency of the agreement with the School Climate statements accounted for 81.62%, and disagreement for 18.38%. The descriptive information indicated that the majority of public school teachers in America held positive perceptions of the school climate in which they worked. Figure 2 illustrates that public school teachers appeared to be highly satisfied with their jobs and their principal’s leadership performance. They held more positive perceptions of the school leadership in their school (chart lines on the left side) than teacher collaboration (chart lines on the right side).

Results for Research Question 1.1

*Can teachers’ perceptions of school climate be distinguished by the school levels (elementary and secondary schools) in which they work?*

Corresponding with Research Question 1.1, a discriminant function analysis was performed using 10 items of School Climate variable as predictors of the school membership (elementary and secondary schools). Preliminary evaluation of assumptions
Table 6

Descriptive Statistics for School Climate \((N = 41015)\)

<table>
<thead>
<tr>
<th>Items</th>
<th>Description (Dimension of School Leadership)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Response Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0330</td>
<td>The principal lets staff members know what is expected of them</td>
<td>1.52</td>
<td>.717</td>
<td>58.8</td>
</tr>
<tr>
<td>T0331</td>
<td>The school administration’s behavior toward the staff is supportive and encouraging</td>
<td>1.67</td>
<td>.846</td>
<td>52.6</td>
</tr>
<tr>
<td>T0335</td>
<td>Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff.</td>
<td>1.87</td>
<td>.889</td>
<td>40.9</td>
</tr>
<tr>
<td>T0337</td>
<td>My principal enforces school rules for student conduct and backs me up when I need it.</td>
<td>1.62</td>
<td>.808</td>
<td>54.6</td>
</tr>
<tr>
<td>T0342</td>
<td>In this school, staff members are recognized for a job well done.</td>
<td>1.98</td>
<td>.871</td>
<td>32.9</td>
</tr>
<tr>
<td>T0346</td>
<td>I am given the support I need to teach students with special needs.</td>
<td>2.25</td>
<td>.926</td>
<td>22.0</td>
</tr>
<tr>
<td>T0350</td>
<td>I am generally satisfied with being a teacher at this school.</td>
<td>1.53</td>
<td>.746</td>
<td>59.2</td>
</tr>
</tbody>
</table>

Average                                                                                         1.78 | 0.83 | 45.86 | 36.11 | 10.53 | 5.51 |

<table>
<thead>
<tr>
<th>Items</th>
<th>Description (Dimension of Teacher Collaboration)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Response Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0341</td>
<td>There is a great deal of cooperative effort among the staff members.</td>
<td>1.79</td>
<td>.796</td>
<td>40.7</td>
</tr>
<tr>
<td>T0338</td>
<td>Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their class.</td>
<td>2.08</td>
<td>.894</td>
<td>28.8</td>
</tr>
<tr>
<td>T0339</td>
<td>Most of my colleagues share my beliefs and values about what the central mission of the school should be.</td>
<td>1.76</td>
<td>.717</td>
<td>38.4</td>
</tr>
</tbody>
</table>

Average                                                                                         1.88 | 0.80 | 35.97 | 44.83 | 14.73 | 4.43 |

Average (Total)                                                                                   1.81 | 0.82 | 42.89 | 38.73 | 13.19 | 5.19 |
Figure 2. Relative Frequency of Item Response for School Climate

of linearity, absence of outliers, normality, and multicollinearity or singularity (tested by correlations between predictors, see Table 7) did not indicate any threat to the assumptions of the discriminant function analysis. There was only one discriminant function (Wilks' Lambda = .91, $\chi^2$ (10) = 3814.56, $p < .001$) that could discriminate the perceptions of School Climate by elementary school teachers from those by secondary school teachers.

The results of the Box’s Test of Equality of Covariance Matrices with Box’s $M = 4.472.97, p < .001$, also indicated that the two groups differed in their covariance matrices, though violating the assumption of homogeneity of variance-covariance matrices. Tabachnick and Fildell (2001) argued that “In inference, when sample sizes are
Table 7

_Pooled Within-Group Correlations Among Predictors of School Climate_

<table>
<thead>
<tr>
<th></th>
<th>T0330</th>
<th>T0331</th>
<th>T0335</th>
<th>T0337</th>
<th>T0338</th>
<th>T0339</th>
<th>T0340</th>
<th>T0341</th>
<th>T0342</th>
<th>T0346</th>
<th>T0347</th>
<th>T0350</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0330</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0331</td>
<td>.593</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0335</td>
<td>.226</td>
<td>.264</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0337</td>
<td>.528</td>
<td>.570</td>
<td>.278</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0338</td>
<td>.336</td>
<td>.350</td>
<td>.250</td>
<td>.474</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0339</td>
<td>.277</td>
<td>.267</td>
<td>.209</td>
<td>.298</td>
<td>.510</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0341</td>
<td>.359</td>
<td>.392</td>
<td>.250</td>
<td>.381</td>
<td>.456</td>
<td>.523</td>
<td>.449</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0342</td>
<td>.483</td>
<td>.577</td>
<td>.282</td>
<td>.510</td>
<td>.405</td>
<td>.353</td>
<td>.551</td>
<td>.504</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0346</td>
<td>.271</td>
<td>.300</td>
<td>.310</td>
<td>.311</td>
<td>.293</td>
<td>.232</td>
<td>.304</td>
<td>.282</td>
<td>.362</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0350</td>
<td>.329</td>
<td>.406</td>
<td>.266</td>
<td>.396</td>
<td>.296</td>
<td>.266</td>
<td>.362</td>
<td>.342</td>
<td>.394</td>
<td>.313</td>
<td>.141</td>
<td>1.000</td>
</tr>
</tbody>
</table>
equal or large, DISCRIM, like MANOVA is robust to violation of the assumption of
equality of within-group variance-covariance (dispersion) matrices” (p. 462). Also when
sample size is large, “Box’s M can tend to be too strict” (p. 80). The group mean of
discriminant scores displayed by the function at group centroids indicated that the
centroids means for each group were well apart. The less similar the centroids scores
appear, the more the school membership is classified by the function. The centroids in
this study showed that the discriminant function was clearly discriminating both in
magnitude and direction.

The structure matrix of correlations between predictors and the discriminant
function, as seen in Table 8, indicated that the best predictors for discriminating between
elementary teachers and secondary teachers were T0338 (Rules for student behavior are
consistently enforced by teachers in this school, even for students who are not in their
classes), T0339 (Most of my colleagues share my beliefs and values about what the
central mission of the school should be), and T0341 (There is a great deal of cooperative
effort among the staff members). Loadings less than .30 are not interpreted.

The results of the loading matrix of the correlation between the discriminant
items and the discriminant function indicated that elementary school teachers had more
favorable perceptions of cooperation of enforcing rules for student behavior (mean =
1.91, $SD = .84$) than secondary school teachers (mean = 2.44, $SD = .90$). Elementary
school teachers (mean = 1.68, $SD = .70$) held more favorable attitudes toward shared
beliefs and values in the school mission than secondary school teachers (mean = 1.93,
Table 8

Results of Discriminant Function Analysis for Predictors of School Climate

<table>
<thead>
<tr>
<th>Items</th>
<th>School Level (1)</th>
<th>School Level (2)</th>
<th>F</th>
<th>Correlation Between Items and Discriminant Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elementary</td>
<td>Secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N=15889</td>
<td>N=22673</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>Std. Deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0330</td>
<td>1.49</td>
<td>1.57</td>
<td>116.10**</td>
<td>.17</td>
</tr>
<tr>
<td>T0331</td>
<td>1.65</td>
<td>1.72</td>
<td>75.88**</td>
<td>.14</td>
</tr>
<tr>
<td>T0335</td>
<td>1.84</td>
<td>1.92</td>
<td>74.39**</td>
<td>.14</td>
</tr>
<tr>
<td>T0337</td>
<td>1.59</td>
<td>1.69</td>
<td>136.16**</td>
<td>.19</td>
</tr>
<tr>
<td>T0338</td>
<td><strong>1.91</strong></td>
<td><strong>2.44</strong></td>
<td>3443.72**</td>
<td><strong>.93</strong></td>
</tr>
<tr>
<td>T0339</td>
<td>1.68</td>
<td>1.93</td>
<td>1104.69**</td>
<td><strong>.53</strong></td>
</tr>
<tr>
<td>T0341</td>
<td>1.73</td>
<td>1.93</td>
<td>530.73**</td>
<td><strong>.36</strong></td>
</tr>
<tr>
<td>T0342</td>
<td>1.92</td>
<td>2.09</td>
<td>324.97**</td>
<td><strong>.29</strong></td>
</tr>
<tr>
<td>T0346</td>
<td>2.25</td>
<td>2.27</td>
<td>6.42*</td>
<td>.04</td>
</tr>
<tr>
<td>T0350</td>
<td>1.51</td>
<td>1.58</td>
<td>68.89**</td>
<td>.13</td>
</tr>
</tbody>
</table>

SD = .72), and there was more cooperative effort for elementary teachers (mean = 1.73, SD = .79) than secondary school teachers (mean = 1.93, SD = .81).

The classification results (Table 9) show that, of 28,043 cases actually belonging to elementary group membership, 18,651 of them were correctly predicted by their perceptions of School Climate. In secondary teacher group membership, of 12,973 cases that were examined, 7,880 of them were correctly predicted by their perceptions of School Climate. The overall classification results indicated that about 64.7 % of the cases can be correctly classified, accounting for about two-thirds of the public school
teachers. In summary, the results of the analysis indicated that elementary and secondary school teachers can be statistically distinguished based on their perceptions of School Climate, especially in the dimension of teacher collaboration. About two thirds of the teachers could be correctly classified.

Table 9

*Classification Results for School Climate: 64.7% of Original Grouped Cases Correctly Classified*

<table>
<thead>
<tr>
<th>SCHLEVEL</th>
<th>Predicted Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Membership</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
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<td>Count</td>
<td>18651</td>
</tr>
<tr>
<td></td>
<td>5093</td>
<td>7880</td>
</tr>
<tr>
<td>%</td>
<td>1</td>
<td>66.51</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>39.26</td>
</tr>
</tbody>
</table>

Results for Research Question 2

*How did American school teachers perceive teacher leadership role in their school organizations?*

Corresponding with this question, descriptive statistic analysis was conducted to explore the mean, standard deviation and response frequency for the items that were composed of the variable of Teacher Leadership (see Table 10). These items were chosen from the section of Decision Making in the Questionnaire. Respondents were asked to rate how much actual influence or actual control they perceived they had over the areas of school operation and classroom operation. The Likert-scale was ranged from “1 = No influence, 2 = Minor influence, 3 = Moderate influence,” to “4 = A great deal of
Table 10

*Descriptive Statistics for Teacher Leadership (N= 41015)*

<table>
<thead>
<tr>
<th>Items</th>
<th>Description (Areas of School operation)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Response Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0311</td>
<td>Setting performance standards for students at this school</td>
<td>2.57</td>
<td>0.961</td>
<td>16.1</td>
</tr>
<tr>
<td>T0312</td>
<td>Establishing curriculum</td>
<td>2.67</td>
<td>0.963</td>
<td>13.8</td>
</tr>
<tr>
<td>T0313</td>
<td>Determining the content of in-service professional development program</td>
<td>2.46</td>
<td>0.9</td>
<td>15.3</td>
</tr>
<tr>
<td>T0314</td>
<td>Evaluating teachers</td>
<td>1.67</td>
<td>0.805</td>
<td>51.7</td>
</tr>
<tr>
<td>T0315</td>
<td>Hiring new full-time teachers</td>
<td>1.86</td>
<td>0.908</td>
<td>43.9</td>
</tr>
<tr>
<td>T0316</td>
<td>Setting discipline policy</td>
<td>2.4</td>
<td>0.931</td>
<td>18.8</td>
</tr>
<tr>
<td>T0317</td>
<td>Deciding how the school budget will be spent</td>
<td>1.87</td>
<td>0.848</td>
<td>39.2</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>2.21</td>
<td>0.90</td>
<td>28.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items</th>
<th>Description (Areas of Classroom operation)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Response Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T0318</td>
<td>Selecting textbooks and other instructional materials</td>
<td>2.8</td>
<td>1.018</td>
<td>13.1</td>
</tr>
<tr>
<td>T0319</td>
<td>Selecting content, topics, and skills to be taught</td>
<td>2.92</td>
<td>0.993</td>
<td>10.5</td>
</tr>
<tr>
<td>T0320</td>
<td>Selecting teaching techniques</td>
<td>3.63</td>
<td>0.628</td>
<td>1.4</td>
</tr>
<tr>
<td>T0321</td>
<td>Evaluating and grading students</td>
<td>3.68</td>
<td>0.587</td>
<td>0.9</td>
</tr>
<tr>
<td>T0322</td>
<td>Disciplining students</td>
<td>3.51</td>
<td>0.669</td>
<td>1</td>
</tr>
<tr>
<td>T0323</td>
<td>Determining the amount of homework to be assigned</td>
<td>3.69</td>
<td>0.597</td>
<td>1.1</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>3.37</td>
<td>0.75</td>
<td>4.67</td>
</tr>
<tr>
<td>Average (Total)</td>
<td></td>
<td>2.75</td>
<td>0.83</td>
<td>17.45</td>
</tr>
</tbody>
</table>
influence,“ and from “1 = No control, 2 = Minor control, 3 = Moderate control,” to “4 =
A great deal of control.”

Descriptive statistic information in Table 10 shows that the overall mean for the
areas of school operation is 2.21 with a standard deviation of 0.90. The frequency of
rating for having great and moderate influence over these areas accounts for 38.80%,
rating for having minor influence accounts for 32.81% and rating for no influence
accounts for 28.40%.

In the areas of classroom operation, the overall mean is 3.37 with a standard
deviation of 0.75. The frequency of ratings for having great and moderate control over
these areas accounts for 84.58%, having minor control accounts for 10.78%, and the
rating for no control accounts for 4.67%.

The descriptive information indicated that less than half of the public school
teachers perceived they had actual influence over the areas of school operation while the
overwhelming number of teachers agreed that they had actual control over the areas of
classroom operation. Figure 3 illustrates that public school teachers perceived they had
higher influence over classroom operation (chart lines on the right side) than school
operation (chart lines on the left side).

Research Question 2.2

"Can teachers' perceptions of their leadership be distinguished by the school
levels (elementary and secondary schools) in which they work?"

Corresponding with Research Question 2.2, a discriminant function analysis was
performed using 13 items of the Teacher Leadership variable as predictors of the
membership for the two school levels. Preliminary evaluation of assumptions of linearity, absence of outliers, normality, and multicollinearity or singularity (tested by correlations between dependent variable items, see Table 11) did not indicate any threat to the discriminant function analysis. There was only one discriminant function (Wilks’ Lambda = .89, $\chi^2 (13) = 4676.09, p < .001$) that could discriminate the perceptions of teacher leadership by elementary school teachers from those by secondary school teachers. The results of the Box’s Test of Equality of Covariance Matrices with Box’s M = 4472.97, $p < .001$, also indicated that the two groups differed in their covariance matrices. The group mean of discriminant scores displayed by the function at group centroids, as shown in Table 12, indicated that the centroids means for each group were
Table 11

*Pooled Within-Group Correlations Among Predictors of Teacher Leadership*

<table>
<thead>
<tr>
<th></th>
<th>T0311</th>
<th>T0312</th>
<th>T0313</th>
<th>T0314</th>
<th>T0315</th>
<th>T0316</th>
<th>T0317</th>
<th>T0318</th>
<th>T0319</th>
<th>T0320</th>
<th>T0321</th>
<th>T0322</th>
<th>T0323</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0311</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>T0312</td>
<td>0.546</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>T0313</td>
<td>0.389</td>
<td>0.404</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0314</td>
<td>0.347</td>
<td>0.328</td>
<td>0.410</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0315</td>
<td>0.266</td>
<td>0.301</td>
<td>0.324</td>
<td>0.441</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>T0316</td>
<td>0.401</td>
<td>0.371</td>
<td>0.425</td>
<td>0.380</td>
<td>0.430</td>
<td>1.000</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>T0317</td>
<td>0.294</td>
<td>0.271</td>
<td>0.370</td>
<td>0.360</td>
<td>0.410</td>
<td>0.434</td>
<td>1.000</td>
<td></td>
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</tr>
<tr>
<td>T0318</td>
<td>0.254</td>
<td>0.393</td>
<td>0.232</td>
<td>0.158</td>
<td>0.175</td>
<td>0.213</td>
<td>0.172</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>T0319</td>
<td>0.291</td>
<td>0.436</td>
<td>0.198</td>
<td>0.171</td>
<td>0.146</td>
<td>0.199</td>
<td>0.148</td>
<td>0.561</td>
<td>1.000</td>
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<td></td>
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</tr>
<tr>
<td>T0320</td>
<td>0.203</td>
<td>0.266</td>
<td>0.179</td>
<td>0.061</td>
<td>0.103</td>
<td>0.193</td>
<td>0.100</td>
<td>0.337</td>
<td>0.444</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0321</td>
<td>0.176</td>
<td>0.218</td>
<td>0.138</td>
<td>0.035</td>
<td>0.079</td>
<td>0.156</td>
<td>0.090</td>
<td>0.268</td>
<td>0.346</td>
<td>0.526</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0322</td>
<td>0.195</td>
<td>0.205</td>
<td>0.183</td>
<td>0.088</td>
<td>0.138</td>
<td>0.269</td>
<td>0.137</td>
<td>0.211</td>
<td>0.247</td>
<td>0.396</td>
<td>0.418</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>T0323</td>
<td>0.132</td>
<td>0.161</td>
<td>0.097</td>
<td>0.043</td>
<td>0.069</td>
<td>0.134</td>
<td>0.068</td>
<td>0.219</td>
<td>0.267</td>
<td>0.378</td>
<td>0.458</td>
<td>0.385</td>
<td>1.000</td>
</tr>
</tbody>
</table>
well apart, showing that the discriminant function was clearly discriminating in both magnitude and direction.

The structure matrix of correlations between the predictors of teacher leadership and the discriminant function, as well as group descriptive statistics, as seen in Table 12, indicated that the best predictors for discriminating between elementary teachers and secondary teachers were T0319 (Selecting content, topics, and skills to be taught), T0318 (Selecting textbooks and other instructional materials), T0312 (Establishing curriculum), T0316 (Setting discipline policy), T0321 (Evaluating and grading students), and T0323 (Determining the amount of homework). Loadings less than .30 are not interpreted.

The results of the structure matrix of the correlation indicated that secondary school teachers seemed to have more favorable perceptions of their actual control over teaching and planning in selecting teaching content, topics and skills (mean = 3.17, \(SD = .91\)) than elementary school teachers (mean = 2.81, \(SD = 1.0\)); to have more favorable perceptions of their control over selecting textbooks and other instructional materials (mean = 3.05, \(SD = .99\)) than elementary school teachers (mean = 2.69, \(SD = 1.0\)). Secondary school teachers seemed to have more influence over establishing curriculum (mean = 2.86, \(SD = .93\)) than elementary school teachers (mean = 2.58, \(SD = .97\)). They also seemed to have more control over evaluating students (mean = 3.78, \(SD = .48\)) than elementary school teachers (mean = 3.64, \(SD = .63\)); and to have more control over determining the amount of homework (mean = 3.78, \(SD = .51\)) than elementary school teachers (mean = 3.65, \(SD = .63\)). Elementary school teachers (mean
Table 12

Results of Discriminant Function Analysis for Predictors of Teacher Leadership

<table>
<thead>
<tr>
<th>Items</th>
<th>School Level (1)</th>
<th>School Level (2)</th>
<th>F</th>
<th>Correlation Between Items and Discriminant Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elementary</td>
<td>Secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N = 15889</td>
<td>N = 22673</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>Std.</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td></td>
<td>Deviation</td>
<td>Deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0311</td>
<td>2.57</td>
<td>2.56</td>
<td>.97</td>
<td>.94</td>
</tr>
<tr>
<td>T0312</td>
<td>2.58</td>
<td>2.86</td>
<td>.97</td>
<td>.93</td>
</tr>
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<td>T0313</td>
<td>2.48</td>
<td>2.40</td>
<td>.90</td>
<td>.90</td>
</tr>
<tr>
<td>T0314</td>
<td>1.66</td>
<td>1.70</td>
<td>.81</td>
<td>.80</td>
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<tr>
<td>T0315</td>
<td>1.87</td>
<td>1.82</td>
<td>.92</td>
<td>.88</td>
</tr>
<tr>
<td>T0316</td>
<td>2.48</td>
<td>2.22</td>
<td>.94</td>
<td>.90</td>
</tr>
<tr>
<td>T0317</td>
<td>1.91</td>
<td>1.78</td>
<td>.86</td>
<td>.82</td>
</tr>
<tr>
<td>T0318</td>
<td>2.69</td>
<td>3.05</td>
<td>1.01</td>
<td>.99</td>
</tr>
<tr>
<td>T0319</td>
<td>2.81</td>
<td>3.17</td>
<td>1.01</td>
<td>.91</td>
</tr>
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<td>T0320</td>
<td>3.59</td>
<td>3.73</td>
<td>.66</td>
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<td>3.78</td>
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<td>T0322</td>
<td>3.55</td>
<td>3.42</td>
<td>.65</td>
<td>.71</td>
</tr>
<tr>
<td>T0323</td>
<td>3.65</td>
<td>3.78</td>
<td>.63</td>
<td>.51</td>
</tr>
<tr>
<td>Group</td>
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<td>.511</td>
<td></td>
<td></td>
</tr>
<tr>
<td>centroids</td>
<td></td>
<td></td>
<td></td>
<td>*p &gt; .05 **p &lt; .001</td>
</tr>
</tbody>
</table>

= 2.48, SD = .94) seemed to have more influence over setting discipline policy than secondary school teachers (mean = 2.22, SD = .90).

In brief, secondary school teachers seemed to have more control over the areas of classroom operation regarding teaching and curriculum planning in particular than
elementary school teachers. Elementary school teachers seemed to have more influence over discipline policy than secondary school teachers.

The classification results (Table 13) show that, of 28,043 cases actually belonging to the elementary school group membership, 17,841 of them were correctly predicted by their perceptions of teacher leadership roles they played in their schools. In the secondary school group membership, of 10,973 cases that were examined, 8,541 of them were correctly predicted by their perceptions of teacher leadership roles they played in their schools. The overall classification results indicated that about 64.3% of the cases can be correctly classified, accounting for about two thirds of the public school teachers. The results of the analysis indicated that elementary and secondary school teachers can be statistically distinguished based on their perceptions of being actively involved in decision-making process in their schools, especially in the areas of classroom operation. About two thirds of the teachers could be correctly classified.

Table 13

Classification Results for Teacher Leadership: 64.3% of Original Grouped Cases Correctly Classified

<table>
<thead>
<tr>
<th>SCHLEVEL</th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Original</td>
<td>Count</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>17841</td>
<td>10202</td>
</tr>
<tr>
<td>2</td>
<td>4432</td>
<td>8541</td>
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<tr>
<td>%</td>
<td>63.6</td>
<td>36.4</td>
</tr>
<tr>
<td>2</td>
<td>34.2</td>
<td>65.8</td>
</tr>
</tbody>
</table>
Results for Research Question 3

What is the relationship between how teachers perceive the components of School Climate and the components of Teacher Leadership?

Corresponding with Research Question 3, a canonical correlation analysis was performed to assess the multivariate shared relationship between the two variable sets. The independent variable set was the 10 components of School Climate. The dependent variable set was the 13 components of Teacher Leadership. The purpose of this canonical correlation analysis was to investigate if the linear combination of the School Climate variable set was maximally correlated with the linear combination of the Teacher Leadership variable set. In other words, I want to know which components in the School Climate variable set and Teacher Leadership variable set contributed most to the relationship if there existed any. Preliminary analysis indicated no violation of the assumptions of normality (variables normally distributed), linearity (linear relationship between the two sets of variables), homoscedasticity (homogeneity of variance), and absence of multicollinearity (variables too highly correlated) and singularity (variables being redundant) (Tabachnick & Fidell, 2001).

The analysis result showed that the model across all functions (canonical roots) was statistically significant using the Wilks' $\lambda = .65$ criterion, $F(130, 327952) = 136.47$, $p < .001$. The analysis result also yielded 10 functions (canonical roots or variate pairs) and eight of them appeared statistically significant ($p < .001$). According to Tabachnick and Fidell (2001), canonical correlation between variable components and variates lower than .30 is usually not interpreted. Considering this study employed a large sample size from the national dataset, I included the second canonical function with canonical
correlation \( r_c = .22 \) for interpretation, assuming that the second function would also assist
the explanation of the variable contribution in the two variable sets. The remaining
canonical correlation functions were of little use in terms of their effective contribution to
the relationship, though they appeared statistically significant.

The statistically significant functions in the canonical correlation test did not tell
us the magnitude of the relationship between two sets of variables. As Sherry and Henson
(2005) put it, statistical significance tests were greatly influenced by sample size. It is
possible for a large sample size to obtain statistically significant outcomes for very small
and unimportant effects. It is important, therefore, to take a look at the effect size to
determine the practical significance. Wilks' \( \lambda \), according to Sherry and Henson (2005),
represents something of an inverse effect size or the amount of variance not shared
between the two variable sets, and thus the effect size of the canonical correlation in this
analysis was obtained by \( 1 - \lambda \) (\( 1 - .65 = .35 \)) for the full model. The effect size pertains
to the strength of association. There are a number of different effect size statistics. One of
them is eta squared, which represents the proportion of variance of the dependent variable
that is explained by the independent variable (Pallant, 2005). Pallant refers to the effect
size as \( .01 = \text{small effect} \); \( .06 = \text{moderate effect} \); and \( .14 = \text{large effect} \). Referencing to the
guidelines by Cohen (1988, pp. 21–23) about the effect size for such multivariate
relationship between two variable sets, it is noted that this canonical correlation analysis
can be considered having a large effect size (65% non-overlap) and that the full model
explained a portion about 35% of the variance shared between the variable sets.

The first and the second canonical functions that described the relationship
between the two variable sets explained 28% and 5%, respectively, of the variation as
compared to less than 3% for any of the remaining canonical functions. These two functions in the canonical model captured most of the relationship between the two variates. To determine which components in the respective variable sets made important contributions to the whole model, I examined the standardized canonical function coefficients (standardized weights), structure coefficients ($r_c$), and the squared structure coefficients ($r^2_c$). The squared structure coefficients helped to express the variation in the linear combination of the components of School Climate that were attributable in the linear combination of the components of Teacher Leadership, and the amount of shared variance between the two variable sets (Sherry & Henson, 2005).

Data analysis results pertaining to the first and second canonical functions are presented in Table 14. It is noted that the standardized canonical function coefficients (standardized weights) for the components of Teacher Leadership carried negative values while the components of School Climate had positive values. This result was due to the fact that the Likert scale in the Questionnaire for the Teacher Leadership items were rated with ascending scales but the School Climate items were rated with descending scales. Given the nature of the Likert scale pattern, it can be assumed that the components of School Climate were positively associated with the components of Teacher Leadership.

With a cutoff correlation of .40, the components in the Teacher Leadership variable set that were correlated with the first function involved all the components of school operation. The structure coefficients pertaining to the first canonical function indicated that the components of T0316 (Setting discipline policy, −0.77), T0313 (Determining the content of professional development programs, −0.72), T0311 (Setting performance standards for students, −0.62), T0317 (Deciding how the school budget will
Table 14

*Canonical Solution for Function 1 and 2*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>$r_c$</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>T0311</td>
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</tr>
<tr>
<td>T0312</td>
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<td>-.542</td>
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<tr>
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<tr>
<td>T0317</td>
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<tr>
<td>T0321</td>
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</tr>
<tr>
<td>T0323</td>
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</tr>
<tr>
<td>School Climate</td>
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<tr>
<td>T0330</td>
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<tr>
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<td>T0342</td>
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</tr>
<tr>
<td>T0350</td>
<td>.208</td>
<td>.654</td>
</tr>
</tbody>
</table>

Canonical Correlation: .53 \[=] .21
be spent, -0.57), and T0322 (Disciplining students, -0.59) explained 59%, 51%, 39%, 32%, and 35% of the variance, respectively, making the strongest contributions to the relationship. These components were mostly related to the area of school operation. Regarding the independent variable set of School Climate, it was found that all School Climate components for the first canonical function made contributions to the relationship between the original components and the canonical variate. The components pertaining to the area of School leadership like T0342 (Work recognition, 0.78), T0337 (Principal support, 0.75), T0331 (Encouraging behavior, 0.74), T0350 (General satisfaction, 0.65), and T0338 (Enforce rules for student behavior, 0.62) explained 61%, 57%, 54%, 43%, and 38% of variance, respectively, making the strongest contributions to the relationship. It was found that collinearity existed among the independent variable set. The components of T0330 (Clear expectation) had a very low standardized function coefficient (0.02) while its structure coefficients was comparatively high (0.58). The components of this kind should be arbitrarily denied credit from their predictive contributions (Humphries-Wadsworth, 1998). The rest of the components in the first canonical function mostly related to the dimension of Teacher collaboration.

Data analysis results pertaining to the second function indicated that the components of the Teacher Leadership variable in the areas of classroom operation made noteworthy contributions to the relationship. They were T0318 (Selecting textbooks and other instructional materials, -0.65), T0319 (Selecting content, topics, and skills to be taught, -0.47), T0320 (Selecting teaching techniques, -0.61), T0321 (Evaluating and grading students, 0.52), and T0323 (Determining the amount of homework to be assigned, 0.40). With regard to the components in the School Climate variable set, it was
found that the component of T0338 (Enforcing rules for student behavior, −0.57) was negatively correlated with the canonical variate, indicating that in dealing with the matters of curriculum planning and classroom instructions, teachers did not perceive it had a strong association with the collaboration effort in enforcing rules for students in schools.

In brief, the results from the canonical correlation analysis involving 10 components of the School Climate variable and the 13 components of the Teacher Leadership variable indicated that the Teacher Leadership components in the area of school operation pertaining to setting student performance standards, establishing curriculum, determining the contents of professional development program, evaluating teachers, hiring new teachers, and deciding on school budget were related in some combination to School Climate. The components in the areas of classroom operation made contributions in the second canonical function. Of all the School Climate components, it appeared that all components made strong contributions to the relationship, especially those pertaining to the dimension of school leadership. The canonical correlation analysis suggested that the School Climate variable set and the Teacher Leadership variable set were positively related in certain combination.

Chapter Summary

In this chapter, I conducted three types of multivariate analyses, namely, factor analysis, discriminant function analysis and a canonical correlation analysis, to investigate the multivariate relationship between the selected components of School Climate variable and the components of Teacher Leadership variable. General descriptive
information about School Climate and Teacher Leadership was also presented in response to the research questions under study. School Climate variable consists of two dimensions: school leadership and teacher collaboration. Teacher Leadership variable consists of two areas: school operation and classroom operation. The analysis results can be summarized in the following four features.

First, two factor analyses followed by two reliability tests were conducted to explore the underlying factors within the items selected to compose the variables of School Climate and Teacher Leadership. The first analysis result yielded a two factor solution for School Climate which can be labeled as the dimension of school leadership and that of teacher collaboration. The other factor analysis result also yielded a two factor solution for Teacher Leadership which can be labeled as the areas of school operation and the areas of classroom operation. These factor solutions were found to have high reliability Cronbach Alphas. Their coherent themes were consistent with the previous research literature on the components of Teacher Leadership and School Climate.

Second, descriptive statistics about the components of School Climate variable and Teacher Leadership variable indicated that the majority of public school teachers in America generally held favorable perceptions of school climate in their schools. They appeared to give more positive opinions about their school leadership than teacher collaboration. The descriptive information also indicated that less than half of the public school teachers perceived they had actual influence over the areas of school operation while the overwhelming number of teachers agreed that they had actual control over the areas of classroom operation.
Third, in discriminating the different perceptions of school climate and teacher leadership between elementary school teachers and secondary school teachers, the discriminant function analysis results indicated that about 65% of public school teachers’ school membership can be classified by the predictor variable of School Climate and about 64% of school teachers’ school membership can be classified by the predictor variable of Teacher Leadership. When the components of School Climate variable were used as the predictors of school membership, it was found that the best predictors for discriminating between elementary teachers and secondary teachers were the components that were categorized into the dimension of teacher collaboration. Elementary school teachers appeared to be more positive than secondary school teachers in collaborating with each other in their school work. When the components of Teacher Leadership variable were used as the predictors of school membership, it was found that the best predictors for discriminating school membership were those that were categorized into the areas of classroom operation. Secondary school teachers appeared to be more positive in their control over teaching and curriculum planning than elementary school teachers, especially in selecting instructional material for classroom operation. The discriminant function analysis results also suggested that two thirds of public school teachers’ school membership could be distinctively classified based on their perceptions of School Climate and Teacher Leadership respectively.

Last, a canonical correlation analysis results indicated that there was a statistically significant correlation between the set of School Climate variable and the set of Teacher Leadership variable. It is noted that this canonical correlation analysis has a large effect size and that the full model explained a portion about 35% of the variance shared between
the variable sets. Of the 10 components of the independent variable School Climate, it appeared that all the components made contributions to the correlation between the two canonical variates. The components in the dimension of school leadership appeared to make more important contributions to the relationship. Of the 13 components of the dependent variable Teacher Leadership, the components in the areas of school operation accounted for more of the explained variance. The areas of classroom operation made smaller contributions.

In sum, the variable set of School Climate was statistically related to the variable set of Teacher Leadership. The dimension of school leadership in the variable set of School Climate and the areas of school operation in the variable set of Teacher Leadership made major contributions to the relationship between the two canonical variates.
CHAPTER V

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to quantifiably assess teacher leadership and its relationship with school climate in American public schools. Five research questions were statistically explored with strong evidence that supports the previous literature on the association of school climate with the idea of teacher involvement in the decision-making process (Sweetland & Hoy, 2000). The findings from this study, however, is distinct from the majority of research literature on this topic, since very few studies in the past few decades have employed quantitative methodology to inquire into the development of teacher leadership in American public schools (York-Barr & Duke, 2004). The impact of school climate on the teacher leadership role that teachers play has not been quantifiably assessed. Quantitative studies on school climate have been many but those related to teacher leadership are far from noticeable. The national dataset of SASS 2003-2004 that this study used allows for such relationship analysis. The findings from the analysis have contributed to the existing literature on teacher leadership and filled in the “gap” of the relationship between school climate and teacher leadership with quantifiable information at a national level. In this chapter, discussion and conclusions based on the analysis results, unanswered questions, research implications of this study and recommendations for future research are provided for educational researchers, educators and policy makers.
Discussion

School Climate in Public Schools

Public school teachers’ view of school climate indicated that the majority of public school teachers perceived that school climate in their educational organizations was generally positive. This indicated that school teachers held favorable opinions of their school climate. The average quality of school climate perceived by public school teachers was weighted statistically higher on the dimension of school leadership than that of teacher collaboration. It can be assumed that such weight reflects a greater impact of school leadership, especially principal’s behavior in schools, on the overall school climate. This finding confirmed previous studies that leadership is an essential element in determining organizational climate (Chelte, Hess, Fanelli, & Ferris, 1989; Griffith, 1999) and organizational climate in schools were related to principal effectiveness (Anderson, 1982; Griffith, 1999; Zheng, 1996). Griffith (1999), in his review of leadership literature, contended that effective leadership in schools witnessed the principal set clear and high achievement goals and maintained a strong task orientation. The principal encouraged teachers, created a supportive environment, facilitated communication, effectively allocated school resources and performed instructional leadership.

The results of relative frequency of the item response for each of the selected School Climate components, in which patterns of ratings were examined, demonstrated that the majority of public school teachers were satisfied with the effectiveness of the principal leadership at their schools. In teachers’ perceptions of the principal’s performance, 92% of agreement with their principals was rated for the item of setting
clear expectations, 85% of agreement for the principals’ encouraging behaviors, 87% of agreement for the principal’s support of teachers managing student conduct, and 78% of agreement for availability of teaching resources. The frequency results for rating School Climate also indicated that 75% of the teachers were satisfied with the recognition they received of a job well done in schools while 90% of them felt that they were satisfied with being a teacher at the school.

As Calabrese (2002) claimed, the perceptions of the organizational members determined the leader’s effectiveness and “effective leadership is a power-driven core component that contributes to organizational health” (p. 164). This study demonstrated that the effectiveness of the principal leadership in American public schools was well recognized by most of the public school teachers.

The descriptive analysis results also indicated that public school teachers generally perceived they had a positive school climate in teacher collaboration. 82% of the teachers held positive perceptions of the coordinative effort among the school staff, 70% of them for their assistance with each other in enforcing rules for students, and 88% of them felt that they had shared values and beliefs among colleagues in their schools.

Hoy and Tarter (1997) claimed that in a healthy school climate, teacher’s behavior in school “is reflected by high faculty morale. Teachers are proud of their school, enjoy working with each other, and are supportive of their colleagues” (p. 47). The study results indicated that most of the public school teachers were satisfied with the collaboration among colleagues in their school and their school maintained a healthy climate in the dimension of teacher collaboration.
In brief, descriptive statistic information about school climate as perceived by public school teachers indicated a positive trend. Public school teachers weighted relatively higher in their agreement with their principal performance in their schools.

*Teacher Leadership in Public Schools*

Descriptive statistics about the perceptions of teacher leadership by public school teachers revealed some variation across the two areas of Teacher Leadership. The analysis results indicated a positive agreement trend but presented contrasting responses between perceptions of the areas of school operation and the areas of classroom operation. In the areas of school operation, relative frequency analysis indicated that about 27.8% of public school teachers perceived they could exercise moderate influence, 32.8% of them said they had minor influence but only about 11% would give a confirmative report of a great deal of influence. Of the seven areas of school operation as perceived by teachers, the relatively high extent of agreement inclusive of moderate influence and a great deal of influence, which surpassed mid-point percentage, went to the items of establishing curriculum (59%) and setting performance standards for students (55%). The rest of the items were all below the mid-point percentage of agreement.

In contrast, in the areas of classroom operation, item response results for a combination of moderate control and a great deal of control amounted to 85%. About 11% of teachers reported they had minor control and only 4.7% reported having no control. Of the six areas of classroom operation as perceived by public school teachers, the relatively high extent of agreement inclusive of moderate control and a great deal of control fell on the items of determining the amount of homework (95%), evaluating and
grading students (95%), selecting teaching techniques (94.6%), and disciplining students (92%). The response items with relatively lower percentage of agreement were selecting textbooks (62%) and selecting teaching content (67.5%).

The findings from the descriptive statistics about the perceptions of teacher leadership in American public schools were consistent with the previous quantitative study done by Shen (2001) who used SASS 1987-88 and 1993-94 datasets to assess teachers’ power over the school issues and classroom issues. The present findings indicated that within the well accepted boundary of teacher leadership role, teachers’ involvement in the decision making process in the areas of school operation was not considerably recognized by a substantial number of teachers as their concurrent leadership behavior in most of American public schools. From this view, it may suggest that public school teachers’ involvement in the school decision making process is still mainly confined to the boundary of the traditional areas of classroom operation. The present data may also imply that the previous literature in teacher leadership practice associated with qualitative case studies have probably only provided limited references to theoretical advocacy rather than generalizable and practical accuracy that reflect a bona fide situation of teacher leadership development in the current public schools. This finding may lead us to comprehend Harris’s (2003) notion that “for many, teacher leadership is acceptable in principle but largely inconceivable in practice” (p. 319). It may point to a fact that in many public schools, teachers do not think they have been involved in leadership activities in the school improvement. Furthermore teachers may not think they are able to exercise leadership in their schools.
School Climate as Predictors of School Membership

The results of the discriminant function analyses indicated that the 10 components of School Climate variable can remarkably classify the school membership where the sample teachers belonged. About 65% of the teachers could be correctly classified by the predictors of School Climate. This may suggest that the perceptions of School Climate by elementary and secondary school teachers were statistically different in a significant proportion. Their perceptions may share some similarity as well in certain aspects in American public schools.

This discriminant function analysis result also indicated that the strongest predictors were the components of “cooperation of enforcing rules, shared beliefs and values, and cooperative effort among colleagues.” These findings may suggest that the dimension of teacher collaboration has greater strength than that of school leadership in classifying the school membership of elementary teachers and secondary teachers regarding their perceptions of school climate. Elementary school teachers seemed to feel more comfortable than secondary school teachers in cooperating with each other and having shared beliefs and values in their work. The variable of School Climate regarding the dimension of teacher collaboration appeared to have more strength in elementary work environment than in secondary schools.

Researchers and educators found that in more successful schools, teachers were given more time to collaborate with one another (Harris, 2003; Louis, Marks, & Kruse, 1996). Hence, teachers who worked in schools with no formal mechanism of collaboration or worked in a tightly controlled administrative mechanism may have less
collaborative opportunities (Goddard, Goddard, & Tschannen-Moran, 2007). It can be assumed that elementary schools may present more opportunities for teachers to collaborate for school improvement. This kind of teacher collaboration, as Little and Bartlett (2002) stated it, is related to the “collective pursuit of educational goals” (p. 346).

Concisely, in classifying the school membership where the public school teachers worked, the components of School Climate in the dimension of teacher collaboration are the proper predictors for the discriminant function. Elementary schools have a more collaborative environment than secondary schools.

**Teacher Leadership as Predictors of School Membership**

Some researchers classified teacher leadership into two leadership functions. From an informal position, teacher leadership consists of classroom-related functions (Berliner, 1983; Muijs & Harris, 2003). From a formal position, teacher leadership encompasses responsibilities moving away from the classroom (Ash & Persall, 2000). Many researchers and educators agreed that teacher leadership included leading role in and out of classroom. (e.g., Barth, 2001; Dana & Bourisaw, 2006; Katzenmeyer & Moller, 2001). The results of discriminant function analysis in this study indicated that the components of Teacher Leadership variable serving as the predictors of school membership can remarkably classify the school membership where the sample teachers belonged. About two thirds of the teachers’ school membership could be correctly classified based on their perceptions of teacher leadership. This may suggest that the perceptions of teacher leadership by elementary and secondary school teachers were
statistically different in a significant proportion and also shared some similarity in certain aspects in American public schools.

It was noted that the strongest predictors were the components regarding teaching and planning, especially those pertaining to designing curriculum. Secondary school teachers perceived that they could play an important role in curriculum development, designing and planning teaching content, materials and skills to be taught for students. This may be due to the fact that the operational characteristics of teacher autonomy in secondary schools allow secondary teachers to adjust and redesign curriculum to accommodate the needs of school operation and students’ development. For instance, secondary school teachers will take on leadership role and be involved in some decision-making process in re-designing curriculum for adjusting for some particular school activities, such as sports, field trips, and community service programs. The current findings seem to indicate that secondary school teachers may have more opportunities in exercising leadership role than elementary school teachers concerning the content of curriculum designing, whereas elementary school teachers may have more influence over setting discipline policies for children in schools. The results of this study may add to the limited literature on differences in teachers’ perceptions of teacher leadership at different school levels.

The Relationship Between Teacher Leadership and School Climate

The objectives of the canonical correlation analysis in this study were to explore the multivariate relationship between school climate and teacher leadership in American public schools and to quantify the magnitude and strength of the relationship between the
two variable sets. The overall results of the canonical correlation analysis revealed that there was statistically significant and positive relationship between teachers’ perceptions of school climate and teacher leadership in American public schools. About 35% of the variance of the linear combination of the Teacher Leadership variable set could be explained by the linear combination of the School Climate variable set. This indicated that school climate as perceived by public school teachers is one of the important factors worth investigating regarding teacher leadership development in public school contexts. The findings revealed that the components of school leadership in the School Climate variable set and the components of school operation in the Teacher Leadership variable set were the strongest contributors in the relationship between the two canonical variates. The findings support the previous research literature that organizational climate has been recognized as a powerful element related to the effectiveness of principal leadership (e.g., Anderson, 1982; Griffith, 1999; Hoy & Tarter, 1997; Muijs & Harris, 2003).

With regard to the Teacher Leadership variable set, it was found that School Climate variable set was more associated with the components in the areas of school operation than those in the areas of classroom operation. This result may offer consistent evidence with the previous literature that reported principal’s leadership style has impact on involving teachers in school decision-making process outside the classroom boundary (e.g., Frost, 2003; Gronn, 2000; Muijs & Harris, 2003; Sergiovanni, 1992). It may suggest that school teachers are concerned with school leadership related to their involvement in the school decision-making process more in the areas of school operation than in the areas of classroom operation. Thus the relationship between school climate and teacher leadership was weighed more heavily on the linkage of the dimension of school
leadership with the areas of school operation. Teachers have long assumed leadership role in the classroom instruction and management with little regard to the differences in school climate. It can be assumed, therefore, teachers’ perceptions of school climate would weigh more on its influence on the areas beyond the classroom boundary.

In summary, the findings of the canonical correlation analysis suggest that school climate was statistically and positively correlated with teacher leadership. Teachers’ perceptions of school climate and teacher leadership weigh more on the influence of the dimension of school leadership on the areas of school operation.

Conclusions and Implications

The idea of teacher leadership has been well established in America and widely discussed in research literature for the past few decades (Frost, 2003). Reviewing literature on teacher leadership presents weaknesses in its research methodological application that leads to questions on its power to generalize reliable findings. Empirical studies looking into its effect on teaching and learning in particular settings within schools have been numerous. However, rarely had they been conducted at a national level with statistical inquiry to assess factors that influenced its development. The present study may represent one of the first undertakings that attempt to quantify such effort.

The primary purpose of this study was to use statistical data information from SASS 2003-2004, a national dataset, to assess teacher leadership and its relationship with school climate in public schools. The findings from the descriptive and multivariate analyses may yield greater insight to the concurrent situation of teacher leadership and school climate as well as their relationship in public schools. This study may suggest
some policy implications for educators and policy makers and can be concluded in the following statement groups.

First, public school teachers perceived that they played a more leading role in their classroom than out of classroom. This finding is consistent with the result of the longitudinal study done by Shen (2005) who used similar contents from the SASS 1987-88 and 1993-94 data set to assess teachers' perceptions of their power over the school issues and classroom issues. His findings indicated that teachers perceived that their leadership role was primarily confined to classroom issues and their leadership role in school-wide issues was weak. It is surprising that despite substantial agreement in the literature of the past few decades supporting teacher leadership development in school improvement, these perceptions remain little changed compared with the earlier research findings. The present data exhibited a quantitatively different picture at a national level from that of qualitatively developed case studies in the previous literature. This may raise a flag of caution that the idea of teacher leadership may be well accepted among researchers in the form of theoretical advocacy. Yet it has not generally recognized among public school teachers in practicality.

School leadership, especially school principal's leadership style, plays an important role in the structure of school climate (Stockton & Cage, 2000). It is noted that public school teachers had a positive view on their school leadership regarding principal support and teacher collaboration as well. This national-data-based representative picture of organizational climate in American public schools seems to suggest that most of our public schools provide a pleasant working environment for our teachers. The level of
satisfaction perceived by teachers regarding their general view on their job is notably high.

Second, it is noted that the dimension of teacher collaboration regarding teachers' perceptions of school climate can classify the views between teachers from elementary schools and secondary schools. Elementary school teachers appeared more willing to exercise their cooperative effort than secondary school teachers to deal with their school work. With regard to the perceptions of the teacher leadership role teachers perceived they played in schools, it was found that secondary school teachers had a more active influence than elementary school teachers over some areas of school operation, such as curriculum planning and classroom instruction. Elementary school teachers seemed to have more influence over students' discipline policy. This can be viewed as reaffirming the previously stated collaboration pattern in elementary schools which allowed teachers to share ideas as well as burden of responsibility in a collaborative school climate. The findings also suggest that there was a significant proportion of overlapping variance in terms of public school teachers' perceptions of school climate and teacher leadership.

Third, the idea of teacher leadership has been widely discussed but scarcely examined in quantitative contexts for evaluating factors that influenced its development. The positive relationship between school climate and teacher leadership generated in this study can provide the much-needed statistical evidence to support the existing literature that called for more research on factors that influence and conditions conducive to teacher leadership (e.g., Frost, 2003; Muijs & Harris, 2007; Sergiovanni & Starrtt, 2002; Spillane, 2006; Timperley, 2005). It is not surprising to note in this study that public school teachers linked their leadership role in the areas of school operation with the dimension of
school leadership as the major pattern of the relationship between school climate and teacher leadership. As Dondero (1997) asserted 10 years ago, organizational climate in a school was closely related to the amount of control over individual teachers and the management style. Teachers would view schools as effective functioning organizations when decision making was more participatory and less centralized. The pattern of this casual linkage found in this study may imply that the teachers' lower involvement in the decision making process in the areas of school operation was related to the dimension of school leadership. Because of the limitations existing in this investigation, such a claim must be interpreted with care and more research evidence is needed for its confirmation.

Lastly, based on the concluding statement above, it is interesting to note that while the majority of school teachers rated high agreement with the school leadership performance in their schools, they rated comparatively lower agreement level about their actual influence over the areas of school operation. The pattern of linkage between school climate and teacher leadership as generated by the canonical correlation results statistically weighed on teachers' perceptions of school leadership with their perceptions of school operation. This finding, however, remains ambiguous in terms of practical implications. If the higher ratings for school leadership performance exist, why are there lower ratings for teachers' influence over the areas of school operation? There seems to be a latent conceptual gap between what researchers consider to be effective school leadership including substantial support of teacher leadership and what school teachers consider to be supportive principal behaviors excluding the elements of involving teachers in the school decision-making process. Obviously this question would tend to
beg for further study on a better understanding of its relationship and its practical implications.

Questions Raised by This Study and Recommendations for Future Research

The findings of this study bring to educational researchers and policy makers with some unanswered questions, as well as provide policy implications in developing teacher leadership in public school organizations. This study has also produced challenges to certain claims of teacher leadership in the existing literature.

First, many researchers and educators have viewed teachers’ participation in decision-making process outside the classroom boundary as the important element of teacher leadership. Findings of successful school reform associated with teacher leadership have been constantly reported regarding teacher’s participation in the decision making process outside their classroom. However, as indicated by the frequency of lower rating for school operation by public school teachers, the results of this study may imply reasons to raise doubt for some research claims of flourishing teacher leadership development in public schools. It may be assumed that the qualitative studies on teacher leadership in the past did not reflect a general picture of teacher leadership in public schools. It is recommended that more quantitative research studies on this topic be needed for further study of teacher leadership in American schools.

Second, over the past few decades, researchers and educators have produced a large body of literature on the scope and content of teacher leadership, including teacher leadership role in and out of the classroom boundary. In this study the results of the high ratings for the areas of classroom operation and low ratings for the areas of school
operation by public school teachers may raise a question: What causes teachers to be able
to have a great deal of control over their classroom operation? Is it due to their motivation
to exercise leadership role or is there an existing culture for teacher autonomy in schools,
stated that teachers usually have a sense of professional autonomy and believe that they
are qualified authorities in the instructional process. Furthermore they feel they have a
right to organize the learning process and they can formulate flexible rules within their
classrooms as they see fit. To further illustrate teacher autonomy is beyond the scope of
this study. Numerous studies on the association of high degree of teacher autonomy with
job satisfaction have been conducted by some researchers (e.g., Dondero, 1997; Natale,
1993; Pearson, 2006; Pearson & Hall, 1993). This association may be correlated with part
of the results from this study that public school teachers rated high agreement level on
both their job satisfaction and their control over classroom operation. The notion of
teacher autonomy regarding teachers’ control over the areas of classroom operation may
also challenge the definition of teacher leadership in that teachers’ decision-making role
inside the classroom is a practice of teaching responsibility and teacher autonomy rather
than a leadership behavior. It is suggested that future research may be directed toward
greater clarity in the aspect of teacher autonomy and teacher leadership role in the
classroom.

Third, this study indicated that elementary school teachers appeared more willing
to collaborate with each other in their school work, but they had less influence than
secondary school teachers over curriculum issues. Recalling this early finding may lead to
a question regarding the present high-stakes accountability context in which elementary
school teachers have recently been involved. Is the high level of collaboration perceived by elementary school teachers due to their decreasing control over the relevant curriculum issues because their work, as Valli (2007) put it, has been much more intensified and demanded than before in response to federal, state and local policies aimed at raising student achievement? It is recommended that future research should explore more fully the possible association of the more demanding curriculum with elementary teachers' perceptions of decreasing control over its design and development. It may be assumed that such association may possibly result in more collaborative effort by elementary school teachers in order to cope with the demanding situation under the umbrella of high-stakes policies.

Fourth, the research literature reviewed in this study indicated that school climate had great impact on teacher empowerment (Sweetland & Hoy, 2000) and associated positively with student achievement (Johnson & Stevens, 2006). The findings of this study also confirmed that teacher leadership was positively related to school climate. The impact of such relationship on student performance, however, has not yet touched upon. If teachers were generally satisfied with their school leadership, with the cooperative effort among themselves and with what they had been involved in their school work, would such satisfaction coming out of a favorable school climate simultaneously yield satisfactory outcomes regarding students' performance in schools? It is recommended that future study based on SASS data should be conducted to further explore to what extent a positive or negative school climate will exercise influence on the relationship between teacher's leadership behaviors and students' performance in schools.
Lastly, this study has explored two dimensions of school climate that are viewed as a major factor associated with teacher leadership in American public schools. By statistically assessing whether these two dimensions of school climate are positively, or negatively, related to teacher leadership, the one factor study can not sufficiently encompass what has been influencing teacher leadership development, and at the same time comprehensively capture what teachers have experienced in terms of leadership role under a school climate of high-stakes accountability. It is recommended that future research should look into more dimensions of school climate and more factors that possibly affect leadership roles assumed by public school teachers under the increasing pressure due to the bombarded with new requests (Valli, 2007).
Appendix A

Human Subjects Institutional Review Board
Letter of Approval
Date: December 10, 2007

To: Patricia Reeves, Principal Investigator
    Jianping Shen, Co-Principal Investigator
    Donghai Xie, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 07-12-08

This letter will serve as confirmation that your research project entitled "A Study of the Relationship between School Climate and Teacher Leadership in American Public Schools: Evidence from SASS 2003-2004" has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 10, 2008
BIBLIOGRAPHY


*Educational Administration Quarterly, 36*(5), 703-729.


Tagiuri, R. (1968). The concept of organizational climate. In R. Tagiuri & G. W. Litwin (Eds.), *Organizational climate: Explorations of a concept* (pp.1-32). Boston: Division of Research, Graduate School of Business Administration, Harvard University.


