

2013

Effective School Leadership Competencies: A Psychometric Study of the NASSP 21st Century School Administrator Skills Instrument

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Effective School Leadership Competencies: A Psychometric Study of the NASSP 21st Century

School Administrator Skills Instrument

By

Tiedan Huang

Presented to the Graduate and Research Committee

of Lehigh University

In Partial Fulfillment of Requirements

for the Degree of Doctoral of Education

in

Educational Leadership

Lehigh University

July, 2013

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August 1, 2013

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctoral of Education.

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ACKNOWLEDGEMENTS

Special thanks ...

- to Professor *George White*, my dissertation chair, for his unyielding confidence, continuous guidance, and professional wisdom;
- to Professor *Roland Yoshida* for teaching me the art of thinking and stretching my academic thinking to a latitude I could never reach on my own;
- to Dr. *Beachum* and Dr. *Kaimal* for their critical insights, patience and friendship;
- to Dr. *Laura Roberts* for her generous sharing of time and incisive criticism;
- to *Peter Reed*, associate director of NASSP, for giving me the permission to study the archival assessment records;
- to Dr. *Grace Caskie* for her great statistical courses which laid a solid foundation for my statistical competence;
- to Dr. Perry Zirkel for planting the seeds of scholarly pursuit in my early years of graduate school;
- to Mary Yotter for taking on the thankless task of keeping me on track;
- to my dear friend, Cindy El Bana, for her decade long friendship and for being a mother to our daughter when I spent long hours with the keyboard and my thoughts;
- to my dear friends, Floe and Jeremy Wischusen for opening their hearts and their home to us, especially on holidays, when homesickness became unbearable on a foreign land;
- to my family and extended family, who, though watching the process from afar, have supported me through it all;
- to my father, in particular, who never got to see this work, for holding me up and always believing that I could be whoever I wanted to be;
- and finally to my dear husband, Aidong, and daughter, Xinqiao, for their understanding, patience, tolerance, and unconditional love. The times past and future with you two have been and will be most cherished.

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Abstract

The study investigated the psychometric properties of the National Association of Secondary School Principals (NASSP) 21st Century School Administrator Skills instrument. The researcher used confirmatory factor analysis (CFA) to verify the number of underlying dimensions of the instrument and the pattern of item-factor relationships, estimate the scale reliability, and examine the convergent and discriminant validity across two different groups of school leaders – principals and assistant principals.

The researcher drew the sample from an existing leadership assessment data set collected for a competitive school leadership program (SLP) grant funded by the U.S. Department of Education in a mid-sized urban school district in the Northeastern region of the United States. In total, 339 teachers' ratings on their principals and 344 teachers' ratings on their assistant principals were available for analysis. The researcher performed CFA on the 67 items of the 21st Century School Administrator Skills instrument for the principal and assistant principal ratings respectively in Mplus using MLM estimation method.

CFA revealed adequate goodness of fit of the hypothesized 10-factor model and high subscale reliability and convergent validity. However, the instrument also manifested severe lack of discriminant validity. A follow-up exploratory factor analysis revealed that the current instrument measures two leadership dimensions instead of ten as originally hypothesized by NASSP. The researcher suggested that the revision of the NASSP 21st Century School Administrator Skills instrument could benefit from a re-conceptualization of school leadership, a comprehensive review of extant empirical literature and principal leadership assessment tools, evaluation of existing items as well as addition of new items based on theoretical and empirical literature.

CHAPTER ONE

Literature Review and Purposes of Study

Introduction

School leadership makes a difference in student learning. A recent issue of *Education Next* points out that highly effective principals raise the achievement of a typical student in their schools by between two and seven months of learning in a single school year while ineffective principals lower achievement by the same amount (Branch, Hanushek, & Rivkin, 2013). At the level of Federal policy, No Child Left Behind encouraged the replacement of the principal in persistently low-performing schools, and the Obama administration, in Race to the Top, has made this a requirement for schools undergoing federally funded turnarounds (Kutash, Nico, Gorin, Rahmatullah, & Tallant, 2010). Meanwhile, education experts, through the updated Interstate School Leaders Licensure Consortium standards (Interstate School Leaders Licensure Consortium, 2008), have defined key aspects of leadership to guide the preparation and development of aspiring and practicing school leaders.

Despite this recognition of the importance of principal leadership, education has been slower than many other fields in developing and adopting research-based, reliable, and valid ways to assess the performance of its leaders. In the military, there is a long tradition of rigorous standards-based assessment to help produce and support leaders who can assume tough tasks and achieve at high levels (The Wallace Foundation, 2009). Many top firms use 360-degree assessments to gather input about employees' performance not only from their supervisors, but also from co-workers and the employee themselves. And in many fields, assessments are used not only to make important career decisions about salaries or promotions, but also to identify areas for individual improvement, shape training and continuing

development, and create a culture of organizational learning (The Wallace Foundation). The field of education where future lives of children are in the making should be no exception. New tools are emerging for assessing principal performance (e.g., VAL-ED) in meaningful ways but more is wanting in the development of new assessment systems or the improvement of existing ones. The primary purpose of the study is to examine the quality of the National Association of Secondary School Principals (NASSP) 21st Century School Administrator Skills instrument (NASSP, n.d.a) in terms of its validity and reliability in assessing principal leadership performance and provide tangible recommendations for the improvement of this instrument.

Principal Leadership

In response to societal changes and school reform efforts, principals' role has changed over time. Using metaphors, Beck and Murphy (1993) have described major changes in the role expectations of the principal: value broker (1920s), scientific manager (1930s), democratic leader (1940s), theory-guided administrator (1950s), bureaucratic leader (1960s), humanistic facilitator (1970s), and instructional leader (1980s). The school restructuring reforms of the 1990s have further identified the principal as a transformational leader who must be involved in school problem finding and problem solving, shared decision-making, decentralized leadership, and systematic change (Crow & Peterson, 1994; Hallinger, 1992; Leithwood, 1992; Murphy, 1994). At the turn of the century, the American infatuation with performance standards has become a global love affair (Leithwood & Steinback, 2003; Murphy, 2002; Murphy & Shipman, 2003). Principals again find themselves at the nexus of accountability and school improvement with an increasingly explicit expectation that they will function as instructional leaders (Hallinger, 2005). However, unlike the strong, directive

instructional leadership image in the 1980s, the portrait of an instructional leader in the new century is not someone who carries the burden alone. Instead, he/she should be someone who takes a distributed perspective on school leadership and invites teachers to share leadership and management (Marks & Printy, 2003; Spillane, Camburn, Pustejovsky, Pareja, & Lewis, 2008).

The landscape of the empirical inquiry reflects the contours of the revolution of principals' roles over the past century and the renewed interest in instructional leadership in the new millennium. Five landmark studies, two in the form of qualitative analyses (Hallinger & Heck, 1998; Leithwood, Seashore Louis, Anderson, & Wahlshtrom, 2004) and three in the format of meta-analyses (Robinson, Lloyd, & Rowe, 2008; Waters, Marzano, & McNulty, 2003; Witziers, Bosker, & Kruger, 2003), aptly traced the empirical landscape in both broad strokes and fine details. The three meta-analyses involved a total of over 100 quantitative studies and hundreds of leadership effects. Taken a whole, this body of research suggests that the pathway of leadership influence is largely indirect (Hallinger & Heck; Witziers et al.); the effects of leadership are mediated through school conditions, classroom conditions, and a set of individual and collective teacher factors (Leithwood et al.); not all leadership is equal; some leadership practices, particularly those targeting the technical core of teaching and learning, make a significant difference in student outcomes (Waters, et al.; Robinson et al.). According to Robinson *et al.* (2008), these leadership actions, ranked in effect sizes from high to low, may include but are not limited to: (1) promoting and participating in teacher learning and development; (2) planning, coordinating, and evaluating teaching and the curriculum; (3) establishing goals and expectations; (4) strategic resourcing; and (5) ensuring an orderly supportive environment. In contrast, the rank order generated by Waters, Marzano, and

McNulty (2003) is different: (1) situational awareness: Being aware of the details and undercurrents in the running of the school and using this information to address current and potential problem; (2) intellectual stimulation: ensuring that faculty and staff aware of the most current theories and practices and making the discussion of these a regular aspect of the school's culture; (3) change agent: demonstrating willingness to challenge the status quo ; (4) input: involving teachers in the design and implementation of important decisions and policies; (5) culture: fostering shared beliefs and a sense of community and cooperation; (6) monitors and evaluates: monitoring the effectiveness of school practices and their impact on student learning; (7) outreach: advocating and speaking for the school to all stakeholders; (8) order: establishing a set of standards operating procedures and routines; (9) resources: providing teachers with materials and professional development necessary for the successful execution of their jobs; (10) affirmation: recognizing and celebrating school accomplishments and acknowledging failures; (11) ideals and beliefs: communicating and operating from strong ideals and beliefs about schooling; (12) discipline: protecting teachers from issues and influences that would distract them from their teaching time or focus; (13) focus: establishing clear goals and keeping those goals in the forefront of the school's attention; (14) knowledge of curriculum, instruction, and assessment: demonstrating knowledge about current curriculum, instruction, and assessment practices; (15) communication: establishing strong lines of communication with teachers and among students; (16) flexibility: adapting one's leadership behavior to the needs of the current situation and being comfortable with dissent; (17) optimizer: inspiring and leading new and challenging innovations; (18) relationships: demonstrating an awareness of the personal aspects of teachers and staff; (19) direct involvement in curriculum, instruction, and assessment; (20) visibility: initializing and

maintaining quality contact and interactions with teachers and students; and (21) contingent rewards: recognizing and rewarding individual accomplishments.

This expansive list generated by Waters and colleagues may look intimidating at the first look. A closer examination of the operational definitions of the 21 responsibilities leads to a considerable degree of overlap with the broad constructs derived by Robinson and colleagues. For example, intellectual stimulation (responsibility #2) falls aptly under the broad construct of promoting and participating in teacher learning and development. Similarly, monitoring and evaluating (responsibility #6), knowledge of curriculum, instruction, and assessment (responsibility #14), and involvement in curriculum, instruction, and assessment (responsibility #19) together represent considerable overlap with Robinson *et al.*'s second domain – planning, coordinating, and evaluating teaching and the curriculum. This substantive overlap in content, however, does not mask a critical strand of leadership actions in the study by Waters and colleagues that are associated primarily with the managerial functions of the school as well as leadership responsibilities with an aim to develop a committed and collaborative professional culture.

Reconciling these findings necessitates a broader and more holistic definition of instructional leadership as we enter the second decade of the new millennium. While instructional leadership is important, schools and societies may benefit more if we take a more holistic and integrated view of school leadership which requires an acquisition and enactment of leadership skills across multiple dimensions, in instruction and curriculum, management of the school as an organization, as well as transformational leadership competencies, such as culture building. The new leadership assessment mechanism (VAL-ED) developed by a group of high profile scholars from Vanderbilt University and the University of Pennsylvania

incorporates this integrated trend of thinking (Goldring, Porter, Murphy, Elliot, & Cravens, 2009).

Assistant Principal Leadership

Compared to the rising tide of research on principalship, the ground for the investigation of assistant principal is less fertile. In some cases, assistant principalship lacks its own identity and is merely regarded as the stepping-stone to principalship or district top leadership positions. Some described assistant principals as the forgotten men (Glanz, 1994) and others as a wasted educational resource (Harvey, 1994).

Extant literature from various educational contexts indicates that duties of assistant principals may include, but are not limited to, resource and student management, teacher development, classroom observation, and instructional leadership (Busch, MacNeil, & Baraniuk, 2010; Gerke, 2004; Marshall, 1993). Among them, student management and instructional leadership stand out as the most prominent.

Student management. As the “daily operation chief” (Porter, 1996, p. 26), assistant principals often perform a caretaker role (Harvey, 1994) and act as policemen (Koru, 1993). Their duties are to enforce the rules of the school, ensure student safety, mediate conflicts, and patrol the halls (Kaplan & Owings, 1999). They are the de facto disciplinarians. Glanz (1994), for instance, found that 90 percent of assistant principals in New York perceived their duty as dealing with disruptive students’ parent complaints, lunch duty, scheduling coverage, and administrative paperwork. Similarly, assistant principals in Maine reported devoting the largest portion of their time to student management (Hausman, Nebeker, McCreary, & Donaldson, 2002). Across the globe, principals in Hong Kong also spent a disproportionate amount of time on student management (Kwan & Walker, 2008).

Instructional leadership. With increased demands on school improvement and student achievement, assistant principals are increasingly expected to be instructional leaders. Working hand in hand with principals, they are expected to help set the vision and goals, coach and evaluate teachers, develop and manage curriculum and instruction, communicate with various stakeholders, and use data to make decisions to impact the classroom instruction and student learning (Kaplan & Owings, 1999; Lashway, 2002; Robinson, Lloyd, & Rowe, 2008). These expected and expanded instructional leadership duties seem to be in line with assistant principals' wants. In Glanz's study, 90 percent of the New York assistant principals indicated that they would rather take on tasks related to instructional than student management. However, in reality, many studies show that few assistant principals actually perform instructional leadership duties (Hausman et al., 2002; Kwan & Walker, 2008).

Need for Reliable and Valid Assessment of Principal Leadership

Assessing leaders is not a new practice within schools and districts. In general, however, leadership assessment has followed locally determined, contract-driven review processes largely for personnel purposes (The Wallace Foundation, 2009). Typically, principals establish some set of goals through a form and process defined by their districts. They then meet annually with a supervisor from the central office who determines whether or not their work has been satisfactory. Assessments are often weakly tied to leadership standards and opportunities for professional growth (Portin, Feldman, & Knapp, 2006). Additionally, the assessment may or may not focus on key aspects of leadership linked to teaching and learning.

This qualitative appraisal of the general state of principal assessment practices drawn by Portin and colleagues (Portin, Feldman, & Knapp, 2006) corresponds with the key findings culled from a series of studies spanning the past two decades (Doub & Keller, 1998; Goldring,

Cravens, Murphy, Porter, Elliot, & Carson, 2009a; Lashway, 2003; Reeves, 2005; Stine, 2001). Goldring *et al.* in their recent analysis of 65 principal assessment instruments, found that over half did not explicitly define the theoretical or empirical grounding on which the instrument was based and only two (3%) included information in the instrument documentations describing psychometric properties. The primary source of data guiding principals' assessment tends to be from central office personnel although there is a growing trend for the involvement of parents, teachers, and principals themselves (Doud & Keller, 1998). Formats and specificity in performance measures also varied. Some districts used checklists rating principals on a variety of behaviors or traits from time management to loyalty; others used free-form evaluations consisting of a narrative, and measures of principal performance against a set of pre-determined goals (Lashway, 2003; Stine, 2001). However, among all the diversity of content and procedures related to principal assessment practices, there seemed to be a consistent and astounding lack of focus on leadership practices in the areas of curriculum, instruction, and teacher collegial behaviors, dimensions of leadership found most impactful to student learning (Goldring, Porter, Murphy, Elliot, & Cravens, 2009b). It comes as no surprise that most principals reported not having received useful feedback from their evaluations and few found the evaluation process relevant to enhancing their motivation and improving their performance (Reeves, 2005). Principal assessments were largely characterized as inconsequential (Reeves).

In light of the slow development in rigorous principal assessment practices as shown above, scholars (e, g., Portin, Feldman, & Knapp, 2006) raised new directions regarding what skills and practices school leaders should be assessed on and how they should be assessed. There has been a consistent call for a process that enhances the principals' effectiveness in

improving learning for both the individual and the organization. Specific recommendations have included: 1) a focus on driver behaviors that improve instruction and promote necessary school change, anchored to professional standards (e.g., ISLLC) (Goldring et al., 2009b; Portin et al., 2006); 2) shared authority and responsibility for improving learning (Portin et al.; The Wallace Foundation, 2009); 3) developing reliable and valid instrumentation (Goldring et al.); and 4) adaptable to different contexts (Portin et al., 2006; The Wallace Foundation).

History of NASSP 21st Century School Administrator Skills Instrument

This call for new directions has critical implications for the development of new assessment systems and the improvement of existing ones. The NASSP 21st Century School Administrator Skills instrument, a 360-degree assessment tool (see Appendix A) developed by the National Association of Secondary School Principals (NASSP), is a case in point. The instrument consisting of 67 behavioral indicators is designed to measure 10 leadership dimensions: setting instructional directions, teamwork, sensitivity, judgment, results orientation, organizational ability, oral communication, written communication, development of others, and understanding one's own strengths and weaknesses. These skill dimensions represent exact duplicates of those measured by NASSP's Assessment Center and were originally developed by a panel of experts consisting of principals, assessment center directors, leadership professors and psychologists based on an extensive job analysis of the practice of secondary school principals (NASSP, n.d.b). Further supporting evidence exists showing the relationships between the assessment scores and on-the-job performance of the assessment center participants (Schmitt & Cohen, 1990; Schmitt, Noe, Merrit, Fitzgerald, & Jorgensen, 1981). However, considering the changing landscape of public education and the concomitant shifts of directions in leadership assessment, whether the NASSP 10-factor instrument has

inherited the content validity of the Assessment Center, whether the content validity is still relevant to the driver leadership behaviors, and whether this instrument can still serve as an effective tool to measure leadership performance warrant a rigorous psychometric test.

Purposes and Research Questions

The pursuit of effective leadership practices has a long history. Since the effective schools movement, great leaps and bounds have taken place. To date, we know not only the characteristics of effective schools but also the processes that most likely bring about the positive chain of reactions. However, we still have not progressed to a point where as a field we are capable of developing the number of effective school leaders with the caliber necessary to meet the challenge facing American schools, especially urban schools. Rigorous leadership assessment holds great promise with its potential in engendering individual improvement and organizational learning. However, the current state of leadership assessment is weak, although some new and quality assessment systems are emerging. Having said that, as the leading professional organization for secondary school principals, NASSP holds a strategic position to remedy this deficiency. This study, with its focus on the critical examination of the psychometric properties of NASSP's 21st Century School Administrator Skills instrument, holds great practical promise and theoretical significance.

The primary purpose of this study is to determine the construct validity of the NASSP's 21st Century School Administrator Skills with a sample of U.S. urban school principals and assistant school principals. The specific research questions for this study are:

1. Is the 10-factor structure hypothesized to underpin responses to the 21st Century School Administrator Skills instrument confirmed for principals?

2. Is the 10-factor structure hypothesized to underpin responses to the 21st Century School Administrator Skills instrument confirmed for assistant principals?
3. Are subscale items from the NASSP 21st Century School Administrator Skills instrument reliable indicators of the 10 latent constructs measuring the performance of principals?
4. Are subscale items from the NASSP 21st Century School Administrator Skills instrument reliable indicators of the 10 latent constructs measuring the performance of assistant principals?
5. Does the 10-factor model of 21st Century School Administrator Skills have convergent and discriminant validity within the principal group?
6. Does the 10-factor model of 21st Century School Administrator Skills have convergent and discriminant validity within the assistant principal group?

The NASSP 10-Factor Model and Its Grounding in Research Literature

The core challenge facing many American schools, in particular those in the urban areas, is to improve student achievement and close the learning gap between whites and the disadvantaged minorities. Such improvement ultimately depends on improving teaching pedagogical practices and certain school conditions and processes, such as school mission and goals, culture, teachers' participation in decision-making, and relationship with parents and the wider community (Leithwood, Louis, Anderson, & Wahlstrom, 2004). School leadership, especially principal instructional and transformational leadership, is widely recognized as important in promoting these in-school processes and conditions (Lieberman, Falk, & Alexander, 1994; Louis, Marks, & Kruse, 1996; Marks & Printy, 2003; Rosenholtz, 1989; Shepperd, 1996). Hence, the key to meeting the excellence and equity challenges in urban

schools lies in school leaders who can effectively create positive school conditions and lead instructional improvement (Barth, 1986; Leithwood, 1994). Since the 21st Century School Administrator Skills instrument is designed to measure the capability of such leaders, it becomes imperative to establish the empirical links between the skill dimensions and the enabling school processes.

Setting instructional directions. Setting instructional directions is defined as implementing strategies for improving teaching and learning. Specific behaviors associated with this function include leaders' actions in developing a vision and establishing clear goals; providing directions in achieving stated goals; encouraging others to contribute to goal achievement; and securing commitment to a course of action from individuals and groups.

There is considerable evidence demonstrating that a key function of effective principal leadership concerns shaping and articulating the school's vision and mission (Bamburg & Andrews, 1990; Hallinger & Heck, 2002), which are subsequently translated into a set of clear and measurable goals related to student learning. It may sound obvious that setting clear and rigorous learning goals should be the central element that defines school leadership. However, over two decades of effective school research indicates that it was not necessarily the case. Less effective urban schools tend to establish goals that are centered narrowly on complying with policy demands, focusing on improving the performance of certain students, within benchmark grades, and in certain subject areas. In contrast, higher performing schools emphasize enhancing the performance of all students regardless of grade level and across all subject areas (Diamond & Spillane, 2004).

The research also supports the notion that high expectations for *every* student are key to closing the achievement gap between socio-economically advantaged and less advantaged

students, and for raising the overall academic achievement of all students (Goldring et al., 2009b). The Southern Regional Education Board identified 10 strategies present in schools and classrooms with a culture of high expectations. They include: (1) developing, communicating and implementing classroom motivation and management plans in every classroom; (2) implementing instructional plans for bell-to-bell teaching; (3) organizing and arranging classrooms to spur productivity; (4) establishing high academic standards; (5) communicating expectations to students and their families; (6) actively engaging each student in instructional tasks; (7) keeping students on target by using tasks that are of interest and of high value; (8) providing timely, relevant and specific feedback about progress to students to encourage their continued success; (9) adopting grading practices that communicate high expectations and reduce frustration; and (10) dealing with severe behavior immediately. Be proactive and have clear policies (Reynolds, 2003).

Establishing clear goals and setting high expectations are central to effective leadership. However, effective principals do not do it alone. They do it through inclusive and facilitative leadership. They often articulate a “vision-in-outline” and invite teachers and parents to further elaborate and shape this vision (Sebring & Bryk, 2000). They create opportunities to bring parents, teachers, and other staff into leadership positions, because they know that change requires the commitment, talent, and energy of many (Sebring, Bryk, Easton, Lopez, Luppescu, Thum, & Smith, 1995). Substantial research base reports positive relationships between family and community involvement and social and academic benefits for students (Henderson & Mapp, 2002). Schools with well-developed parent partnership programs demonstrate higher achievement gains over schools with less robust partnerships (Shaver & Walls, 1998). Case studies showed supportive community leaders could coordinate

much needed resources in high poverty schools. For example, Sebring and Bryk (2000), in their case study, documented how caring community leaders in Chicago areas successfully prevented many children from missing the first few days and weeks by enlisting assistance from local hospitals and sending physicians to schools to provide immunizations before school started. Effective leaders invest time, energy and resources in community and family work because they know that schools cannot be successful without them (Lawson, 1999).

Teamwork. Teamwork refers to seeking and encouraging involvement of team members; modeling and encouraging the behaviors that move the group to task completion; and supporting group accomplishment. Research has demonstrated that schools organized as communities and teams, rather than bureaucracies, are more likely to exhibit academic success (Bryk & Driscoll, 1988; Lee, Smith, & Croninger, 1995; Louis & Miles, 1990). The collaborative cultures, often termed as teacher professional communities in school contexts, are defined by elements such as shared goals and values, focus on student learning, shared work, deprivatized practice, and reflective dialogue (Louis, Marks, & Kruse, 1996). Empirical evidence reveals that support of teamwork and collaborative efforts among educators is one of the main strategies that effective principals use to promote professional growth among teachers (Blasé & Blasé, 2000). These principals recognize that collaborative networks among educators are essential for successful teaching and learning. They use various strategies to encourage teamwork and collaboration among teachers. They model teamwork, provide time for collaborative work, and actively advocate sharing and peer observation. They encourage teachers to visit other teachers, even in other schools, to observe class. Research shows that the authentic collaboration among teachers results in increased teacher motivation, self-esteem,

efficacy, and reflective behavior, such as risk taking, instructional enrichment effort, innovative ability, and creativity (Blasé & Blasé, 2000).

Sensitivity. Setting instructional direction and fostering teamwork requires leaders' interpersonal skills, such as sensitivity, which refers to leaders' ability and skills in perceiving the needs and concerns of others, dealing tactfully with others in emotionally stressful situations or in conflict; knowing what information to communicate and to whom; and appropriately relating to people of varying ethnic, cultural, and religious backgrounds.

The definition of sensitivity in this context parallels a cluster of social awareness and relationship management competencies (e.g., *empathy*, *communication*, and *conflict management*) under the broader emotional intelligence framework proposed and refined by Goleman (1998, 2001) and empirically tested by Boyatzis, Goleman and Rhee (2000). According to Goleman (2001), The *empathy* competency gives leaders an astute awareness of others' emotions, concerns, and needs. An empathetic leader can read emotional undercurrents, picking up on nonverbal cues such as tone of voice or facial expression. This sensitivity to others is critical for superior job performance whenever the focus is on interaction with people. The link between empathy and job performance has been empirically confirmed in various sectors of life from health care (Friedman & DiMatteo, 1982) and retail (Pilling & Eroglu, 1994) to business management (Spencer & Spencer, 1993). Additionally, *empathy*, together with listening, is also found crucial to *conflict management*. Individuals armed with the arts of listening and empathizing are adept at handling difficult people and situations with diplomacy, encouraging debate and open discussion, and orchestrating win-win situations (Goleman, 2001). Using a nationally representative sample of approximately 300 elementary schools,

Eberts and Stone (1988) demonstrated that conflict resolution and consensus building were among the key variables that significantly predicted student achievement.

Although there is theoretical significance in showing that an individual competency (e.g., *empathy, conflict management*) in itself has a significant impact on performance, in life and particularly on the job, people exhibit these competencies in groupings. Williams (2008), for instance, found nine emotional competencies (e.g., *self control, conflict management, teamwork/collaboration, etc.*) working together set outstanding school principals apart from their less effective counterparts.

Whereas the empirical evidence pertaining to the significance of emotional intelligence and competencies in the educational sector is only starting to emerge, the data documenting their significance in non-educational sectors have been building for more than three decades. Besides the delineation of the individual constructs of emotional intelligence and competencies and the recognition of emotional competencies coming in multiples, the existing evidence also suggests that the path of influence of leaders' emotional competencies on organizational performance is mediated through organizational climate (Goleman, 2001).

Judgment. Judgment refers to school leaders' ability to make high quality decisions based on data and skills in identifying educational needs, assigning appropriate priority to issues, and in exercising caution. It also includes the leader's ability to seek, analyze, and interpret relevant data.

This definition carries conceptual similarities with the construct of abstract reasoning, which is defined by industrial psychologists and organizational behavior scholars as the extent to which an individual has an ability to assess and evaluate critically ideas that appear to be vague or unformulated (Hendrick, 1990). According to Dubinsky, Yammarino, and Jolson

(1995), individuals who are high on this characteristic tend to be analytical; they have keen insight and are able to decompose a problem into its constituent elements. They demonstrate cognitive complexity, exercise appropriate judgment, and have adept decision-making skills. Previous research has found that judgment is positively related to leadership (Bass, 1990a). Kotter (1990) argues that effective leaders, in comparison to managers, are inductive and they gather a broad range of data and look for patterns, relationships, and linkages that help explain things. Bass (1990a) further espouses that logic, analysis, problem identification and problem-solving skills are critical for individualized consideration and intellectual stimulation, two of the four critical qualities exhibited by transformational leaders.

Despite the strong theoretical claims about judgment, rigorous empirical testing of this work has been minimal. What has emerged so far indicates that the current operational definition of this construct has only modest internal consistency (Cronbach alpha = .53) (Dubinsky et al., 1995) and the positive relationship between judgment and transformational leadership proposed by theorists is not supported by empirical evidence (Dubinsky et al., 1995; Hetland & Sandal, 2003). Systematic inquiry on judgment has not formed yet in educational literature though bits and pieces exist to hint the importance of leaders' judgment in school performance. Effective leaders, for example, are often found masters at taking the dimensions of work that have historically occupied center stage in school administration – management, politics, organization, finance – and ensuring that they no longer end in themselves but assume importance to the extent they strengthen the quality of the instructional program and enhance student learning (Louis & Miles, 1990; Beck & Murphy, 1996).

The use of student data to inform teacher reflection and school improvement is increasing in importance. Effective principals serve an essential role in leading, guiding, and

organizing the work of collaborative data teams, a systematic support mechanism to ensure sustainable data use (Wayman, Midgley, & Stringfield, 2006). They also set up comprehensive assessment systems using a variety of data-collection strategies to have teachers engage in recordkeeping and monitor student progress, and to use data to inform instruction and curricular decisions (Murphy, Elliott, Goldring, & Porter, 2007).

Results orientation. Results orientation is defined as assuming responsibility; recognizing when a decision is required; taking prompt actions as issues emerge; and resolving short-term issues while balancing them against long-term objectives. This definition overlaps considerably with that of achievement orientation given by Yukl (2006) and therefore is considered synonymous with achievement orientation in this study. According to Yukl, achievement orientation includes a set of related attitudes, values, and needs: need for achievement, desire to excel, willingness to assume responsibility, and concern for task objectives.

Many studies have been conducted in the business sector on the relationship of achievement orientation to managerial advancement and effectiveness (Bass, 1990b). However, the results have not been consistent for different criteria measures (e.g., advancement vs. effectiveness) or for different types of managerial positions, e.g., entrepreneurial managers, corporate general managers, technical managers (Yukl, 2006). The relationship of achievement motivation to managerial effectiveness is complex and inconclusive. Some studies find a positive relationship (Stahl, 1983), but other studies find a negative relationship (House, Spangler, & Woyke, 1991) or no relationship (Miller & Toulouse, 1986). Yukl (2006) speculates that this inconsistency may be due to a curvilinear relationship of achievement orientation to managerial effectiveness rather than a linear one. In other words, managers with

a moderately high amount of achievement orientation are more effective than managers with low achievement orientation, or managers with very high achievement orientation. No empirical evidence is available at this point to confirm Yukl's speculation.

Research on the behavioral correlates of achievement orientation is still limited, but some relationships appear promising. Compared to managers with a weak achievement orientation, managers with a strong achievement orientation are found to have a strong concern for task objectives, more willing to assume responsibility for solving task-related problems and more likely to take the initiative in discovering problems and acting decisively to solve them. They also exercise proper caution and prefer solutions that involve moderate levels of risk rather than solutions that are either very risky or very conservative. These leaders are likely to engage in task behaviors such as setting challenging but realistic goals and deadlines, developing specific action plans, determining ways to overcome obstacles, organizing the work efficiently, and emphasizing performance when interacting with others (Boyatzis, 1982).

Compared to the business sector, the education sector has a less systematic line of research regarding this aspect of leadership. However, the limited evidence seems to converge on the importance of an achievement orientation in effective school leadership. In a comprehensive review of cross-sector literature on turnaround leadership, Murphy (2008) found that turnaround leaders are often achievement oriented. They tend to display an action orientation and are hungry for achievement (Bibeault, 1982; Grinyer, Mayes, & McKiernan, 1988). They are moved primarily by a need to achieve results (Grinyer et al., 1988). They gravitate toward new opportunities (Gerstner, 2002; Sloma, 1985). They have a passion for quality (Rindler, 1987) and a commitment to excellence (Bibeault, 1982). In line with this finding, Hallinger and Murphy (1986) identified strong results orientation as one of the three

main characteristics that define effective instructional leaders. Similarly, Blasé (1987) reported that decisiveness, follow-through, and problem-solving orientation are among nine prominent task-related factors that characterize effective school leadership.

Organizational ability. Organizational ability is enacted when a leader engages behaviors such as planning and scheduling his/her own and the work of others, scheduling flow of activities, establishing procedures to monitor projects, practicing time and task management, and knowing what to delegate and to whom.

Making things happen to achieve a goal that is consistent with a plan is at the core of every manager's job (Boyatzis, 1982). Although the demands may vary among specific management jobs and the organizational context, most managers are required to establish plans of action, determine what and how people and other resources should be used, and solve problems to keep the organization functioning (Boyatzis, 1982). Preponderance of evidence points to the essentiality of leaders' organizational ability. Clark and colleagues documented the importance of leaders' planning behavior in initiating change (Clark, Lotto, & Astuto, 1989). Leithwood and Montgomery (1982) found that effective principals are highly skilled planners and proactive in their planning work. These leaders were found to place a high priority on curriculum planning (Leithwood & Montgomery, 1982) and assume an active role in planning staff learning activities (Clark, Lotto, & McCarthy, 1980). They also actively plan for the collection of data for the purpose of meeting the demands of accountability and informing curriculum implementation and classroom instruction (Goldring et al., 2009b).

In addition to being skilled planners, effective principals also demonstrate great willingness to delegate authority (Blasé, 1987). These leaders encourage their teachers to use professional judgment and discretion and provide their staff with considerable leeway in their

decision-making. Since principals' time and relevant knowledge are limited, the willingness of principals to delegate authority brings about timely decisions and more efficient work processes. Blasé (1987) particularly pointed out that authentic delegation meant sharing authority and extending appropriate resources as compared to dumping meaningless responsibilities and work, which ineffective principals tend to do. Blasé (1987) indicated that receiving authority from principals was correlated with teacher trust, respect, self-concept, and their job involvement.

Effective principals plan, delegate and empower. They monitor as well. The monitoring function of the leadership was well documented by both earlier effective school literature (Purkey & Smith, 1983) and later research on transformational leadership (Leithwood & Jantzi, 2005). The associated leadership behaviors include: monitoring the school's curriculum to ensure alignment between rigorous standards and curriculum coverage (Eubanks & Levine, 1983); monitoring the quality of instruction by conducting ongoing classroom observations (Goldring, et al., 2009b); and monitoring the effectiveness of professional development by assessing the extent to which staff instructional practices are improving and impacting student learning (Eubanks & Levine, 1983).

Oral and written communication. Communication refers to leaders' ability to express ideas clearly and correctly both orally and in writing and to deliver their message appropriately for different audiences – students, teachers, parents, and other community members. In studying school change, Loucks and colleagues found that principals played major communication roles both in and outside the school (Loucks, Bauchner, Crandal, Schmidt, & Eisman, 1982).

Effective principals continuously communicate their high expectations to students and staff (Blase & Kirby, 2009; Egley & Jones, 2005). Such actions of the leaders allow for clear, focused articulation of school goals (Johnson, Livingston, Schwartz, & Slate, 2010). Communication is also a key vehicle that effective principals utilize to ensure internal accountability. For example, effective leaders hold faculty and students accountable by communicating the results of performance data (Earl & Fullan, 2003). They provide teachers and students and parents with assessment results on an ongoing basis (Levine & Stark, 1982). Information about student progress is available to students and parents in an easily accessible form, across an array of forums, and in multiple formats (Eubanks & Levine, 1983; Leithwood & Montgomery, 1982; Wynne, 1980).

Similarly, effective leaders also communicate regularly and through multiple channels with families, community members, local businesses, social services, and faith-based organizations (Garibaldi, 1993). Through ongoing communication, schools and the community form partnerships and serve as resources for one another that inform, promote, and link key institutions in support of student academic and social learning.

Developing others. This leadership dimension is described as helping others grow professionally by teaching, coaching, and providing specific feedback and developmental suggestions based on observations and data.

The existing literature provides strong empirical support for this leadership dimension. In their meta-analysis of 27 studies linking leadership to student outcomes, Robinson and colleagues (2008) found a large effect of this particular leadership dimension ($ES = 0.84$). Further this effect seems to be independent of student social economic status. For example, several studies revealed when student background factors were controlled, the more that

teachers reported their principals to be active participants in teacher learning and development, the higher the student outcome became (Andrews & Soder, 1987; Bamburg & Andrews, 1991). Also, leaders in high-performing schools are often described to be more likely to participate in informal staff discussions of teaching and teaching problems (Heck, Larson, & Marcoulides, 1990; Heck, Marcoulides, & Lang, 1991). They tend to give more behaviorally specific feedback to teachers (Hallinger & Murphy, 1985; Izumi, Coburn, & Cox, 2002) and suggest specific developmental activities to improve teacher professional capacity (Hallinger & Murphy, 1985). Through these interactions, principals are more likely to be seen by staff as credible sources of instructional advice, which implies that they are not only perceived to be knowledgeable but also accessible and willing to share information and expertise on instructional matters. In one study that used a social network theory, teachers were asked to indicate whom they approached for advice about teaching (Friedkin & Slater, 1994). Principals were significantly more likely to be nominated as sources of instructional advice in higher achieving schools. In contrast, the extent to which teachers identified principals as close personal friends was not significantly related to school performance. The authors suggested that leaders who were perceived as sources of instructional advice and expertise gain greater respect from their staff and hence had greater influence over how teachers taught.

Understanding one's own strengths and weaknesses. Understanding one's own strengths and weaknesses is defined as understanding personal strengths and weaknesses; taking responsibility for improvement by actively pursuing developmental activities and striving for continuous learning.

Though rarely studied in the education sector, leaders' abilities in understanding their own strength and weakness - the ability of accurate self-assessment, have been considered a

main competency for emotionally intelligent leaders in the business sector. Boyatzis (1982), for example, in his study of several hundred managers from twelve different organizations, found accurate self-assessment was the hallmark of superior performance. Individuals with the accurate self-assessment competency are aware of their strengths and limitations, seek out feedback and learn from their mistakes, and know where they need to improve and when to work with others who have complementary strengths (Goleman, 2001). Similarly, accurate self-assessment was the competence found in virtually every star performer in a study of several hundred knowledge workers – computer scientists, auditors, and the like - at companies such as AT& T and 3M (Kelley, 1998). While star performers are more likely to accurately assess their abilities or underestimate their abilities, average performers typically overestimate their strengths (Goleman, 1998).

Accurate self-assessment also characterizes individuals with strong achievement orientation and is one of the most critical differentiators of outstanding individual contributors, professionals, and entrepreneurs (McClelland, 1985; Spencer & Spencer, 1993). More importantly, accurate self-assessment is central to recognizing others' emotional (*sensitivity*) and developmental needs (*developing others*). After all, only those who are capable of recognizing their own strengths and weaknesses are in a competent position of identifying and managing others' needs.

Summary of Empirical Literature. The review of theoretical and empirical literature thus far revealed extensive links between the NASSP 21st Century School Administrator Skills dimensions and the school and classroom conditions and teacher professional learning, the key elements that drive student achievement. On the one hand, it highlighted considerable congruence between the NASSP's 10 leadership dimensions and the predominant

conceptualizations of instructional and transformational leadership. On the other, it also put on the center stage certain global leadership skills, such as sensitivity, judgment, results orientation, organizational ability, and understanding one's own strengths and weaknesses, which are largely ignored by the current educational literature. While the attention to these leadership dimensions may give rise to criticism such as an emphasis on managerial skills, it may also represent an opportunity to address areas largely forgotten by the mainstream educational literature.

Compared to the abundance and sophistication of research in effective principal leadership, the knowledge base for the assistant principalship can be best characterized as emerging. The limited knowledge base suggests that assistant principals in most circumstances play the role of a chief operation officer with extensive responsibilities in student management but limited involvement in instructional leadership. However, working as an instructional leader is a leadership role that assistant principals aspire to.

Considering the significant differences in the leadership roles that principals and assistant principals are expected to enact, it is unlikely that the same leadership instrument can adequately and accurately measure the effectiveness of both groups of leaders. However, the literature overall reveals a considerable overlap of management tasks shared between the principals and the assistant principals. With its substantive coverage of global management skills, the NASSP 21st Century School Administrator Skills seems to be an instrument that can measure the effectiveness of an assistant principal to a certain extent and with some face validity.

Connections of NASSP Instrument to ISLLC Standards

The literature review to this point has demonstrated a close connection between the 10 dimensions of NASSP leadership skills and the leadership driver behaviors for school improvement. This section focuses on the instrument's alignment with ISLLC standards (Interstate School Leaders Licensure Consortium, 2008). The ISLLC standards were developed between 1994 and 1996 under the direction of the National Policy Board for Educational Administration (NPBEA), a consortium of ten national organizations associated with school leadership in the United States. ISLLC standards were adopted by the NPBEA in December of 1996 and were reauthorized by the board in December 2007. The ISLLC 2008 standards represent the reauthorization. As one of the NPBEA's member organizations, NASSP has contributed actively to the writing and rewriting of ISLLC standards.

The ISLLC standards are currently used by 43 states in their entirety or as a template for developing state standards (ISLLC, 2008). Since their inception, the ISLLC standards have significantly shaped the preparation and professional development of prospective and practicing leaders, the licensure and induction of new leaders, the accreditation of preparation programs and more recently the rigorous evaluation of principal performance (ISLLC; Goldring et al., 2009a). The ISLLC standards' strong footing in guiding policy and practice lies in their technical core, an empirically anchored and value-based statement about what the leadership profession should look like at the dawn of the twenty-first century: an instructional leader with the primary responsibility of improving teaching and learning for *all* children (ISLLC; Murphy, 2005).

The alignment between the NASSP's 21st Century School Administrator Skills and ISLLC standards has both practical and conceptual implications. First, the standards provide

the leadership scaffolding for over forty states, all the members of the NPBEA, and thousands of individual school districts in the U.S. Therefore, an assessment system that was not aligned with them would be largely ignored (Goldring et al., 2009a). Second, and more importantly, linkage to the ISLLC standards will provide the additional intellectual foundation for the 21st Century School Administrator Skills as the instrument itself was originally derived from leadership activities of the NASSP's Assessment Center, which was designed on the basis of an analysis of effective leadership practices and expert judgment instead of a comprehensive review of the literature. Considering the strong research grounding of the ISLLC standards, the congruence between the instrument and the standards will imply that the instrument measures essential leadership behaviors that the broad theoretical and empirical knowledge base deems necessary and effective for student improvement. This linkage thus serves as further evidence of content validity of the 21st Century School Administrator Skills instrument.

Table 1 shows the intersection between the instrument's conceptual constructs and the ISLLC 2008 standards. The cross table shows a great logical correlation between ISLLC standards and NASSP's conceptualization of effective leadership skills. One key commonality between the ISLLC standards and the NASSP's conceptual framework is that both focus on leaders in formal leadership positions. This should not be interpreted to mean that leadership only resides in leaders in formal positions. Rather, it means that leaders in formal positions play a pivotal role even in schools where leadership is distributed. The spotlight on leaders in formal positions will facilitate the identification of individual strengths and weaknesses for

Table 1

Alignment of 21ST Century School Administrator Skills Conceptual Constructs with the ISLLC 2008 Standards

Educational Leadership Policy Standards ISLLC 2008	NASSP 21 ST Century School Administrator Skills									
	SID	T	S	J	RO	OA	OC	WC	DO	US W
Standard 1 An educational leader promotes the success of every student by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by all stakeholders.	+	+	+	+	+	+	+	+		
Standard 2 An educational leader promotes the success of every student by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth.	+	+	+	+	+	+	+	+	+	
Standard 3 An educational leader promotes the success of every student by ensuring management of the organization, operation, and resources for a safe, efficient, and effective learning environment.		+	+	+	+	+			+	
Standard 4 An educational leader promotes the success of every student by collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources.	+	+	+	+		+	+	+		
Standard 5 An educational leader promotes the success of every student by acting with integrity, fairness, and in an ethical manner.			+	+						
Standard 6 An educational leader promotes the success of every student by understanding, responding to, and influencing the political, social, economic, legal, and cultural context.	+	+		+			+	+		+

Note. SID = setting instructional direction; T = teamwork; S = sensitivity; J = judgment; RO = results orientation; OA = organizational ability; OC = oral communication; WC = written communication; DO = development of others; USW = understanding one's own strengths and weaknesses

the purpose of evidence-based professional development for these individuals. One key difference is that NASSP's framework makes finer-grained distinctions among individual constructs than do the ISLLC standards.

ISLLC Standard 1 refers to setting a widely shared vision for learning. Specifically, it defines an educational leader as someone who “promotes the success of every student by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by all stakeholders“ (ISLLC, 2008). The functions embedded in this standard include: a) collaboratively developing and implementing a shared vision and mission; b) collecting and using data to identify goals, assess organizational effectiveness, and promote organizational learning; c) creating and implementing plans to achieve goals; d) promoting continuous and sustainable improvement; and e) monitoring and evaluating progress and revising plans (ISLLC). In NASSP's framework, the dimensions of setting instructional direction, teamwork, sensitivity, judgment, results orientation, organizational ability, oral and written communications are consistent with standard 1. For example, items that measure *setting instructional direction* and *teamwork*, such as *articulating a clear vision for the school and its efforts related to teaching and learning*, and *encouraging others to share their ideas and opinions regarding improved teaching and learning*, are rooted in standard 1.

ISLLC Standard 2 refers to the school culture and instructional programs. Specifically, Standard 2 states, “An educational leader promotes the success of every student by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth” (ISLLC, 2008). Included in this standard are such leadership behaviors as nurturing and sustaining a culture of collaboration, trust, learning, and

high expectations; creating a comprehensive, rigorous, and coherent curricular program; developing assessment and accountability systems to monitor student progress; developing the instructional and leadership capacity of staff; and monitoring and evaluating the impact of the instructional program. In NASSP's framework, Standard 2 is supported by all the areas except for understanding one's own strengths and weaknesses. Examples of the types of behaviors in NASSP's framework that are aligned with Standard 2 include *setting high performance expectations related to teaching and learning for self and others, eliciting perceptions, feelings, and concerns of others, developing action plans to achieve goals related to student learning, motivating others to change behaviors that inhibit their professional growth and student learning, and suggesting specific developmental activities to improve others' professional capacity*. Although many behavior indicators in the NASSP framework support Standard 2, one should notice that the NASSP instrument does not explicitly capture all the subtleties and operational leadership activities Standard 2 entails. For instance, although some behavioral indicators in several skill dimensions (e.g., teamwork, organizational ability, and developing others) are associated with staff development, collaboration and trust building, no items in the NASSP 21st Century School Administrator Skills instrument explicitly measure how effectively a leader creates a comprehensive, rigorous, and coherent curricular program or develops a school-wide assessment and accountability system. Similarly, no items measure how effectively a school leader develops the instructional and leadership capacity of staff or how effectively a school leader monitors and evaluates the impact of the instructional program. The NASSP 21st Century School Administrator Skills instrument manifests a lack of focus on the specific behaviors related to the curriculum and instructional program when juxtaposed with ISLLC Standard 2.

Standard 3 refers to the management of the school to support student success. Specifically, Standard 3 states, “ An educational leader promotes the success of every student by ensuring management of the organization, operation, and resources for a safe, efficient, and effective learning environment” (ISLLC, 2008). Key leadership functions associated with this standard include monitoring and evaluating the management and operational systems, obtaining and allocating efficiently human and fiscal resources, developing the capacity for distributed leadership, and ensuring teacher and organizational time is focused to support quality instruction and student learning. This standard is aligned with NASSP’s leadership dimensions of teamwork, sensitivity, judgment, results orientation, organizational ability, and development of others. Behavioral indicators from the NASSP’s framework that match with this standard are *assisting the team in maintaining the direction needed to complete tasks, taking actions to divert unnecessary conflict, assigning priority to issues and tasks within the school’s vision for teaching and learning, establishing timelines, schedules, and milestones, and using available resources effectively to accomplish the student learning goals.*

Standard 4 refers to the role of the school leader in fostering relationships between the school and its broader external community. According to Standard 4, an educational leader is to “promote the success of every student by collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources” (ISLLC, 2008). The functions of work that help define this standard include collecting and analyzing data and information pertinent to the educational environment, promoting understanding, appreciation, and use of the community’s diverse cultural, social, and intellectual resources, building and sustaining positive relationships with families and caregivers, and building and sustaining productive relationships with community partners.

Association between the NASSP's framework and this standard can be found in the areas of setting instructional direction, teamwork, sensitivity, judgment, organizational ability, oral and written communication. Specific items that are aligned with this standard include *exercising caution when dealing with unfamiliar issues and individuals, interacting appropriately and tactfully with people from different backgrounds, tailoring messages to meet the needs of each unique audience, and developing alliances and resources outside the school to improve the quality of teaching and learning.*

Standard 5 centers on integrity, fairness, and ethics. Key functions of the leader include ensuring a system of accountability for every student's academic and social success, modeling principles of self-awareness, reflective practice, transparency, and ethical behavior, safeguarding the values of democracy, equity, and diversity, considering and evaluating the potential moral and legal consequences of decision-making, and promoting social justice and ensuring that individual student needs inform all aspects of schooling. The representation of this standard in NASSP's framework is centralized on the dimensions of sensitivity and judgment. The following items can be considered to connect to this standard: *interacting appropriately and tactfully with people from different backgrounds, eliciting perceptions, feelings, and concerns of others, responding tactfully to others in emotionally stressful situations or in conflict, and exercising caution when dealing with unfamiliar issues and individuals.*

The last ISLLC standard focuses on the political, social, economic, legal, and cultural context of learning. This standard calls for leaders to advocate for children and families, engage actions to influence local, district, state, and national decisions affecting student learning, and assess, analyze, and anticipate emerging trends and initiatives in order to adapt

leadership strategies. Multiple aspects of the NASSP's framework can be anchored to this standard. They are as follows: setting instructional direction, teamwork, judgment, oral and written communication, and understanding one's own strengths and weaknesses. The following items from the NASSP's framework reflect this aspect of leadership: *seeking commitment of all involved to a specific course of action to improve student learning, seeking additional information about issues and events relevant to the school and its mission, clearly presenting thoughts and ideas in formal, large-group presentations, and recognizing and managing one's own strengths and developmental needs.*

Overall, great congruence is evident between the ISLLC standards and multiple NASSP's effective leadership skill dimensions. However, important differences exist as well. There are substantial differences in the number of behaviors, the range of behaviors, and the level of abstraction of the behavioral concepts. Compared to the ISLLC standards that include 31 functions of principal work, 21ST Century School Administrator Skills measure 67 behaviors. Additionally, the ISLLC standards cluster principal functions in six broad domains; 21st Century School Administrator Skills instrument classifies leadership behaviors into 10 skill dimensions. Finally, the level of abstraction of the behaviors in 21st Century School Administrator Skills is more concrete and narrowly focused. In terms of content coverage, the NASSP instrument has an apparent lack of attention to academic core – curriculum and instructional programs. The NASSP instrument does not contain explicit, behavioral indicators that measure how effectively a school leader ensures a rigorous and coherent academic program is in place and how effectively a school leader helps improve the pedagogical capacity of instructional staff. Also, the instrument does not include items that measure leaders' practices to build a system-wide accountability system.

Definition of Key Terms

Instructional leadership: In a broad view, instructional leadership refers to various functions that contribute to student learning. This includes functions directly related to teaching and learning as well as some managerial functions. Four dimensions form the instructional role of the principal: developing the school missions and goals; coordinating, monitoring, and evaluating curriculum, instruction, and assessment; promoting a climate for learning; and creating a supportive work environment. Focused on learning, instructional leadership infuses management decisions and regular school routines with educational meaning.

Transformational leadership: Inheriting its conceptual roots in the broad organizational literature, transformational leadership focuses on the relationship between the leader and the followers. This relationship focuses on the pursuit of higher purposes and positive change. Transformational leaders exhibit some or all of the four leadership characteristics: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. In school settings, transformational principal leadership consists of nine functions clustered under three broad categories of leadership functions: (1) mission centered (developing a widely shared vision for the school; building consensus about school goals and priorities); (2) performance centered (holding high performance expectations; providing individualized support; supplying intellectual stimulation); (3) culture centered (modeling organizational values; strengthening productive school culture; building collaborative cultures; and creating structures for participation in school decision).

Setting instructional direction is defined as implementing strategies for improving teaching and learning. Specific behaviors associated with this function include leaders' actions in

developing a vision and establishing clear goals; providing directions in achieving stated goals; encouraging others to contribute to goal achievement; and securing commitment to a course of action from individuals and groups.

Teamwork refers to seeking and encouraging involvement of team members; modeling and encouraging the behaviors that move the group to task completion; and supporting group accomplishment.

Sensitivity refers to leaders' ability and skills in perceiving the needs and concerns of others, dealing tactfully with others in emotionally stressful situations or in conflict; knowing what information to communicate and to whom; and appropriately relating to people of varying ethnic, cultural, and religious backgrounds.

Judgment refers to school leaders' ability to make high quality decisions based on data and skills in identifying educational needs, assigning appropriate priority to issues, and in exercising caution. It also includes the leader's ability to seek, analyze, and interpret relevant data.

Results orientation is defined as assuming responsibility; recognizing when a decision is required; taking prompt actions as issues emerge; and resolving short-term issues while balancing them against long-term objectives. Results orientation is synonymous with achievement orientation.

Organizational ability is enacted when a leader engages behaviors such as planning and scheduling his/her own and the work of others so that resources are used appropriately, scheduling flow of activities, establishing procedures to monitor projects; practicing time and task management, and knowing what to delegate and to whom.

Oral communication refers to leaders' ability to express ideas clearly orally and deliver their message appropriately for different audiences – students, teachers, parents, and other community members.

Written communication refers to leaders' ability to express ideas clearly in writing and to deliver their message appropriately for different audiences – students, teachers, parents, and other community members.

Developing others is described as helping others grow professionally by teaching, coaching, and providing specific feedback and developmental suggestions based on observations and data.

Understanding one's own strengths and weaknesses is defined as understanding personal strengths and weaknesses; taking responsibility for improvement by actively pursuing developmental activities; and striving for continuous learning.

CHAPTER TWO

Methods

The researcher organized the design to address the six questions presented in the previous chapter. Confirmatory factor analysis (CFA) served as the main method to verify the number of underlying dimensions of the 21st Century School Administrator Skills instrument and the pattern of item-factor relationships, estimate the scale reliability, and examine the convergent and discriminant validity. Exploratory factor analysis was the dominant method for testing construct validity in the past. However, CFA is becoming more preferable when the goal is to evaluate whether a theoretically meaningful model fits the data and has been increasingly used in the development and refinement of clinical assessment instruments in psychology (Floyd & Widaman, 1995). Since the development of the 21st Century School Administrator Skills instrument was driven by strong theoretical perspectives albeit from the business sector and job analysis of clinical experiences of successful practicing principals, the use of CFA is more appropriate.

Sample

The researcher drew the sample from an existing leadership assessment data set collected for a competitive school leadership program (SLP) grant funded by the U.S. Department of Education in Disce aut Discede School District (DDSD), a mid-sized urban school district in the Northeastern region of the United States. The leadership assessment took place during February and March in 2012. The superintendent of DDSD granted permission for the use of the existing data set. In total, 445 teachers were asked to rate their principals and 629 teachers were asked to rate their assistant principals. Out of the 445 teachers, 352 (79.1%) responded to the survey and out of the 352 responses, 339 (96.3%) contained complete data.

Out of the 629 teachers who were invited to rate their assistant principals, 363 (57.7%) responded and 344 (94.8%) responses contained complete data. Although principal and assistant principal self and supervisor ratings were also collected, they were not part of the data analysis for this study. The exclusion of the supervisor- and self-ratings were due to two reasons. First, the inclusion of both sources would add to the data method bias that the proposed CFA would not be able to reliably delineate due to a lack of data points since there were only 54 ratings from each source. Additionally, compared to supervisors and selves, teachers and support staff are likely to give more valuable and reliable information because they have the opportunity to observe more closely what principals do on a day-to-day basis (Ebmeier, 1991).

The assessment data were collected solely for the purpose of obtaining baseline performance levels of 54 participating school leaders. Detailed personal and professional background data of the raters and the leaders who were rated were not collected. Recipients of the assessment forms were informed that the information would be used to help their leaders gauge their level of leadership competency and determine personal strengths and areas for improvement. The district central office personnel did not have access to the assessment data nor did they use them for high stakes personnel decisions. Respondents were also informed that the information would be kept confidential and no individuals would be identified in the report to the district and individual schools or research studies. All teachers from all 22 schools were invited to participate. In schools in which multiple leaders needed evaluations, the matches between the teachers and the leaders were done to elicit the most accurate responses. The building leaders did not exert any influence on the assignment process. Only teachers who had extensive interactions with a particular leader were assigned to evaluate that

leader. No teachers evaluated more than one leader. Therefore common method bias was eliminated and each observation was independent. On average each principal received 15 complete ratings and each assistant principal 11 complete ratings from their teachers and support staff members. The overall teacher and staff return rate for principal assessment was 79.1 percent and for assistant principal assessment 57.7 percent.

Personal and professional information on each of the raters and the leaders or demographic and staffing information on each school was not collected due to the sensitivity of the questions being posed. However, publicly available information indicated that the school district was racially diverse. It was the third largest urban school system in the state with a student enrollment of approximately 17,000 in 2012. Its students came from more than 40 countries and spoke 26 languages. The district consisted of 16 elementary schools and early childhood centers, four middle schools, and two high schools. The total number of personnel amounted to 2,253, of which 1,217 were teachers and 54 principals and assistant principals. As a typical urban school district, DDS D faced some common challenging conditions associated with high-needs urban districts – high poverty (over 75% of the students were eligible for free or reduced price lunch), high proportion of students of color (65% Hispanic and 17% African American), and high percentage English learners (11%). Results from the 2011 state standardized exams showed that the district’s overall proportion of students scoring proficient and above was 58% in mathematics and 48% in reading as compared to the state average of 76% in mathematics and 72% in reading.

Procedures

Since principal leadership assessment was an integral part of the school district professional development program and the federally funded leadership project between a

research university and the school district, a letter jointly authored by the project director from the university, the district central administration, and the teachers' union was sent to all the teachers and non-instructional staff across the district sharing the purpose of the leadership assessment and its usage. Specifically, the respondents were told that the sole purpose of the assessment was to determine individual leaders' strengths and areas for improvement and to inform the design of district-wide leadership professional development program. The NASSP distributed the 21st Century School Administrator Skills questionnaire electronically to all teachers and non-instructional staff at each building. Teachers were asked to finish the assessment form during the time reserved for faculty meetings.

Measures

As noted above the NASSP 21st Century School Administrator Skills instrument consisted of three separate questionnaires with parallel items for each of the three respondent groups: leaders themselves, supervisors, and teachers and non-instructional staff members. Each questionnaire was divided into 10 areas of leadership: setting instructional directions, teamwork, sensitivity, judgment, results orientation, organizational ability, oral communication, written communication, development of others, and understanding one's own strengths and weaknesses, with three to ten items per area. All 67 items were framed as positive statements about the leader under evaluation (e.g., "This person articulates a clear vision for the school and its efforts related to teaching and learning") with responses recorded on a 5 point Likert-type frequency scale (1= almost never and 5 = almost always). Note the positive phrasing of all items may potentially lead to acquiescence bias, a tendency of survey respondents to agree to an item regardless of its content (Wright, 1975).

The focus of this study was addressed using the responses to the teacher and non-instructional staff questionnaires (see Appendix A). Besides the 67 items divided into 10 areas, additional questions were added at the beginning of the questionnaire to identify the leader under evaluation, the work site of the rater, the amount of time that the rater had worked with the leader, and the professional role of the rater.

Data Analysis

Data entry. The data for this study were entered automatically into a spreadsheet since the web-based online service SurveyMonkey was used for data collection. A staff member at NASSP emailed the researcher the original data file in Excel format. Upon receiving the data file, the researcher removed all information related to the identity of each school leader and assigned each of them a code in order to link specific leaders, school sites, and teacher ratings. She then imported the data file into SPSS for data inspection and cleaning.

Missing values. Review of the raw data indicated that missing data in the dataset were a result of unfinished surveys. These incomplete cases consisted of 3.7 percent of the principal ratings and 5.2 percent of the assistant principal ratings. A further examination suggested that these missing cases were accidental and unsystematic in nature. Considering the low percentage of missing cases and the unsystematic nature of missing data, the cases were deemed missing at random (MAR). The researcher therefore used listwise deletion in cleaning the dataset in SPSS. According to Little and Rubin (1987), when less than five percent of the data are missing, listwise deletion is appropriate because any other sort of simple imputation or correction are more likely to generate biases.

Analysis. Confirmatory factor analysis (CFA) of the 67 items of the 21st Century School Administrator Skills instrument was performed for the principal and assistant principal

ratings respectively in Mplus using MLM estimation method. The researcher chose MLM over the commonly used maximum likelihood (ML) estimator because MLM is a robust and reliable estimator across different levels of non-normality, model complexity, and sample size (Chou & Bentler, 1995; Curran, West, & Finch, 1996) whereas ML works well only with multivariate normal, interval-type data (Brown 2006) and the data for this study departed markedly from normality (see Table 2). Note critical values of skewness and kurtosis that exceed +2.00 or that are smaller than -2.00 indicate statistically significant deviation from normality. As for the multivariate normality, very small multivariate values (e.g., less than 1.00) are considered negligible while values ranging from one to ten often indicate moderate non-normality. Values that exceed ten indicate severe non-normality (Division of Statistics and Scientific Computation, College of Natural Sciences, The University of Texas at Austin, n.d.). In this study, all observed variables departed significantly from normality in terms of both skewness and kurtosis. Furthermore, the joint multivariate kurtosis reached severe non-normality according to the aforementioned critical ratio criterion (see Table 2).

Table 2

The Univariate and Multivariate Normality of Observed Variables

Variables	Skewness	Critical Ratio	Kurtosis	Critical Ratio
SID_1	-1.42	-10.68	1.50	5.63
SID_2	-1.81	-13.59	3.22	12.11
SID_3	-1.25	-9.38	1.01	3.78
SID_4	-1.22	-9.20	1.08	4.07
SID_5	-1.18	-8.87	0.43	1.61

Variables	Skewness	Critical Ratio	Kurtosis	Critical Ratio
SID_6	-0.88	-6.62	-0.14	-0.51
SID_7	-1.11	-8.37	0.43	1.61
SID_8	-1.12	-8.42	0.27	1.02
SID_9	-1.33	-10.03	1.25	4.68
T_1	-.95	-7.14	.06	.23
T_2	-1.14	-8.60	.50	1.88
T_3	-1.26	-9.44	.88	3.30
T_4	-.82	-6.16	-.28	-1.07
T_5	-1.10	-8.30	.32	1.19
T_6	-.91	-6.86	-.14	-.51
T_7	-.77	-5.81	-.43	-1.60
S_1	-1.47	-11.08	1.38	5.19
S_2	-.99	-7.43	-.11	-.40
S_3	-.75	-5.64	-.36	-1.35
S_4	-.69	-5.18	-.61	-2.30
S_5	-.80	-5.98	-.36	-1.36
S_6	-.81	-6.11	-.40	-1.49
S_7	-.87	-6.53	-.30	-1.13
S_8	-.88	-6.58	-.21	-.78
S_9	-.95	-7.17	-.03	-.09
J_1	-1.22	-9.17	.89	3.34

Variables	Skewness	Critical Ratio	Kurtosis	Critical Ratio
J_2	-.99	-7.45	.34	1.26
J_3	-.87	-6.57	-.28	-1.07
J_4	-1.20	-8.98	.76	2.86
J_5	-.99	-7.46	.27	1.02
J_6	-1.13	-8.49	.44	1.66
J_7	-1.22	-9.14	.73	2.73
J_8	-1.11	-8.31	.37	1.40
J_9	-1.05	-7.89	.14	.53
J_10	-1.03	-7.76	.38	1.44
RO_1	-1.08	-8.13	.38	1.44
RO_2	-1.17	-8.82	.54	2.06
RO_3	-.96	-7.21	.15	.56
RO_4	-.93	-6.96	-.17	-.62
RO_5	-1.40	-10.49	1.20	4.49
OA_1	-1.36	-10.23	1.48	5.56
OA_2	-.97	-7.26	.28	1.06
OA_3	-1.08	-8.10	.52	1.94
OA_4	-.99	-7.47	.19	.72
OA_5	-1.17	-8.77	.79	2.95
OA_6	-1.50	-11.25	1.64	6.17
OA_7	-1.31	-9.87	1.12	4.19

Variables	Skewness	Critical Ratio	Kurtosis	Critical Ratio
OC_1	-1.65	-12.43	2.23	8.38
OC_2	-1.95	-14.67	3.50	13.15
OC_3	-2.16	-16.22	4.24	15.95
OC_4	-1.58	-11.88	1.93	7.25
OC_5	-1.58	-11.89	2.08	7.83
OC_6	-1.58	-11.90	2.11	7.94
OC_7	-1.68	-12.61	2.51	9.42
WC_1	-1.74	-13.06	2.81	10.56
WC_2	-1.72	-12.93	2.59	9.74
WC_3	-1.67	-12.55	2.40	9.00
WC_4	-1.54	-11.55	1.82	6.86
DO_1	-1.17	-8.82	.44	1.64
DO_2	-.96	-7.18	-.20	-.75
DO_3	-1.00	-7.51	.03	.10
DO_4	-.87	-6.54	-.29	-1.07
DO_5	-.62	-4.64	-.69	-2.60
DO_6	-.64	-4.84	-.69	-2.61
USW_1	-.90	-6.77	-.09	-.33
USW_2	-.81	-6.12	-.29	-1.07
USW_3	-1.14	-8.60	.49	1.82
Multivariate			1890.50	181.00

Following the non-normality diagnosis, the researcher tested the 10-factor congeneric measurement model (see Figure 1) in Mplus. In this model, each of the 67 items was allowed to load on only its associated factor, and the factors representing the 10 principal skill dimensions were allowed to correlate. The researcher used MLM as the estimator because MLM produces maximum likelihood parameter estimates with standard errors and a mean-adjusted chi-square test statistic that are both robust to non-normality. Note the MLM chi-square test statistic is also referred to as the Satorra-Bentler chi-square (Muthen & Muthen, 2012). Several fit indices, capturing different aspects of the model fit were used, including chi-square and the chi-square to degrees of freedom ratio (χ^2/df), comparative fit index (*CFI*), Tucker-Lewis index (*TLI*), root-mean-square error of approximation (*RMSEA*) and standardized root mean square residual (*SRMR*). For *CFI* and *TLI*, acceptable fit is indicated by values of .90 or greater and good fit by values of .95 or greater; for *RMSEA*, values of .06 to .08 represent acceptable fit and values of .05 or less indicate good fit (Browne & Cudeck, 1993; Schumacker & Lomax, 2004); and for *SRMR*, a value less than .08 is generally considered a good fit (Hu & Bentler, 1999). In terms of the chi-square, a non-statistically significant chi-square value indicates a good global fit of the model. However, according to Kenny (2011), the chi-square can be considered a reasonable measure of fit for models with about 75 to 200 cases; for models with more cases (400 or more), the chi-square is almost always statistically significant. Our sample included 339 cases for principal assessment and

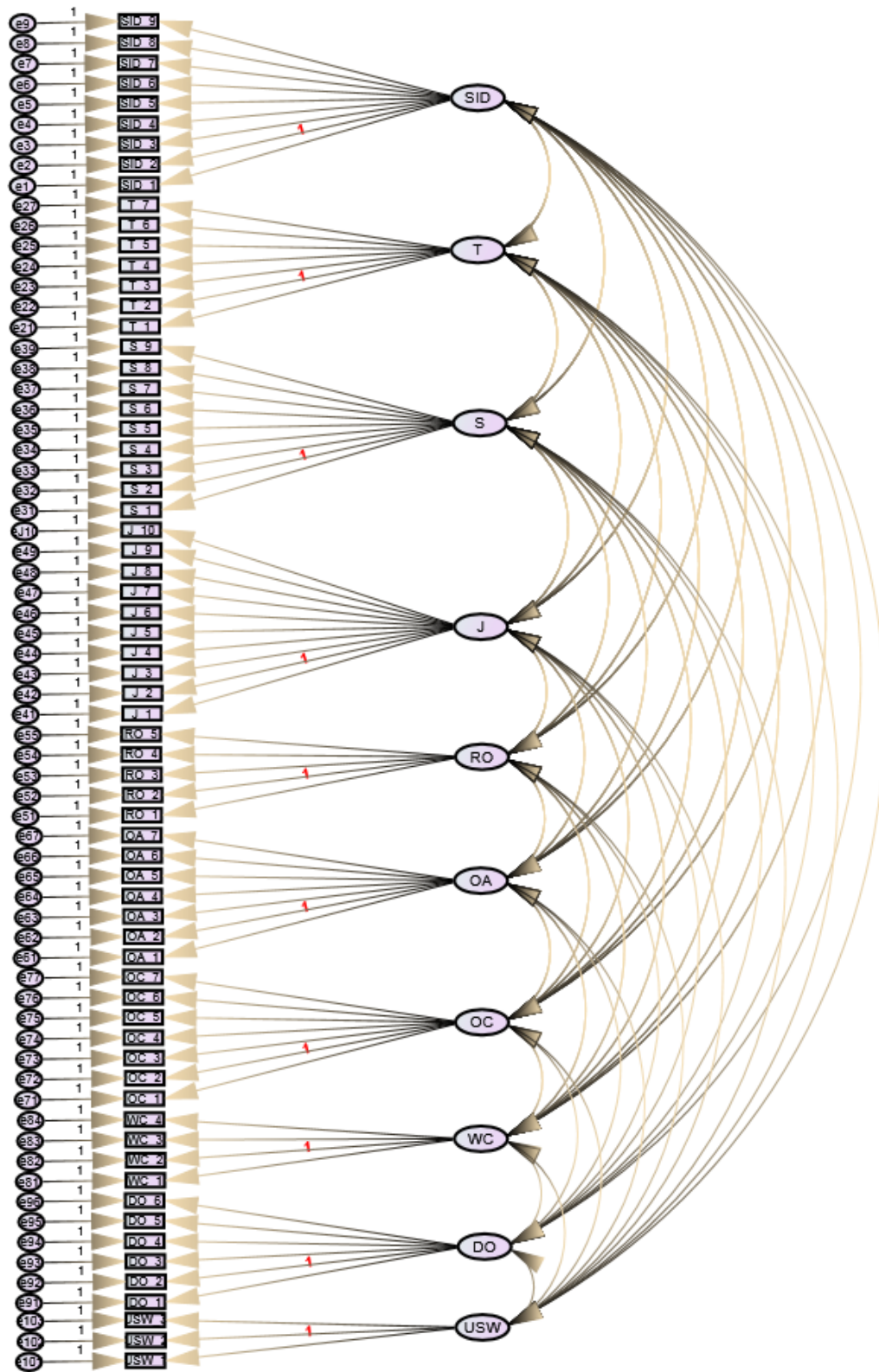


Figure 1. Measurement model of 21st century school administrator skills

344 for assistant principal assessment respectively. It seems that chi-square may not be a reliable measure to assess model fit. Consequently, the researcher decided to use χ^2/df and a value within the range of one to three would be considered an acceptable fit according to Carmines and McIver (1981).

While the aforementioned fit indices determined whether the hypothesized 10-factor model was properly specified, the following estimates provided evidence for the presence of convergent and discriminant validity or lack thereof. The composite reliability ($CR > .70$) derived from CFA together with Cronbach's alpha ($0.7 \leq \alpha < 0.8$ acceptable, $0.8 \leq \alpha < 0.9$ good, $\alpha \geq 0.9$ excellent) were used to evaluate the reliability of each subscale (Hair, Black, Babin, & Anderson, 2010; George & Mallery, 2003; Kline, 1999). The Composite Reliability (CR) and Average Variance Extracted measures (AVE; $CR > AVE$; $AVE > .50$) were used to assess the presence of convergent validity and the Maximum Shared Squared Variance ($MSV < AVE$) and the Average Shared Squared Variance ($ASV < AVE$) were used to determine the presence of discriminant validity.

CHAPTER 3

Results

Based on prior empirical evidence and theory bearing together with NASSP's job analysis of effective K-12 principals, the researcher specified a 10-factor model of key principal leadership competencies in which 67 observable leadership actions/variables loaded onto 10 latent constructs of leadership practices: setting instructional directions (SID), teamwork (T), sensitivity (S), judgment (J), results orientation (RO), organizational ability (OA), oral communication (OC), written communication (WC), development of others (DO), and understanding one's own strengths and weaknesses (USW). Figure 1 depicts the complete specification of the 10-factor model. Note the measurement model contained no double-loading indicators and all measurement error was presumed to be uncorrelated. However, the 10 latent factors were permitted to be correlated based on prior empirical evidence and theoretical discussions. The model was overidentified with 2099 degrees of freedom (*df*).

As noted in the Methods section, 445 teachers and non-instructional staff in a mid-sized urban district received requests to rate their principals and 629 received requests to rate their assistant principals using the NASSP 21st Century School Administrator Skills instrument. Out of the 715 responses, 683 cases (339 for principals vs. 344 for assistant principals) had complete rating data on all 67 observed variables. Prior to the CFA analysis, the researcher conducted normality diagnoses, which indicated that the data departed markedly from both univariate and multivariate normality. This gave rise to the necessity of using MLM as the estimator, which is available in Mplus application.

Ten-Factor Structure

Using Mplus with MLM estimation, the CFA analysis generated the following fit indices for principal and assistant principal ratings respectively (see Table 3): Satorra-Bentler chi-square, and chi-square to degrees of freedom, root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and Tucker-Lewis index (TLI). Guided by suggestions provided by Browne and Cudeck (1983), Carmines and McIver (1981), Hu and Bentler (1999), Kenny (2011), and Schumacker and Lomax (2004), acceptable model fit was defined by the following criteria: χ^2/df ($1 \leq \chi^2/df \leq 3$), TLI ($\geq .90$), CFI ($\geq .90$), RMSEA ($\leq .08$), SRMR ($\leq .08$). Multiple indices were used because they provide different information about model fit (e.g., absolute fit, fit adjusting for model parsimony, fit relative to null model). When used together, these indices provide a more conservative and reliable evaluation of the solution (Brown, 2006).

Table 3

Fit Indices for the 10-Factor 21st Century School Administrator Skills Model

	Satorra-Bentler χ^2	<i>df</i>	<i>p</i>	χ^2 /df	TLI	CFI	RMSEA	SRMR
Principal (N=339)	4281.59	2099	.0000	2.04	.89	.90	.06	.04
Assistant Principal (N=344)	4463.19	2099	.0000	2.13	.90	.90	.06	.04

Although a non-statistically significant chi-square value indicates a good model fit and the chi-square in the present solution was significant, it was not necessarily an indication of a poorly fitting model because chi-square tends to be significant when sample size is larger than 200 (Kenny, 2011). The number of ratings for both the principal (N=339) and the assistant

principal ($N=344$) exceed 200 by a large margin in this study. Therefore, the chi-square and degree of freedom ratio was a more appropriate fit index. Altogether, the overall goodness-of-fit indices suggested that the 10-factor model fit the data well for both the principal ($\chi^2/df=2.04$, SRMR=.04, RMSEA=.06, CFI=.90, TLI=.89) and the assistant principal ($\chi^2/df=2.13$, SRMR=.04, RMSEA=.06, CFI=.90, TLI=.90). However, inspection of modification indices indicated multiple localized points of ill fit in the solution (e.g., largest modification index = 50.75). Nevertheless, model revisions based on this information failed to improve the model fit.

Table 4

Standardized Factor Correlations for the Principal Sample

	SID	T	S	J	RO	OA	OC	WC	DO	USW
SID	-									
T	0.92	-								
S	0.89	0.94	-							
J	0.93	0.93	0.89	-						
RO	0.92	0.91	0.90	0.98	-					
OA	0.91	0.88	0.83	0.95	0.96	-				
OC	0.83	0.79	0.80	0.81	0.81	0.80	-			
WC	0.59	0.56	0.59	0.60	0.64	0.65	0.72	-		
DO	0.88	0.88	0.87	0.91	0.94	0.91	0.78	0.60	-	
USW	0.79	0.79	0.79	0.83	0.85	0.85	0.75	0.68	0.87	-

Note. SID=Setting Instructional Direction, T=Teamwork, S=Sensitivity, J=Judgment, RO=Results Orientation, OA=Organizational Ability, OC=Oral Communication, WC=Written

Communication, DO=Developing Others, USW=Understanding Own Strength and Weaknesses

Correlations between factors for both the principal sample (Table 4) and assistant principal sample (Table 5) were also examined for potential model parsimony. If too many factors have been specified in a CFA model, this is likely to be detected by correlations between factors that approximate ± 1.0 , a sign of poor discriminant validity (Brown, 2006). In applied research, a factor correlation that equals or exceeds .85 is often used as the cutoff criterion for problematic discriminant validity (Cohen, Cohen, West, & Aiken, 2003).

Table 5

Standardized Factor Correlations for the Assistant Principal Sample

	SID	T	S	J	RO	OA	OC	WC	DO	USW
SID	-									
T	0.92	-								
S	0.87	0.93	-							
J	0.91	0.94	0.92	-						
RO	0.92	0.94	0.93	0.99	-					
OA	0.90	0.89	0.83	0.92	0.94	-				
OC	0.85	0.82	0.86	0.86	0.87	0.82	-			
WC	0.66	0.63	0.62	0.69	0.70	0.72	0.72	-		
DO	0.86	0.86	0.86	0.88	0.90	0.90	0.78	0.69	-	
USW	0.84	0.82	0.79	0.87	0.87	0.87	0.75	0.72	0.90	-

Note. SID=Setting Instructional Direction, T=Teamwork, S=Sensitivity, J=Judgment, RO=Results Orientation, OA=Organizational Ability, OC=Oral Communication, WC=Written Communication, DO=Developing Others, USW=Understanding Own Strength and Weaknesses

Using this criterion, the researcher combined the excessively overlapping factors. However, the more parsimonious model did not produce satisfactory model fit for either the principal sample ($\chi^2/df=2.63$, SRMR=.04, RMSEA=.07, CFI=.84, TLI=.84) or the assistant principal sample ($\chi^2/df=2.85$, SRMR=.04, RMSEA=.04, CFI=.84, TLI=.83). Therefore, the initial model represented the best-fitting model in reproducing the sample correlations among all indicators and was used in the rest of the study in the discussion of all questions related to reliability and validity. Completely standardized parameter estimates from this solution were presented in Table 6 for the principal ratings and Table 7 for the assistant principal ratings. All freely estimated standardized parameters for statistically significant for both groups ($p < .001$). Except for one indicator (OA1: Delegates responsibilities to others), factor-loading estimates revealed that the indicators were strongly related to their purported latent factors (range of R^2 s = 0.58-0.92 for principals and 0.59-0.94 for assistant principals), consistent with the earlier job analysis conducted by the NASSP. However, estimates from the 10-factor solution indicated strong correlations among eight out of the 10 dimensions (see Tables 4 and 5). The two that were not highly related to each other or the remaining dimensions were oral communication (OC) and written communication (WC). In summary, the 10-factor structure hypothesized to underpin responses to the 21st Century School Administrator Skills instrument was confirmed empirically for principals and assistant principals. However, for both groups, there existed strong evidence that the majority of the latent factors did not represent distinct constructs. There was also one indicator (OA1) for both groups that failed to measure its purported latent factor.

Table 6

Descriptive Statistics and Confirmatory Factor Analysis for the Principal Sample

	Descriptive Statistics		Confirmatory Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
Setting Instructional Direction ($\alpha=0.96$)					
SID1: Articulates a vision related to teaching and learning	4.31	0.95	0.84	0.71	0.000
SID2: Sets high performance expectations for self or others	4.43	0.88	0.81	0.66	0.000
SID3: Encourages innovation to improve teaching and learning	4.25	0.97	0.88	0.77	0.000
SID4: Sets clear measurable objectives	4.16	1.01	0.85	0.72	0.000
SID5: Generates enthusiasm toward common goals	4.06	1.20	0.89	0.79	0.000
SID6: Develops alliances and resources outside the school to improve quality teaching and learning	3.87	1.17	0.84	0.71	0.000
SID7: Clearly articulates expectations regarding the performance of others	4.10	1.07	0.89	0.79	0.000
SID8: Acknowledges and celebrates achievement and accomplishments	4.03	1.20	0.84	0.71	0.000
SID9: Seeks commitment to a course of action	4.22	1.15	0.87	0.76	0.000
Teamwork ($\alpha=0.96$)					
T1: Supports the ideas of team members	3.93	1.15	0.90	0.81	0.000
T2: Encourages team members to share ideas	4.06	1.14	0.90	0.81	0.000
T3: Contributes ideas toward reaching solutions	4.22	0.99	0.79	0.62	0.000
T4: Assists in the operational tasks of the team	3.80	1.21	0.83	0.69	0.000
T5: Seeks input from team members	4.03	1.16	0.90	0.81	0.000
T6: Acts to maintain direction or focus to achieve the team's goals	3.91	1.18	0.90	0.81	0.000
T7: Seeks consensus among team members	3.77	1.23	0.90	0.81	0.000
Sensitivity ($\alpha=0.96$)					
S1: Interacts appropriately and tactfully with others	4.32	1.03	0.81	0.66	0.000
S2: Elicits perceptions, feelings, or	3.96	1.23	0.91	0.83	0.000

	Descriptive Statistics		Confirmatory Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
concerns of others					
S3: Voices disagreement without creating unnecessary conflict	3.80	1.19	0.87	0.76	0.000
S4: Anticipates responses of others and acts to reduce negative impact	3.78	1.23	0.92	0.85	0.000
S5: Communicates necessary information to appropriate persons in a timely manner	3.81	1.20	0.77	0.59	0.000
S6: Expresses written, verbal, or non-verbal recognition of feelings, needs, or concerns of others	3.87	1.20	0.94	0.88	0.000
S7: Responds tactfully to others in emotionally stressful situations or in conflict	3.90	1.22	0.90	0.81	0.000
S8: Takes actions to divert unnecessary conflict	3.90	1.18	0.92	0.85	0.000
S9: Responds in timely manner to others	3.95	1.16	0.76	0.58	0.000
Judgment ($\alpha=0.97$)					
J1: Assigns priority to issues within the school's vision	4.21	0.99	0.87	0.76	0.000
J2: Exercises caution when dealing with unfamiliar issues and individuals	4.08	1.03	0.80	0.64	0.000
J3: Avoids reaching quick conclusions with limited data	3.89	1.21	0.85	0.72	0.000
J4: Evaluates information to determine the elements that affect teaching and learning	4.19	1.00	0.87	0.76	0.000
J5: Communicates a clear learning-related rationale for each decision	3.96	1.12	0.91	0.83	0.000
J6: Seeks additional information	4.07	1.12	0.90	0.81	0.000
J7: Uses sources of data to confirm or refute assumptions	4.13	1.08	0.85	0.72	0.000
J8: Asks follow-up questions to clarify information	4.13	1.04	0.88	0.77	0.000
J9: Seeks to identify the cause of a problem	4.07	1.13	0.89	0.79	0.000
J10: Establishes relationships between issues and events	4.02	1.10	0.92	0.85	0.000
Results Orientation ($\alpha=0.95$)				0.71	0.000

	Descriptive Statistics		Confirmatory Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
RO1: Takes actions to move issues toward closure	4.03	1.12	0.84		
RO2: Takes responsibility for improvement	4.15	1.06	0.88	0.77	0.000
RO3: Determines the criteria what indicate a problem or issue is solved	3.92	1.13	0.93	0.86	0.000
RO4: Considers the implications of a decision before taking action	3.89	1.23	0.89	0.79	0.000
RO5: Sees the big picture related to the mission of the school	4.26	1.05	0.87	0.76	0.000
Organizational Ability ($\alpha=0.92$)					
OA1: Delegates responsibilities to others	4.28	0.95	0.43	0.18	0.000
OA2: Monitors delegated responsibilities	3.96	1.08	0.83	0.69	0.000
OA3: Develops action plans	4.12	1.03	0.88	0.77	0.000
OA4: Monitors progress and modifies plans as needed	4.03	1.09	0.90	0.81	0.000
OA5: Establishes timelines, schedules, or milestones	4.15	1.02	0.79	0.62	0.000
OA6: Prepares for meetings	4.32	0.99	0.76	0.58	0.000
OA7: Uses available resources effectively	4.20	1.04	0.88	0.77	0.000
Oral Communication ($\alpha=0.96$)					
OC1: Demonstrates effective presentation skills	4.35	1.00	0.89	0.79	0.000
OC2: Speaks articulately	4.53	0.84	0.83	0.68	0.000
OC3: Uses correct grammar	4.66	0.69	0.77	0.59	0.000
OC4: Tailors messages to meet the needs of unique audiences	4.36	0.99	0.88	0.77	0.000
OC5: Clearly presents thoughts and ideas in one-on-one conversations	4.36	0.95	0.90	0.81	0.000
OC6: Clearly presents thoughts and ideas with small groups	4.38	0.93	0.93	0.86	0.000
OC7: Clearly presents thoughts and ideas in formal, large-group presentations	4.38	0.95	0.89	0.79	0.000
Written Communication ($\alpha=0.96$)	4.40	0.93	0.93	0.86	0.000

	Descriptive Statistics		Confirmatory Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
WC1: Writes concisely					
WC2: Demonstrates technical proficiency in writing	4.39	0.94	0.94	0.88	0.000
WC3: Expresses ideas clearly in writing	4.37	0.95	0.96	0.92	0.000
WC4: Writes appropriately for different audiences	4.28	1.02	0.88	0.77	0.000
Developing Others ($\alpha=0.95$)					
DO1: Shares expertise gained through experience	4.15	1.10	0.85	0.72	0.000
DO2: Motivates others to change behaviors that inhibit professional growth	3.90	1.26	0.93	0.86	0.000
DO3: Recommends specific developmental activities	3.96	1.18	0.89	0.79	0.000
DO4: Gives behaviorally-specific feedback	3.85	1.24	0.89	0.79	0.000
DO5: Asks others for their perception of their professional development needs	3.58	1.30	0.83	0.69	0.000
DO6: Seeks agreement on specific actions to be taken for developmental growth	3.60	1.32	0.84	0.71	0.000
Understanding Own Strengths and Weaknesses ($\alpha=0.93$)					
USW1: Recognizes and communicates own strengths	3.96	1.14	0.85	0.72	0.000
USW2: Recognizes and manages own developmental needs	3.85	1.20	0.94	0.88	0.000
USW3: Pursues personal growth through planned developmental activities	4.08	1.12	0.91	0.83	0.000

Note. *N*=339

Table 7

Descriptive Statistics and Confirmatory Factor Analysis for the Assistant Principal Sample

	Descriptive Statistics		Confirmatory Factor Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value

	Descriptive Statistics		Confirmatory Factor Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
Setting Instructional Direction ($\alpha=0.97$)					
SID1: Articulates a vision related to teaching and learning	3.94	1.11	0.91	0.83	0.000
SID2: Sets high performance expectations for self or others	4.01	1.14	0.90	0.81	0.000
SID3: Encourages innovation to improve teaching and learning	3.85	1.17	0.92	0.85	0.000
SID4: Sets clear measurable objectives	3.74	1.21	0.91	0.83	0.000
SID5: Generates enthusiasm toward common goals	3.89	1.27	0.87	0.76	0.000
SID6: Develops alliances and resources outside the school to improve quality teaching and learning	3.41	1.27	0.81	0.66	0.000
SID7: Clearly articulates expectations regarding the performance of others	3.84	1.17	0.92	0.85	0.000
SID8: Acknowledges and celebrates achievement and accomplishments	3.83	1.23	0.84	0.71	0.000
SID9: Seeks commitment to a course of action	3.90	1.16	0.90	0.81	0.000
Teamwork ($\alpha=0.97$)					
T1: Supports the ideas of team members	3.86	1.21	0.90	0.81	0.000
T2: Encourages team members to share ideas	3.94	1.18	0.92	0.85	0.000
T3: Contributes ideas toward reaching solutions	4.11	1.06	0.83	0.69	0.000
T4: Assists in the operational tasks of the team	3.90	1.20	0.88	0.77	0.000
T5: Seeks input from team members	3.79	1.24	0.94	0.88	0.000
T6: Acts to maintain direction or focus to achieve the team's goals	3.77	1.27	0.93	0.86	0.000
T7: Seeks consensus among team members	3.65	1.26	0.92	0.85	0.000
Sensitivity ($\alpha=0.97$)					
S1: Interacts appropriately and tactfully with others	4.26	1.06	0.81	0.66	0.000
S2: Elicits perceptions, feelings, or concerns of others	3.94	1.14	0.87	0.76	0.000
S3: Voices disagreement without	3.86	1.10	0.85	0.72	0.000

	Descriptive Statistics		Confirmatory Factor Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
creating unnecessary conflict					
S4: Anticipates responses of others and acts to reduce negative impact	3.81	1.20	0.90	0.81	0.000
S5: Communicates necessary information to appropriate persons in a timely manner	3.83	1.26	0.84	0.71	0.000
S6: Expresses written, verbal, or non-verbal recognition of feelings, needs, or concerns of others	3.79	1.19	0.93	0.86	0.000
S7: Responds tactfully to others in emotionally stressful situations or in conflict	3.92	1.17	0.89	0.79	0.000
S8: Takes actions to divert unnecessary conflict	3.92	1.17	0.90	0.81	0.000
S9: Responds in timely manner to others	3.95	1.25	0.85	0.72	0.000
Judgment ($\alpha=0.97$)					
J1: Assigns priority to issues within the school's vision	3.86	1.15	0.88	0.77	0.000
J2: Exercises caution when dealing with unfamiliar issues and individuals	3.80	1.18	0.81	0.66	0.000
J3: Avoids reaching quick conclusions with limited data	3.84	1.18	0.84	0.71	0.000
J4: Evaluates information to determine the elements that affect teaching and learning	3.84	1.15	0.91	0.83	0.000
J5: Communicates a clear learning-related rationale for each decision	3.76	1.21	0.91	0.83	0.000
J6: Seeks additional information	3.87	1.19	0.90	0.81	0.000
J7: Uses sources of data to confirm or refute assumptions	3.87	1.16	0.90	0.81	0.000
J8: Asks follow-up questions to clarify information	4.01	1.15	0.88	0.77	0.000
J9: Seeks to identify the cause of a problem	4.01	1.19	0.91	0.83	0.000
J10: Establishes relationships between issues and events	3.91	1.16	0.92	0.85	0.000
Results Orientation ($\alpha=0.96$)					
RO1: Takes actions to move issues toward closure	3.91	1.25	0.89	0.79	0.000

	Descriptive Statistics		Confirmatory Factor Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
RO2: Takes responsibility for improvement	3.84	1.21	0.91	0.83	0.000
RO3: Determines the criteria what indicate a problem or issue is solved	3.77	1.18	0.91	0.83	0.000
RO4: Considers the implications of a decision before taking action	3.71	1.22	0.93	0.86	0.000
RO5: Sees the big picture related to the mission of the school	3.99	1.18	0.91	0.83	0.000
Organizational Ability ($\alpha=0.95$)					
OA1: Delegates responsibilities to others	3.87	1.03	0.58	0.34	0.000
OA2: Monitors delegated responsibilities	3.70	1.19	0.88	0.77	0.000
OA3: Develops action plans	3.74	1.24	0.93	0.86	0.000
OA4: Monitors progress and modifies plans as needed	3.69	1.21	0.94	0.88	0.000
OA5: Establishes timelines, schedules, or milestones	3.78	1.21	0.90	0.81	0.000
OA6: Prepares for meetings	3.99	1.19	0.86	0.74	0.000
OA7: Uses available resources effectively	3.86	1.18	0.92	0.85	0.000
Oral Communication ($\alpha=0.96$)					
OC1: Demonstrates effective presentation skills	4.08	1.13	0.87	0.76	0.000
OC2: Speaks articulately	4.32	0.94	0.85	0.72	0.000
OC3: Uses correct grammar	4.46	0.80	0.77	0.59	0.000
OC4: Tailors messages to meet the needs of unique audiences	4.17	1.05	0.90	0.81	0.000
OC5: Clearly presents thoughts and ideas in one-on-one conversations	4.20	1.08	0.90	0.81	0.000
OC6: Clearly presents thoughts and ideas with small groups	4.17	1.06	0.89	0.79	0.000
OC7: Clearly presents thoughts and ideas in formal, large-group presentations	4.16	1.06	0.91	0.83	0.000
Written Communication ($\alpha=0.97$)					
WC1: Writes concisely	4.04	1.15	0.96	0.93	0.000

	Descriptive Statistics		Confirmatory Factor Analysis		
	<i>M</i>	<i>SD</i>	Loading	<i>R</i> ²	<i>P</i> -Value
WC2: Demonstrates technical proficiency in writing	4.02	1.16	0.95	0.90	0.000
WC3: Expresses ideas clearly in writing	4.06	1.19	0.97	0.94	0.000
WC4: Writes appropriately for different audiences	3.99	1.20	0.93	0.86	0.000
Developing Others ($\alpha=0.96$)					
DO1: Shares expertise gained through experience	3.82	1.19	0.85	0.72	0.000
DO2: Motivates others to change behaviors that inhibit professional growth	3.67	1.28	0.94	0.88	0.000
DO3: Recommends specific developmental activities	3.63	1.27	0.91	0.83	0.000
DO4: Gives behaviorally-specific feedback	3.70	1.27	0.90	0.81	0.000
DO5: Asks others for their perception of their professional development needs	3.25	1.38	0.86	0.74	0.000
DO6: Seeks agreement on specific actions to be taken for developmental growth	3.29	1.38	0.87	0.76	0.000
Understanding Own Strengths and Weaknesses ($\alpha=0.94$)					
USW1: Recognizes and communicates own strengths	3.69	1.25	0.87	0.76	0.000
USW2: Recognizes and manages own developmental needs	3.62	1.31	0.94	0.88	0.000
USW3: Pursues personal growth through planned developmental activities	3.76	1.27	0.92	0.85	0.000

Note. $N=344$

Reliability

Precise measurement is important in test development. The reliability coefficient provides information about measurement consistency or precision. Cronbach's (1951) coefficient alpha (α) has been traditionally and is still frequently used as an index of the reliability of (sub)scales, multiple-item tests, questionnaires, self-reports, and inventories

(Raykov, 1998). Despite its widespread popularity, researchers have long recognized that α is a misestimator of scale reliability (Brown, 2006). Multiple research studies (e.g., Green & Hershberger, 2000; Komaroff, 1997; Raykov, 1997) have demonstrated that Cronbach's alpha does not provide a dependable estimate of scale reliability of multiple-item measures. Raykov (2001, 2004) has developed a CFA-based method of estimating scale reliability that reconciles the problem with Cronbach's coefficient. In light of this accumulated finding, in addition to Cronbach's alpha, the common measure of scale reliability (Field, 2009), composite reliability recommended by Raykov was used simultaneously to evaluate the reliability of the subscales. Compared to Cronbach's alpha which uses item variance and covariances in its estimation, composite reliability takes into account factor loadings, error variances, and error covariances (if applied) in the computation of the reliability coefficient. Tables 8 and 9 reported the testing results related to both reliability measures.

As indicated in Tables 8 and 9, all ten subscales had high reliabilities with both the principal ratings and assistant principal ratings in terms of the Cronbach's alpha ($>.90$) as well as the composite reliability measures ($>.90$). Further, the composite reliability value of each subscale was almost identical with its corresponding Cronbach's reliability coefficient. In summary, the subscales items from the NASSP 21st Century School Administrator Skills instrument were reliable indicators of the 10 latent constructs measuring the performance of principals and assistant principals. However, it is worth noting that two item-total statistics in the Cronbach's alpha test should be examined even when subscales demonstrate sufficient reliability. One of these statistics is the *Corrected Item-Total Correlations* and the other is *Cronbach's Alpha if Item is Deleted*. While the first statistic indicates the correlation between each item and the total score of the subscale, the second represents the value of the overall

alpha of the subscale when that particular item is removed in the calculation. The values for the *Corrected Item-Total Correlations* statistic should be larger than .30 (Field, 2009). The statistic reported under *Cronbach's Alpha if Item is Deleted* should not result in a substantive increase in the alpha value. If it does, that corresponding item should be deleted in order to improve the subscale's reliability (Field). Using Field's recommendation, out of the 67 items, all had sufficient correlations (>.30) with their corresponding subscale total score and only one item resulted in a slight increase in the alpha value if deleted. This item is the first item in subscale Organizational Ability (OA1: Delegates responsibilities to others). Overall, the 67 items under the 10 subscales of the NASSP 21st Century School Administrator Skills instrument demonstrated strong reliability measuring its corresponding latent constructs of leadership performance.

Table 8

Cronbach's Alphas of Subscales for Both the Principals and Assistant Principal Samples

	Principal		Assistant Principal	
	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
Setting Instructional Direction	$\alpha = 0.96$		$\alpha = 0.97$	
SID1: Articulates a vision related to teaching and learning	.83	.96	.89	.97
SID2: Sets high performance expectations for self or others	.80	.96	.88	.96
SID3: Encourages innovation to improve teaching and learning	.87	.95	.90	.97
SID4: Sets clear measurable objectives	.84	.95	.89	.97
SID5: Generates enthusiasm toward common goals	.87	.95	.86	.97
SID6: Develops alliances and resources outside the school to improve quality teaching and learning	.81	.96	.80	.97
SID7: Clearly articulates expectations	.87	.95	.90	.97

	Principal		Assistant Principal	
	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
regarding the performance of others				
SID8: Acknowledges and celebrates achievement and accomplishments	.81	.96	.83	.97
SID9: Seeks commitment to a course of action	.85	.95	.89	.97
Teamwork	$\alpha = 0.96$		$\alpha = 0.97$	
T1: Supports the ideas of team members	.87	.95	.89	.96
T2: Encourages team members to share ideas	.86	.95	.91	.96
T3: Contributes ideas toward reaching solutions	.77	.96	.81	.97
T4: Assists in the operational tasks of the team	.82	.95	.86	.96
T5: Seeks input from team members	.89	.95	.92	.96
T6: Acts to maintain direction or focus to achieve the team's goals	.88	.95	.91	.96
T7: Seeks consensus among team members	.88	.95	.90	.96
Sensitivity	$\alpha = 0.96$		$\alpha = 0.97$	
S1: Interacts appropriately and tactfully with others	.80	.96	.80	.96
S2: Elicits perceptions, feelings, or concerns of others	.89	.96	.86	.96
S3: Voices disagreement without creating unnecessary conflict	.85	.96	.83	.96
S4: Anticipates responses of others and acts to reduce negative impact	.90	.96	.88	.96
S5: Communicates necessary information to appropriate persons in a timely manner	.76	.96	.81	.96
S6: Expresses written, verbal, or non-verbal recognition of feelings, needs, or concerns of others	.92	.96	.90	.96
S7: Responds tactfully to others in emotionally stressful situations or in conflict	.88	.96	.87	.96

	Principal		Assistant Principal	
	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
S8: Takes actions to divert unnecessary conflict	.90	.96	.89	.96
S9: Responds in timely manner to others	.76	.96	.83	.96
Judgment	$\alpha = 0.97$		$\alpha = 0.97$	
J1: Assigns priority to issues within the school's vision	.85	.97	.85	.97
J2: Exercises caution when dealing with unfamiliar issues and individuals	.79	.97	.81	.97
J3: Avoids reaching quick conclusions with limited data	.85	.97	.84	.97
J4: Evaluates information to determine the elements that affect teaching and learning	.87	.97	.90	.97
J5: Communicates a clear learning-related rationale for each decision	.89	.97	.90	.97
J6: Seeks additional information	.87	.97	.90	.97
J7: Uses sources of data to confirm or refute assumptions	.84	.97	.90	.97
J8: Asks follow-up questions to clarify information	.86	.97	.87	.97
J9: Seeks to identify the cause of a problem	.87	.97	.89	.97
J10: Establishes relationships between issues and events	.90	.97	.90	.97
Results Orientation	$\alpha = 0.95$		$\alpha = 0.96$	
RO1: Takes actions to move issues toward closure	.81	.94	.87	.95
RO2: Takes responsibility for improvement	.83	.94	.89	.95
RO3: Determines the criteria what indicate a problem or issue is solved	.90	.92	.89	.95
RO4: Considers the implications of a decision before taking action	.87	.93	.90	.95
RO5: Sees the big picture related to the mission of the school	.84	.93	.88	.95
Organizational Ability	$\alpha = 0.92$		$\alpha = 0.95$	
OA1: Delegates responsibilities to others	.42	.94	.59	.96

	Principal		Assistant Principal	
	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
OA2: Monitors delegated responsibilities	.80	.90	.88	.94
OA3: Develops action plans	.85	.90	.90	.94
OA4: Monitors progress and modifies plans as needed	.85	.89	.91	.94
OA5: Establishes timelines, schedules, or milestones	.79	.90	.89	.94
OA6: Prepares for meetings	.70	.91	.84	.95
OA7: Uses available resources effectively	.82	.90	.87	.94
Oral Communication	$\alpha = 0.96$		$\alpha = 0.96$	
OC1: Demonstrates effective presentation skills	.87	.95	.84	.95
OC2: Speaks articulately	.84	.95	.85	.95
OC3: Uses correct grammar	.77	.96	.76	.96
OC4: Tailors messages to meet the needs of unique audiences	.86	.95	.88	.95
OC5: Clearly presents thoughts and ideas in one-on-one conversations	.86	.95	.87	.95
OC6: Clearly presents thoughts and ideas with small groups	.90	.95	.86	.95
OC7: Clearly presents thoughts and ideas in formal, large-group presentations	.86	.95	.89	.94
Written Communication	$\alpha = 0.96$		$\alpha = 0.97$	
WC1: Writes concisely	.91	.94	.94	.97
WC2: Demonstrates technical proficiency in writing	.91	.94	.94	.96
WC3: Expresses ideas clearly in writing	.93	.94	.95	.96
WC4: Writes appropriately for different audiences	.86	.96	.91	.97
Developing Others	$\alpha = 0.95$		$\alpha = 0.96$	
DO1: Shares expertise gained through experience	.81	.94	.82	.96
DO2: Motivates others to change	.87	.94	.90	.95

	Principal		Assistant Principal	
	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
behaviors that inhibit professional growth				
DO3: Recommends specific developmental activities	.85	.94	.88	.95
DO4: Gives behaviorally-specific feedback	.85	.94	.86	.95
DO5: Asks others for their perception of their professional development needs	.83	.94	.87	.95
DO6: Seeks agreement on specific actions to be taken for developmental growth	.85	.94	.88	.95
Understanding Own Strengths and Weaknesses	$\alpha = 0.93$		$\alpha = 0.94$	
USW1: Recognizes and communicates own strengths	.80	.93	.85	.92
USW2: Recognizes and manages own developmental needs	.89	.85	.90	.88
USW3: Pursues personal growth through planned developmental activities	.85	.89	.86	.91

Note. N=339.

Table 9

Comparison of Cronbach's Alpha and Composite Reliability Coefficient

	Principal		Assistant Principal	
	Cronbach's Alpha	Composite Reliability	Cronbach's Alpha	Composite Reliability
Setting Instructional Direction	0.96	0.96	0.97	0.97
Teamwork	0.96	0.96	0.97	0.97
Sensitivity	0.96	0.97	0.97	0.97
Judgment	0.97	0.97	0.97	0.97
Results Orientation	0.95	0.95	0.96	0.96

Organizational Ability	0.92	0.92	0.95	0.95
Oral Communication	0.96	0.96	0.96	0.96
Written Communication	0.96	0.96	0.97	0.97
Developing Others	0.95	0.95	0.96	0.96
Understanding Own Strengths and Weaknesses	0.93	0.93	0.94	0.94

Note. N=344

Convergent and Discriminant Validity

The convergent and discriminant validity constituted the centrality of construct validity. They are two interlocking essential aspects of construct validity. As mentioned in the Methods section, convergent validity is indicated by evidence that different indicators of theoretically similar or overlapping constructs are strongly interrelated; and discriminant validity is indicated by results showing that indicators of theoretically distinct constructs are not highly interrelated (Brown, 2006). Tables 10 and 11 reported evidence related to convergent and discriminant validity for principals and assistant principals respectively. According to the recommendations of Hair and his colleagues (2010), a scale achieves adequate convergent validity if the composite reliability and the Average Variance Extracted measures meet the following criteria: $CR > .70$, $CR > AVE$, $AVE > .50$ and a scale achieves adequate discriminant validity if the Maximum Shared Squared Variance (MSV) and the Average Shared Squared Variance (ASV) are both smaller than the Average Variance Extracted measures. When examined against the recommendations of Hair and his colleagues (2010), the statistics reported in Tables 10 and 11 indicate that the subscales of the NASSP 21st Century School Administrator Skills instrument have adequate convergent validity for measuring the performances of both the principals and the assistant principals. However, the

subscales demonstrated poor discriminant validity for measuring both the principals' and the assistant principals' performances. Specifically, only three subscales (Oral Communication, Written Communication, and Understanding Own Strengths and Weaknesses) were demonstrated as distinctive latent constructs for evaluating principals. For assistant principals, even less evidence of discriminant validity was present. For them, only two subscales (Written Communication and Understanding Own Strengths and Weaknesses) were manifested distinct constructs. In summary, the NASSP 21st Century School Administrator Skills had a severe lack of construct validity considering that convergent and discriminant validity were interlocking elements that constitute the essential aspects of construct validity.

Table 10

Convergent Validity and Discriminant Validity for the Principal sample

Factors	CR	AVE	MSV	ASV
Setting Instructional Direction	0.96	0.74	0.86*	0.64
Teamwork	0.96	0.76	0.88*	0.63
Sensitivity	0.97	0.76	0.88*	0.70
Judgment	0.97	0.76	0.96*	0.77*
Results Orientation	0.95	0.78	0.96*	0.78*
Organizational Ability	0.92	0.63	0.92*	0.74*
Oral Communication	0.96	0.76	0.69	0.62
Written Communication	0.96	0.86	0.52	0.39
Developing Others	0.95	0.76	0.88*	0.73
Understanding Own Strengths and Weaknesses	0.93	0.81	0.76	0.64

Note. N=339, CR = Composite Reliability, AVE = Average Variance Extracted, MSV = Maximum Shared Squared Variance, ASV = Average Shared Squared Variance
Adequate convergent validity: CR>.70 & CR>AVE & AVE>.50
Adequate discriminant validity: MSV<AVE & ASV<AVE
* Lack of discriminant validity

Table 11

Convergent Validity and Discriminant Validity for the Assistant Principal Sample

Factors	CR	AVE	MSV	ASV
Setting Instructional Direction	0.97	0.79	0.85*	0.65
Teamwork	0.97	0.82	0.88*	0.65
Sensitivity	0.97	0.76	0.86*	0.72
Judgment	0.97	0.79	0.98*	0.79*
Results Orientation	0.96	0.83	0.98*	0.80
Organizational Ability	0.95	0.75	0.87*	0.75*
Oral Communication	0.96	0.76	0.76*	0.67
Written Communication	0.97	0.91	0.52	0.47
Developing Others	0.96	0.79	0.82*	0.72
Understanding Own Strengths and Weaknesses	0.94	0.83	0.82	0.68

Note. $N=344$, CR = Composite Reliability, AVE = Average Variance Extracted, MSV = Maximum Shared Squared Variance, ASV = Average Shared Squared Variance
Adequate convergent validity: $CR > .70$ & $CR > AVE$ & $AVE > .50$

Adequate discriminant validity: $MSV < AVE$ & $ASV < AVE$

* Lack of discriminant validity

Exploratory Factor Analysis

Exploratory factor analysis is a useful scale development technique for reducing a large number of indicators to a more manageable set. It is particularly useful as a preliminary analysis in the absence of sufficiently detailed theory about the relation of the indicators to the underlying constructs. A typical use of exploratory factor analysis is to factor an overall set of items and then construct scales on the basis of the resulting factor loadings. Scales are then formed by assigning to the same scale that load at least moderately on the same factor and do not load as highly on other factors. Exploratory factor analysis can be a useful preliminary

technique for scale construction but a subsequent confirmatory factor is needed to evaluate and refine the resulting scales (Gerbing & Anderson, 1988). In practice, researchers often use exploratory factor analysis as a precursor to confirmatory factor analysis with split samples.

Due to a lack of sufficient sample size for a split sample and the presence of an existing theory articulated by the NASSP, the researcher proceeded with a confirmatory factor analysis directly as shown above. The CFA revealed that the 10-factor model has a serious problem with discriminant validity. CFA is limited in identifying the sources of poor discriminant validity. Exploratory factor analysis, in contrast, is capable of showing how well the items in a questionnaire load on non-hypothesized factors (Kelloway, 1995) and was therefore used as a follow-up analysis to identify the sources of poor discriminant validity. Specifically, the researcher used principal axis factoring and promax rotation with reference to scree plots (See figures 2 and 3) and Kaiser criterion of 1.0 for eigenvalues in identifying the factors. These exploratory factor analysis techniques resulted in two factors for both principal sample and assistant principal sample (See Tables 12 and 13). While two clearly distinctive factors representing managerial leadership and communication emerged within the principal sample, the factor structure with the assistant principal was less interpretable. Multiple cross-loaded items were also present within the assistant principal sample. Although there were some discrepancies across the principals and the assistant principals in terms of the pattern structures, the overall finding was consistent with the CFA analysis – the 21st Century School Administrator Skills instrument at present does not measure 10 unidimensional, distinctive leadership competencies as articulated by NASSP. The pattern structures shown in Tables 12 and 13 clearly demonstrated that the overwhelming majority of the items loaded on one single factor for both the principal sample and the assistant principal sample. The unidimensional

nature of those items was therefore the very source of poor discriminant validity revealed by the CFA statistics.

Table 12

Exploratory Factor Analysis Pattern Structure for the Principals

	Managerial Leadership	Communication
J9: Seeks to identify the cause of a problem	.92	
T5: Seeks input from team members	.92	
DO3: Recommends specific developmental activities	.90	
T1: Supports the ideas of team members	.89	
J10: Establishes relationships between issues and events	.89	
S4: Anticipates responses of others and acts to reduce negative impact	.89	
T7: Seeks consensus among team members	.89	
T6: Acts to maintain direction or focus to achieve the team's goals	.88	
S8: Takes actions to divert unnecessary conflict	.88	
J6: Seeks additional information	.88	
T2: Encourages team members to share ideas	.86	
J5: Communicates a clear learning-related rationale for each decision	.86	
J1: Assigns priority to issues within the school's vision	.86	
RO3: Determines the criteria what indicate a problem or issue is solved	.86	
SID6: Develops alliances and resources outside the school to improve quality teaching and learning	.85	
DO4: Gives behaviorally-specific feedback	.84	
S6: Expresses written, verbal, or non-verbal recognition of feelings, needs, or concerns of others	.84	

	Managerial Leadership	Communication
J8: Asks follow-up questions to clarify information	.84	
T3: Contributes ideas toward reaching solutions	.83	
DO2: Motivates others to change behaviors that inhibit professional growth	.83	
RO1: Takes actions to move issues toward closure	.83	
SID9: Seeks commitment to a course of action	.83	
SID5: Generates enthusiasm toward common goals	.82	
OA7: Uses available resources effectively	.81	
SID7: Clearly articulates expectations regarding the performance of others	.81	
J7: Uses sources of data to confirm or refute assumptions	.81	
J4: Evaluates information to determine the elements that affect teaching and learning	.81	
RO4: Considers the implications of a decision before taking action	.81	
T4: Assists in the operational tasks of the team	.80	
RO2: Takes responsibility for improvement	.80	
SID8: Acknowledges and celebrates achievement and accomplishments	.79	
OA3: Develops action plans	.79	
S3: Voices disagreement without creating unnecessary conflict	.78	
RO5: Sees the big picture related to the mission of the school	.78	
J3: Avoids reaching quick conclusions with limited data	.78	
SID4: Sets clear measurable objectives	.77	
S2: Elicits perceptions, feelings, or concerns of others	.77	
OA4: Monitors progress and modifies plans as needed	.76	
S5: Communicates necessary	.76	

	Managerial Leadership	Communication
information to appropriate persons in a timely manner		
SID3: Encourages innovation to improve teaching and learning	.75	
DO1: Shares expertise gained through experience	.74	
S9: Responds in timely manner to others	.73	
J2: Exercises caution when dealing with unfamiliar issues and individuals	.72	
S7: Responds tactfully to others in emotionally stressful situations or in conflict	.71	
OA2: Monitors delegated responsibilities	.70	
SID2: Sets high performance expectations for self or others	.67	
DO5: Asks others for their perception of their professional development needs	.67	
SID1: Articulates a vision related to teaching and learning	.66	
DO6: Seeks agreement on specific actions to be taken for developmental growth	.64	
OA5: Establishes timelines, schedules, or milestones	.63	
S1: Interacts appropriately and tactfully with others	.58	
USW2: Recognizes and manages own developmental needs	.57	
USW1: Recognizes and communicates own strengths	.55	
USW3: Pursues personal growth through planned developmental activities	.52	
OA1: Delegates responsibilities to others	.51	
A6: Prepares for meetings	.46	
WC3: Expresses ideas clearly in writing		1.04
WC2: Demonstrates technical proficiency in writing		1.01
WC1: Writes concisely		.98
WC4: Writes appropriately for different audiences		.86
OC2: Speaks articulately		.72

	Managerial Leadership	Communication
OC3: Uses correct grammar		.70
OC7: Clearly presents thoughts and ideas in formal, large-group presentations		.61
OC4: Tailors messages to meet the needs of unique audiences		.59
OC1: Demonstrates effective presentation skills		.55
OC5: Clearly presents thoughts and ideas in one-on-one conversations		.55
OC6: Clearly presents thoughts and ideas with small groups		.55
Eigenvalues	43.88	2.82
% of variance	65.49	4.21

Note. N=339.

Table 13

Exploratory Factor Analysis Pattern Structure for the Assistant Principals

	Managerial Leadership	Written Communication, Intra- and Inter-personal Development
S2: Elicits perceptions, feelings, or concerns of others	.99	
T1: Supports the ideas of team members	.98	
S6: Expresses written, verbal, or non-verbal recognition of feelings, needs, or concerns of others	.96	
S8: Takes actions to divert unnecessary conflict	.94	
J9: Seeks to identify the cause of a problem	.94	
S7: Responds tactfully to others in emotionally stressful situations or in conflict	.93	
S4: Anticipates responses of others and acts to reduce negative impact	.92	
J10: Establishes relationships between issues and events	.91	
T2: Encourages team members to share	.91	

	Managerial Leadership	Written Communication, Intra- and Inter-personal Development
ideas		
T5: Seeks input from team members	.92	
S1: Interacts appropriately and tactfully with others	.89	
T6: Acts to maintain direction or focus to achieve the team's goals	.87	
SID5: Generates enthusiasm toward common goals	.87	
S5: Communicates necessary information to appropriate persons in a timely manner	.86	
S3: Voices disagreement without creating unnecessary conflict	.85	
T7: Seeks consensus among team members	.85	
RO5: Sees the big picture related to the mission of the school	.85	
S9: Responds in timely manner to others	.83	
J8: Asks follow-up questions to clarify information	.81	
RO1: Takes actions to move issues toward closure	.78	
T4: Assists in the operational tasks of the team	.76	
SID7: Clearly articulates expectations regarding the performance of others	.74	
J4: Evaluates information to determine the elements that affect teaching and learning	.73	
SID9: Seeks commitment to a course of action	.73	
RO4: Considers the implications of a decision before taking action	.72	
SID8: Acknowledges and celebrates achievement and accomplishments	.71	
OC4: Tailors messages to meet the needs of unique audiences	.71	
J3: Avoids reaching quick conclusions with limited data	.71	

	Managerial Leadership	Written Communication, Intra- and Inter-personal Development
T3: Contributes ideas toward reaching solutions	.68	
SID3: Encourages innovation to improve teaching and learning	.68	
J5: Communicates a clear learning-related rationale for each decision	.67	
RO3: Determines the criteria what indicate a problem or issue is solved	.67	
OC1: Demonstrates effective presentation skills	.65	
DO2: Motivates others to change behaviors that inhibit professional growth	.64	
SID4: Sets clear measurable objectives	.63	
J6: Seeks additional information	.62	
SID2: Sets high performance expectations for self or others	.62	
OC5: Clearly presents thoughts and ideas in one-on-one conversations	.62	
J7: Uses sources of data to confirm or refute assumptions	.61	
RO2: Takes responsibility for improvement	.60	
SID6: Develops alliances and resources outside the school to improve quality teaching and learning	.59	
DO4: Gives behaviorally-specific feedback	.58	
SID1: Articulates a vision related to teaching and learning	.58	
OC2: Speaks articulately	.54	
OC6: Clearly presents thoughts and ideas with small groups	.54	
OA7: Uses available resources effectively	.54	.42
J2: Exercises caution when dealing with unfamiliar issues and individuals	.53	
J1: Assigns priority to issues within the school's vision	.53	.40
OA4: Monitors progress and modifies	.51	.42

	Managerial Leadership	Written Communication, Intra- and Inter-personal Development
plans as needed		
OA3: Develops action plans	.48	.44
DO3: Recommends specific developmental activities	.46	.43
OC7: Clearly presents thoughts and ideas in formal, large-group presentations	.45	
OC3: Uses correct grammar	.40	
WC2: Demonstrates technical proficiency in writing		1.09
WC1: Writes concisely		1.04
WC3: Expresses ideas clearly in writing		1.02
WC4: Writes appropriately for different audiences		1.01
USW3: Pursues personal growth through planned developmental activities		.63
OA5: Establishes timelines, schedules, or milestones		.59
OA1: Delegates responsibilities to others		.58
OA2: Monitors delegated responsibilities		.57
DO5: Asks others for their perception of their professional development needs		.57
USW2: Recognizes and manages own developmental needs		.56
DO6: Seeks agreement on specific actions to be taken for developmental growth		.55
USW1: Recognizes and communicates own strengths		.53
OA6: Prepares for meetings	.44	.47
DO1: Shares expertise gained through experience	.41	.44
Eigenvalues	46.67	2.47
% of variance	69.66	3.68

Note. N=344.

Table 14

Factor Correlation within the Principal Sample

Factor	Managerial Leadership	Communication
1	1.00	
2	.74	1.000

Table 15

Factor Correlation within the Assistant Principal Sample

Factor	Managerial Leadership	Communication
1	1.00	
2	.80	1.000

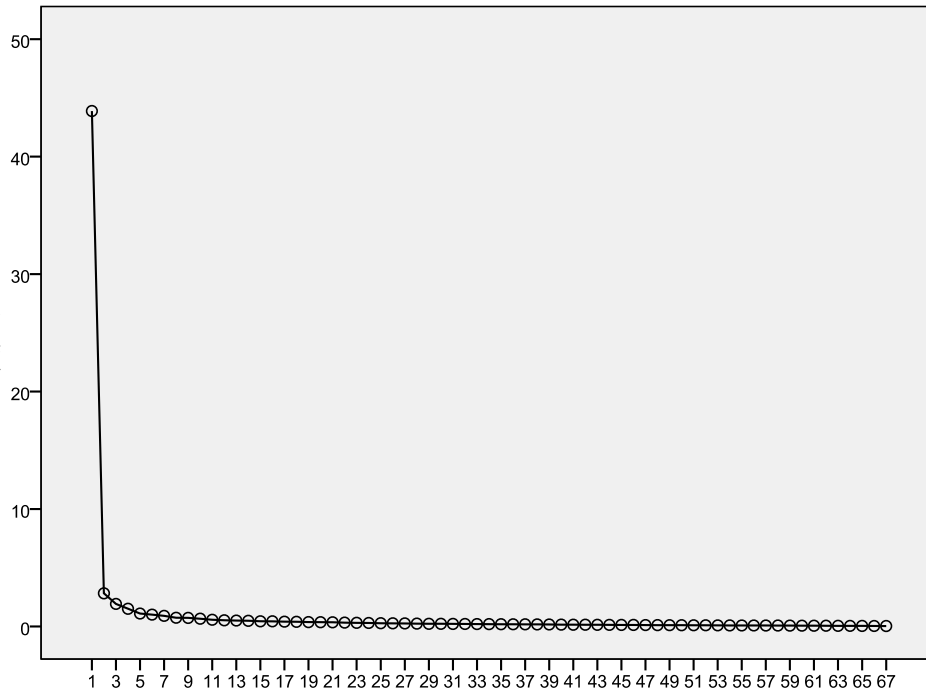


Figure 2. Scree plot derived from the principal sample

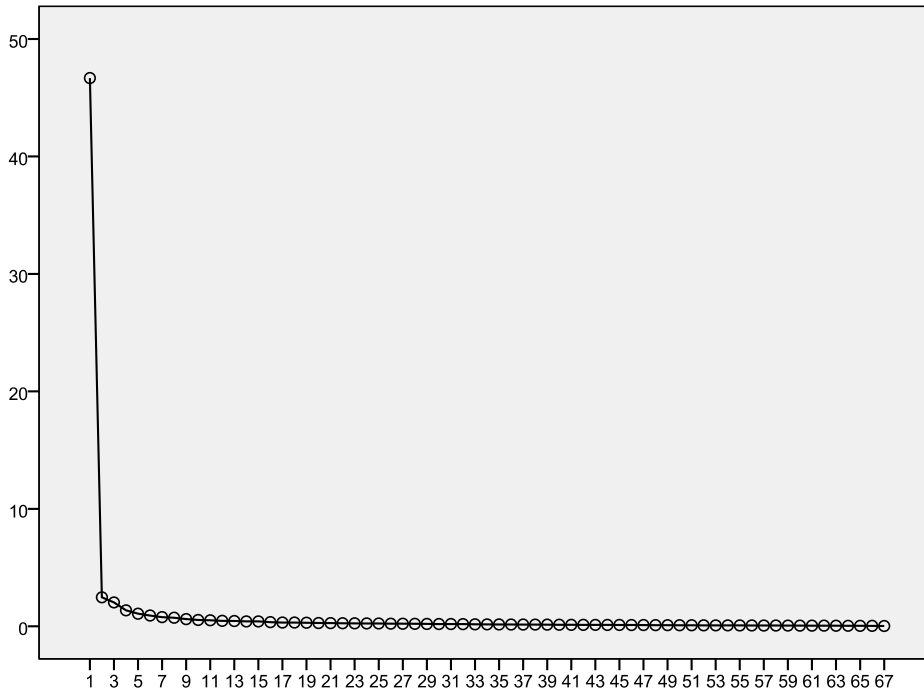


Figure 3. Scree plot derived from the assistant principal sample

Summary of Findings

Cronbach and Meehl (1995) argued that investigating the construct validity of a measure necessarily involves at least the following three steps: (1) articulating a set of theoretical concepts and their interrelations, (2) developing ways to measure the hypothetical constructs proposed by the theory, and (3) empirically testing the hypothesized relations among constructs and their observed manifestations. The literature review in the first section articulated the set of theoretical concepts and their interrelations. The method section described in detail how the hypothesized constructs were measured. The analysis and the subsequent report of results presented here demonstrated empirical evidence on the hypothesized relations among constructs and their observed indicators and provided answers to the key research questions raised in the first section.

The 10-factor structure. The confirmatory factor analysis conducted on both the principal ratings and assistant principal ratings respectively confirmed that the initially hypothesized 10-factor structure was the best-fitting model. A set of fit indices (e.g., chi-square/*df*, RMSEA, SRMR, CFI, TLI) representing varied aspects of model fit indicated the 10-factor model was adequate in reproducing the sample correlations among all observed indicators. All the factor loadings were statistically significant. Except for one indicator (OA1: Delegates responsibilities to others), the factor loadings were high ranging from 0.76 to 0.96 for the principals and 0.77 to 0.97 for the assistant principals. These high factor-loading estimates suggested that the indicators were strongly related to their purported latent constructs. This finding was consistent with the earlier job analysis of successful K-12 principals commissioned by NASSP. However, high correlations were also present among the majority of the factors. Out of the 10 factors, only Oral Communication and Written Communication demonstrated adequate distinctiveness.

Reliability of subscales. In terms of both Cronbach's alpha and composite reliability, the subscale items from the NASSP 21st Century School Administrator Skills instrument represented reliable indicators for their corresponding latent constructs. This was true for both the principal ratings and the assistant principals ratings. The values of Cronbach's alpha and composite reliability for each subscale were almost identical and over 0.90 for all subscales for both groups.

Convergent and discriminant validity. Using several statistics (e.g., CR, AVE, MSV, AVE) measuring the intercorrelations of indicators of theoretically similar or distinct constructs, the CFA analysis revealed that the subscales of the NASSP 21st Century School Administrator Skills had adequate convergent validity but unsatisfactory discriminant

validity. Out of the 10 dimensions, only three (Oral Communication, Written Communication, Understanding Own Strengths and Weaknesses) were demonstrated as distinctive constructs measuring principal performance. For assistant principals, only two dimensions (Written Communication, Understanding Own Strength and Weaknesses) were demonstrated distinct constructs. A follow-up exploratory factor analysis revealed that the overwhelming majority of the items (80% for assistant principal vs. 85% for principal) measured one single dimension of managerial skills of school leaders. In other words, the NASSP 21st Century School Administrator Skills instrument is best used to gauge the global managerial abilities of school leaders. Majority of the items represent a unidimensional construct instead of multiple distinctive constructs as originally articulated by NASSP.

CHAPTER FOUR

Discussion

Psychometric Properties of NASSP 21st Century School Administrator Skills

Research has consistently shown that school leadership makes a difference in students learning. Evaluating principals on the core behaviors affecting student achievement can be an important leverage point for raising leadership quality. Valid leadership evaluation requires accurate measurement of individual performance and sound psychometric development and reporting are essential to accuracy (Goldring et al., 2009a). Yet principals are often evaluated with the use of instruments with no theoretical background and little, if any, documented psychometric properties (Goldring et al.). The NASSP 21st Century School Administrator Skills instrument, a 360-degree assessment tool developed by NASSP and widely used in many school districts and programs across the United States, warrants a comprehensive examination of its psychometric properties. This is what the present study aimed to do.

Specifically, first, through a comprehensive literature review, the study established significant linkages between the leadership dimensions defined by NASSP and the broader knowledge base on effective leadership. Secondly, the study articulated specific processes and procedures NASSP used to measure target behaviors. Lastly, a detailed analysis of the instrument's construct validity provided empirical evidence on the validity and reliability of NASSP's 10-factor principal leadership model. Confirmatory factor analysis revealed adequate goodness of fit, which means that the originally hypothesized 10-factor congeneric model can be used to describe the relationships between the effective leadership dimensions and their manifest behaviors. Considering the extensive overlap between these 10 leadership dimensions and effective principal leadership behaviors, such as transformational and

instructional leadership, the 10 dimensions and their indicators can potentially serve as proxies to target leadership practices. These practices will, in turn, lead to improved teacher pedagogical practices, the cultivation of learning-centered school missions and goals, the development of collaborative professional culture and learning community among teachers, and authentic engagement of parents and the wider community, essential elements that help improve student achievement and close the learning gap (Leithwood et al., 2004; Lieberman et al., 1994; Louis et al., 1996; Marks & Printy, 2003; Shepperd, 1996).

Nevertheless, the adequate model fit and high reliability and convergent validity should not be used to compensate the instrument's severe lack of discriminant validity. The magnitude of correlations among the majority of the factors raises serious concerns in treating the 10 factors as distinctive constructs. Collapsing the highly correlated measures into a single construct, an approach recommended by scholars to achieve model parsimony and enhance model fit (Brown, 2006), failed to improve the model fit in this study. The modification indices generated by the CFA procedure pointed to a great number of cross-loaded items that had contributed to the poor discriminant validity. A follow-up exploratory factor analysis indicated that the NASSP instrument measured two leadership dimensions instead of 10 domains of school leadership as originally articulated by NASSP. Further, over 80% of its 67 behavioral indicators formed the first factor that measured global managerial leadership. It appears that the NASSP 21st Century School Administrator Skills instrument is best used as an assessment tool measuring general managerial skills of school leaders. This is not necessarily surprising considering that the instrument, as the literature review indicated, has a lack of attention to the academic core – curriculum and instructional programs. The instrument does not contain explicit, behavioral indicators that measure how effectively a school leader ensures

that a rigorous and coherent academic program is in place and how effectively a school leader helps improve the pedagogical capacity of instructional staff. Neither does the instrument include items that measure leaders' practices to build a system-wide accountability system. To help improve school leaders' instructional leadership capacity, the instrument needs enrichment in content coverage. It needs to incorporate behaviors specifically associated with leading curriculum and instruction and school-wide accountability system. Nevertheless, the lack of focus on instructional leadership behaviors should not mask the strength of this instrument in gauging managerial leadership practices that attend to the development of teacher leadership and collaboration. An effective assessment system should assess both *what* school leaders must do and *how* they go about it in order to improve student academic and social learning, the two dimensions of leadership behaviors both Goldring and colleagues (2009a) and Marks and Printy (2003) voiced in their seminal works.

Cronbach and Meehl (1995) argued the importance of looking into at least the following three aspects in the examination of construct validity of an instrument: (1) theoretical conceptualization of key constructs, (2) measurement of key constructs, and (3) empirical testing of the relationships between the hypothesized constructs and their observed variables. With its predominant emphasis on *how* school leaders lead themselves and the organization, the NASSP instrument's lack of discriminant validity may be due to its faulty conceptualization of school leadership at the first place. The delineation of leadership behaviors into ten dimensions made intuitive sense and might appeal to scholarly interest. However, in life and particularly on the job, leaders are found to exhibit multiple competencies simultaneously, an observation that Williams (2008) shared in her study of outstanding urban school leaders. In other words, one particular leadership behavior may demonstrate a leader's

mastery of multiple leadership competencies. This leads to significant complexity in both the conceptualization and the measurement of leadership. The presence of multiple conceptual frameworks on effective school leadership in the theoretical and empirical literature reflects the field's dilemma in its difficult pursuit of a universal definition of effective school leadership. For instance, the learning-centered leadership, created by a group of scholars who chartered the development of VAL-ED, delineates leadership behaviors into two dimensions – core components and key processes. Core components refer to six school characteristics that support teaching and learning – high standards for student learning, rigorous curriculum, quality instruction, culture of learning and professional behavior, connections to external communities, and systematic performance accountability. Key processes include planning, implementing, supporting, advocating, communicating, and monitoring. Key effective leadership behaviors are perceived as those practices that fall into the 36 intersecting cells of the core components and the key processes. Another influential conceptualization of effective leadership is developed by Waters, Marzano, and McNulty (2003). Under this framework, leadership behaviors are categorized into 21 dimensions (e.g., situational awareness, intellectual stimulation, change agent, etc.), each representing an individual factor in the context of empirical testing. Juxtaposing the NASSP's framework with these dominant conceptualizations, the NASSP's narrow focus on managerial competencies becomes apparent. Although a universal definition of effective instructional leadership is far in the horizon, reconciling the preeminent frameworks necessitates a broader and more holistic definition of school leadership characterized by multiple dimensions and functions of leadership behaviors associated with the management of the academic core, the management of the school and its

community, as well as transformational leadership practices aiming to develop collective commitment and a shared culture.

Recommendations for Instrument Design

Educational measurement experts suggest that the test development phase is the most basic and essential step in establishing validity (Porter, Polikoff, Goldring, Murphy, Elliot, & May, 2010). The first rightful phase of instrument development begins with a thorough examination of the research literature and creation of the conceptual framework (Porter et al.). Guided by the conceptual framework, content experts can begin item writing. The NASSP 21st Century School Administrator Skills instrument, whose development was based on clinical job analysis, could benefit from a comprehensive literature review of extant literature and principal leadership assessment tools. Then guided by the literature review, experts can examine the existing pool of items and write new ones if deemed necessary. The present study revealed the instrument's lack of attention to leadership behaviors associated with the leadership of the academic core – curriculum, instruction, assessment and accountability. New items need to be written to address the content coverage in this area.

Besides the potential problem with the conceptualization of key leadership constructs, the lack of discriminant validity of the NASSP instrument could be attributed to poor item performance. The indistinctiveness of the hypothesized constructs could be due to the way individual items were written. A panel of experts can gather to examine items for redundancy and appropriateness. Items should also be evaluated for appropriate grain size. In this way, items that are too global or too specific can be removed from the pool. Each item should also be evaluated against its explicit link to the core leadership behaviors under a defined theoretical construct. The rating scale should also be examined. The panel of experts should

decide whether the frequency of certain leadership behaviors enacted equalizes to the effectiveness of the very behavior by referring to the empirical literature and personal professional experience. Experts should also give attention to the likelihood of response set bias caused by positive phrasing of all items. The suggestions highlighted above can serve as the starting point for NASSP to adopt in improving the item construction and to build stronger instrument content validity. Also worthy of note is that the aforementioned item writing process is an iterative process involving engagement of multiple content and measurement experts.

Upon the completion of item construction, a series of studies should be initiated to evaluate the psychometric properties of the instrument. These include but are not limited to: (1) sorting study, (2) cognitive interviews, (3) item bias study, and (4) pilot testing. Note these studies are also most likely iterative. In summary, the examination and improvement of psychometric properties of tests is an ongoing process. The steps recommended here are only minimal steps in order to achieve quality test development.

Recommendations for Practice of Principal Leadership Assessment

As noted at the beginning of the study, in order to realize the potential of principal leadership assessment as the lever to improve both the individual and the organization, the principal assessment process should focus on driver behaviors that improve instruction and promote necessary school change, anchored in professional standards (e.g., ISLLC) and adopt reliable and valid instrumentation (Goldring et al., 2009b; Portin et al., 2006; The Wallace Foundation, 2009). This study in particular sheds lights on the importance of the empirical examination of psychometric properties that reveal the accuracy of the assessment instrument. Without a psychometrically sound instrument, a fair and accurate assessment of principal

leadership is unlikely. Therefore, quality principal assessment starts with a cautionary and critical examination of assessment tools. A quality assessment instrument should bear the following key characteristics. First, it should have a solid theoretical and empirical grounding that delineates a set of key leadership dimensions and their manifest behaviors. Secondly, the chosen assessment instrument should have documented empirical evidence on how the instrument was developed and whether the process substantiated the steps of test development recommended by educational measurement experts (Kane, 2006; Lissitz & Samuelson, 2007; Messick, 1989; Porter et al., 2010). Lastly, the chosen assessment instrument should have documented evidence on adequate construct validity, such as reliability, convergent validity and discriminant validity. Adoption of an instrument without the aforementioned attributes will result in inaccurate and unfair measurement of principal practices, which will not only prompt incorrect career decisions about salaries or promotions but also thwart the development of individuals and the culture of a learning organization.

Limitations of Study

The sample for this study was drawn from a single urban school district in the Northeast of the United States. This represents an issue related to the sample's representativeness as well as a possible source of systematic error.

The present study targeted only 22 schools and 54 principals and assistant principals. Although the study had a sample size large enough at the level of teacher ratings, the small size of supervisor (22 principals and 32 for assistant principals) and self-ratings (22 from principals and 32 from assistant principals) was not sufficient for a confirmatory factor analysis for the purpose of psychometric examination. Therefore, conclusions drawn regarding the factor patterns, scale reliability and validity cannot be readily transferred to the supervisor

ratings and administrator self-ratings. The insufficient sample size for the supervisor and self-ratings also prevented the use of multitrait-multimethod analysis, an elegant procedure capable of estimating convergent validity, discriminant validity, and method effects in the evaluation of the construct validity in the social and behavioral sciences.

Due to the scope of the study, the researchers did not pursue the factor invariance analyses that are often regarded as a natural extension of multiple groups CFA analysis. Instead, the present study only covered the first phase of a step-wise testing process – testing the CFA model separately in each group.

Confirmatory factor analysis was probably more appropriate in the context of the present study. However, if the sample size permitted, an exploratory factor analysis using a split sample, which was not possible due to the constraint of sample size for the current study, could have added substantial value because CFA was not capable of showing how well the items loaded on the non-hypothesized factors (Kelloway, 1995). This has critical implications considering the originally hypothesized 10-factor model has serious problems with discriminant validity. An EFA using an independent split sample would therefore help identify the sources of poor discriminant validity. More importantly, it can serve as a precursor to the subsequent confirmatory factor analysis and preliminary empirical techniques in defining subscales.

Recommendations for Future Research

A nationally representative sample will be ideal. A stratified random sample can be drawn using the following strata: (1) level of schooling (elementary, middle, or high school), (2) geographic distribution (Northeast, South, Midwest, and West), and (3) locale (urban,

suburban, or rural). The inclusion of these design features in the stratified sampling process will help eliminate systematic bias caused by particular school contexts.

In addition to a stratified representative national sample, more schools can be recruited for future studies so that parallel confirmatory factor analyses can be conducted with 360 ratings from teachers, supervisors, and leaders themselves. Because the minimum sample size is not invariant across studies but depends on multiple factors such as the level of communality of the variables and the level of overdetermination of the factors, researchers can consult MacCallum and colleagues' work for references in the determination of appropriate sample size (MacCallum, Widaman, Zhang, & Hong, 1999). Note a sufficient sample size from all three groups of raters will also make the MTMM analysis possible in estimating convergent validity, discriminant validity, and method effects.

Future studies can also further evaluate factor invariance across multiple groups, e.g., principals and assistant principals. A list of potential tests is as follows: (1) Test the CFA model separately in each group, a process pursued by the present study; (2) conduct the simultaneous test of equal form (identical factor structure); (3) test the equality of factor loadings; (4) test the equality of indicator intercepts; and (5) test the equality of indicator residual variances. It should be noted that prior to conducting the multiple-groups CFAs, it is important to ensure that the posited model is acceptable across both groups.

Lastly, if possible, future studies should recruit enough schools so that a split sample can be achieved and used for exploratory factor analysis and confirmatory factor analysis separately. This is recommended because it is a traditionally recommended procedure in scale development. Moreover, an EFA will help identify the sources of poor discriminant validity

revealed by the present study and provide a more appropriate model that is aligned with both the empirical evidence as well as extant theories.

Conclusion

In conclusion, this study provides support for the following findings regarding the NASSP 21st Century School Administrator Skills instrument: As an assessment instrument measuring principal and assistant principal performance, (a) The NASSP 10-factor model has adequate model fit and is the best fitting model in explaining the relationships between the observed variables and their underlying latent constructs; (b) the subscales for both groups have high reliability; (c) the subscales also have adequate convergent validity; however, (d) the instrument has poor discriminant validity as reflected by the high intercorrelations among the majority of the factors. However, caution is warranted in generalizing these results as the samples were drawn completely from a mid-sized urban school district and only teacher ratings were used for the psychometric examination of the instrument. Nevertheless, the analytical procedures used in the study provide adequate, comprehensive assessment of construct validity and are recommended for future research on construct validity examinations that are in urgent need in the field of educational leadership assessment.

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APPENDIX A

APLI: Leadership Skills Observer Assessment

1. 360 Degree Leadership Skills Assessment

This instrument is provided for you to give performance feedback to the individual who invited you to participate in this performance assessment. Your responses are confidential and will be combined with those of other observers in a way that assures your anonymity.

Instructions: To insure that your responses are recorded for the person who invited you, please respond to the questions below to indicate who invited you and provide some data about the source of your knowledge about this person. These responses will not be linked to the feedback you will provide on subsequent pages.

When you have responded to the questions below, Click "Next Page>>" to continue the assessment.

1. Please provide the requested information For the PERSON WHO INVITED YOU to provide performance feedback through this instrument.

Please do NOT enter your name anywhere on this instrument.

Last name of person for whom you are providing feedback

First name of person for whom you are providing feedback

Individual's School

Individual's District

2. Do you currently work at the same school as the individual whose performance you are rating?

- Yes
 No

3. How long have you worked with this individual?

- Less than 1 year
 1-2 years
 3-5 years
 More than 5 years

4. What is your role in relation to the individual that requested your feedback?

- This person reports to me.
 This person is my peer.
 I report to this person.

APLI: Leadership Skills Observer Assessment

2. Setting Instructional Direction -- Skill 1 of 10 Skills

The 9 items on this page are indicators of skill in Setting Instructional Direction, the first of ten skills you will rate.

Read each behavioral statement below the definition and rate the frequency with which you have observed each behavior for this person using a scale of 1 (almost never) to 5 (almost always). There are a total of 67 items. You must respond to every item. Your responses are completely confidential and you have total anonymity as a rater. Your responses will appear in aggregate with those of other colleagues.

We define Setting Instructional Direction as implementing strategies for improving teaching and learning including putting programs and improvement efforts into action; developing a vision and establishing clear goals; providing direction in achieving stated goals; encouraging others to contribute to goal achievement; securing commitment to a course of action from individuals and groups.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate, instead, how often you have observed the behavior in your interactions with the person.

1. This person articulates a clear vision for the school and its efforts related to teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person sets high performance expectations related to teaching and learning for self and for others.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person encourages innovation to improve teaching and successful learning for every student.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person sets measurable objectives for student academic success and effective instruction.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person generates enthusiasm and persuades others to work together to accomplish common goals for the success of every student.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APLI: Leadership Skills Observer Assessment

6. This person develops alliances and resources outside the school to improve the quality of teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. This person clearly articulates expectations regarding the performance of others as it relates to effective instruction and student success.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. This person acknowledges and celebrates the achievements and accomplishments of others in their efforts to ensure student success.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. This person seeks commitment of all involved to a specific course of action to improve student learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Teamwork -- Skill 2 of 10 Skills

The 7 items on this page are indicators of skill in Teamwork, the second of ten skills you will rate.

We define Teamwork as seeking and encouraging involvement of team members; modeling and encouraging the behaviors that move the group to task completion; supporting group accomplishment.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person supports the ideas and views offered by team members to resolve problems and improve learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person encourages others to share their ideas and opinions regarding improved teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APLI: Leadership Skills Observer Assessment

3. This person contributes his or her ideas and opinions toward reaching solutions and improving student success.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person assists in the operational tasks of the team.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person seeks input from team members regarding ideas to improve learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. This person assists the team in maintaining the direction needed to complete tasks.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. This person seeks to develop consensus among team members.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Sensitivity -- Skill 3 of 10 Skills

The 9 items on this page are indicators of skill in Sensitivity, the third of ten skills you will rate.

We define sensitivity as perceiving the needs and concerns of others; dealing tactfully with others in emotionally stressful situations or in conflict; knowing what information to communicate and to whom; appropriately relating to people of varying ethnic, cultural, and religious backgrounds.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person interacts appropriately and tactfully with people from different backgrounds.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person elicits perceptions, feelings, and concerns of others.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APLI: Leadership Skills Observer Assessment

3. This person voices disagreement without creating unnecessary conflict.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person anticipates responses of others and acts to reduce negative impact.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person communicates necessary information to the appropriate persons in a timely manner.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. This person expresses verbal and/or non-verbal recognition of feelings, needs, and concerns of others.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. This person responds tactfully to others in emotionally stressful situations or in conflict.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. This person takes action to divert unnecessary conflict.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. This person responds in a timely manner to others who initiate contact with him or her.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Judgment -- Skill 4 of 10 Skills

The 10 items on this page are indicators of skill in Judgment, the fourth of ten skills you will rate.

We define judgment as reaching logical conclusions and making high quality decisions based on available information; assigning appropriate priority to significant issues; exercising appropriate caution in making decisions and in taking action; seeking out relevant data, facts and impressions; analyzing and interpreting complex information.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

APLI: Leadership Skills Observer Assessment

1. This person assigns priority to issues and tasks within the school's vision for teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person exercises caution when dealing with unfamiliar issues and individuals.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person avoids reaching quick conclusions and making decisions with limited data.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person evaluates information to determine the elements that affect teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person communicates a clear learning-related rationale for each decision.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. This person seeks additional information about issues and events relevant to the school and its mission.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. This person uses relevant sources for data and information to confirm or refute assumptions.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. This person asks follow-up questions to clarify information.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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9. This person seeks to identify the causes of problems.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. This person establishes relationships between issues and events.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Results Orientation -- Skill 5 of 10 Skills

The 5 items on this page are indicators of skill in Results Orientation, the fifth of ten skills you will rate.

We define Results Orientation as assuming responsibility; recognizing when a decision is required; taking prompt action as issues emerge; resolving short-term issues while balancing them against long-term objectives.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person takes action to move issues toward closure in a timely manner.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person takes responsibility for implementing initiatives to improve teaching and learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person determines criteria that indicate a problem or issue is resolved.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person considers the long-term and short-term implications of a decision on teaching and learning before taking action.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person sees the big picture related to student learning as the mission of the school.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Organizational Ability -- Skill 6 of 10

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The 7 items on this page are indicators of skill in Organizational Ability, the sixth of ten skills you will rate.

We define Organizational Ability as planning and scheduling one's own and the work of others so that resources are used appropriately; scheduling flow of activities; establishing procedures to monitor projects; practicing time and task management; knowing what to delegate and to whom.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person delegates responsibility to others.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

2. This person monitors the progress and completion of delegated responsibilities.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

3. This person develops action plans to achieve goals related to student learning.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

4. This person monitors progress and modifies plans or actions as needed.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

5. This person establishes timelines, schedules, and milestones.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

6. This person prepares effectively for meetings.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

7. This person uses available resources effectively to accomplish the student learning goals of the school.

	1 almost never	2	3	4	5 almost always
I observe this person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging in this behavior:					

8. Oral Communication -- Skill 7 of 10 Skills

APLI: Leadership Skills Observer Assessment

The 7 items on this page are indicators of skill in Oral Communication, the seventh of ten skills you will rate.

We define Oral Communication as clearly communicating when speaking to individuals, small groups, and large groups; making oral presentations that are clear and easy to understand.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person demonstrates effective presentation skills, e.g., opening and closing comments, eye contact, enthusiasm, confidence, rapport, use of visual aids.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person speaks articulately.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person uses correct grammar.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person tailors messages to meet the needs of each unique audience.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person clearly presents thoughts and ideas in one-on-one conversations.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. This person clearly presents thoughts and ideas in communication with small groups.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. This person clearly presents thoughts and ideas in formal, large-group presentations.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Written Communication -- Skill 8 of 10 Skills

APLI: Leadership Skills Observer Assessment

The 4 items on this page are indicators of skill in Written Communication, the eighth of ten skills you will rate.

We define Written Communication as expressing ideas clearly in writing; demonstrating technical proficiency; writing appropriately for different audiences.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person writes concisely.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. This person demonstrates technical proficiency in writing.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person expresses ideas clearly in writing.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person writes appropriately for each of the different audiences in the school community.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Developing Others -- Skill 9 of 10 Skills

The 6 items on this page are indicators of skill in Developing Others, the ninth of ten skills you will rate.

We define Development of Others as helping others grow professionally through teaching and coaching; providing specific feedback and developmental suggestions based on observations and data.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person shares information and expertise from his or her professional experiences to assist the professional growth of others.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APLI: Leadership Skills Observer Assessment

2. This person motivates others to change behaviors that inhibit their professional growth and student learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person suggests specific developmental activities to improve others' professional capacity to contribute to student learning.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This person gives behaviorally-specific feedback focusing on behaviors, not the person.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This person asks a protégé what he/she perceives to be strengths and weaknesses and what he/she wants to improve.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. This person seeks agreement on specific actions to be taken by a protégé for his/her development and growth.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Understanding Own Strengths and Weaknesses -- Skill 10 of 10 Skills

The 3 items on this page are indicators of skill in Understanding One's Own Strengths and Weaknesses, the tenth of ten skills you will rate.

We define Understanding Own Strengths and Weaknesses as identifying personal strengths and weaknesses; taking responsibility for self improvement by actively pursuing developmental activities; striving for continuous learning.

For each indicator, please rate how often you have observed the person who requested your feedback engage in the behavior described. Do not rate the person's ability to perform the behavior. Rate how often you have observed the behavior in your interactions with the person.

1. This person recognizes and appropriately communicates his or her own strengths.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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2. This person recognizes and manages his or her own developmental needs.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This person actively pursues personal growth through participation in planned developmental activities.

	1 almost never	2	3	4	5 almost always
I observe this person engaging in this behavior:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have completed the observer assessment of skills for 21st Century School Leaders. When all observers have completed their assessments NASSP will generate a report and send it to the person who requested your feedback.

Your responses are completely confidential and you have total anonymity.

Thank you for providing your colleague feedback for this professional growth activity. Click below to submit your ratings and close this page.

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VITA

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CURRENT AFFILIATION

Research Associate
Institute for Schools and Society
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Analyst and Dissertation Mentor
Right Angle Educators

EDUCATION

- Ed.D.** **Lehigh University**, Bethlehem, PA
Educational Leadership, *September, 2013*
- M.S.** **Lehigh University**, Bethlehem, PA
Instructional Design and Development, 2003
- B.A.** **University of International Relations**, Beijing China
English Language and Literature, 1994

AREAS OF INTEREST

- Leadership preparation and development
- Principal evaluation
- Program evaluation
- School climate
- Sociocultural context of education and education policy

DISSERTATION

Title: *Effective school leadership competencies: A psychometric study of the NASSP 21st Century School Administrator Skills instrument*

Committee: George White, Roland Yoshida, Floyd Beachum, and
Girija Kaimal

Timeline: Dissertation Defense: July 8, 2013

RESEARCH EXPERIENCE

Institute for Schools and Society June 2012 – present

Research Associate

- Program evaluator for [Allentown Principal Leadership Initiative](#);
- Co-lead for the evaluation study of Temple’s NSF Noyce Scholarship program in recruiting and developing high-quality STEM teachers;
- Grant writing

Center for Developing Urban Educational Leaders Sept. 2009 – May 2012

Research assistant

- Grant writing
- Research on:
 - o Aspiring principal mentoring;
 - o Urban leadership preparation and development; and
 - o Community school

PROFESSIONAL EXPERIENCE

Adjunct Professor, College of Education, Lehigh University
Spring 2011

Instructional Designer, Distance Education, Lehigh University
Jan. 2003 – June 2009

English Instructor, Public School 67, Beijing China
June 1994 – July 2000

GRANTS, ASSISTANTSHIPS & AWARDS

- United States Department of Education School Leadership Program (CFDA: 84.363A). Allentown Principal Leadership Initiative (2010 – 2015), \$3,000,500. [Note: Main author - Wrote this grant as final assignment for the grant writing class]
- Commonwealth of Kentucky DoE Virtual Mandarin Chinese Project (2010 – 2011), \$10,000.

- The Impact of Theater Inspired Professional Development on Teacher Effectiveness and Student Outcomes – Co-PI for a teacher professional development research grant *submitted* to the Spencer Foundation; Main author (Not funded)

PUBICATIONS in PRINT

- **Huang, T.**, Beachum, F. D., White, G., Kaimal, G., FitzGerald, A. M., & Reed, P. (2012). Preparing urban school leaders: What works? *Planning and Changing*, spring/summer.
- **Huang, T.**, & Wiseman, A. (2011). *The Impact and Transformation of Educational Policy in China*. Volume 16 in the International Perspectives on Education and Society Series (Bingley, UK: Emerald Publishing).
- **Huang, T.**, & Wiseman, A. (2011). Leadership Preparation and Development in the People's Republic of China: The Landscape of Empirical Evidence on School Leadership Preparation. In Huang, T., & Wiseman, A. (Eds.), *The Impact and Transformation of Educational Policy in China*. Volume 16 in the International Perspectives on Education and Society Series (Bingley, UK: Emerald Publishing).
- Wiseman, A., **Huang, T.** (2011). The Development of Comparative Education Research on Chinese Educational Policy Reform: An Introduction. In Huang, T., & Wiseman, A. (Eds.), *The Impact and Transformation of Educational Policy in China*. Volume 16 in the International Perspectives on Education and Society Series (Bingley, UK: Emerald Publishing).
- Beachum, F. D., McCray, C. R., & **Huang, T.** (2010). Administrators and Teachers Sharing Leadership: Utilizing C.A.R.E. in Urban Schools. *Making Connections: Interdisciplinary Approaches to Cultural Diversity*.

ARTICLES SUBMITTED

- **Huang, T.**, Caskie, G. I. L., White, G., Beachum, F., & McCray, C. (upcoming). School climate, student behavioral and academic Outcomes: An SEM Analysis of the TIMSS Top Five. *Journal of Educational Administration*.

ARTICLES READY TO BE SUBMITTED

- **Huang, T.**, Beachum, F., & White, G. School climate, student behavioral and academic Outcomes: An SEM Analysis of the TIMSS U.S. data. For submission to *Educational Policy*.

- **Huang, T.**, Kaimal, G., White, G., & Reed, P. Gender, stage of professional development, and leadership performance. For submission to *Journal of School Leadership*.
- Yoshida, R. K., **Huang, T.**, Cox, D., Mott, T., & Lowe, J. C. Who's known and what's important in forming a school reputation. For submission to *International Journal of Educational Management*.

PRESENTATIONS AT SCHOLARLY MEETINGS

- **Huang, T.** (2012). *Learning to Lead: Innovative Leadership Preparation Practices That Work – and How We Know They Do*. Co-panelist at a panel discussion at the University Council for Educational Administration Conference in Denver, CO.
- **Huang, T.**, White, G., Beachum, F., & McCray, C. (2012). School climate, student behavioral and academic Outcomes: An SEM Analysis of the TIMSS Top Five. Paper presented at the annual conference of the American Educational Research Association, Vancouver, BC.
- **Huang, T.**, Beachum, F. D., White, G., Kaimal, G., & FitzGerald, A. M. (2011, November). *Preparing Urban School Leaders: What Works?* A paper presentation at the University Council for Educational Administration Conference in Petersburg, PA.
- **Huang, T.**, Beachum, F., & White, G. (2011, April). *School Climate and Student Behavioral and Academic Outcomes: An Analysis of U.S. Trends in International Mathematics and Science Study (TIMSS) Data Using Structural Equation Modeling*. Paper presented at the annual conference of the American Educational Research Association, New Orleans, LA.
- **Huang, T.**, & White, G. (2010, October). *Developing a Mentoring Internship Model for Urban School Leadership: Using Legitimate Peripheral Participation*. Paper presented at the Third Annual Conference on Mentoring, Albuquerque, NM.
- Barber, M. E., & **Huang, T.** (2008, November). *Leadership Preparation and Development in the People's Republic of China: The Landscape of Empirical Evidence on Preparation and Its Outcomes*. Paper presented at the Annual Convention of University Council of Educational Administration, Orlando, FL.
- Barber, M. E., & **Huang, T.** (2007, August). *Across a Cultural Divide: Leveraging Research-Based Practice for the Preparation of Effective School Leaders*. Paper presented at the International Conference on Educational Leadership, Beijing, China.

PROGRAM EVALUATION REPORTS

- Kaimal, G., Gonzaga, A., & **Huang, T.** (2012). *Evaluation of the Allentown Principal Leadership Initiative (APLI)*. Philadelphia, PA: Institute for Schools and Society, Temple University.
- **Huang, T.**, & Kaimal, G. (2013). *Evaluation of the Temple Noyce Teacher Scholars (TNT) project*. Philadelphia, PA: Institute for Schools and Society, Temple University.

HONORS

- David L. Clark National Graduate Student Research Scholar, University Council for Educational Administration (2010)
- English Language Teaching Excellence Award, Haidian School District, Beijing China (1998)

PROFESSIONAL SERVICE

Reviewer for referred professional journals

- *Journal of Educational Administration*
- *Journal of School Leadership*
- *The Urban Review*
- *Educational Management Administration and Leadership*
- *Making Connections: Interdisciplinary Approaches to Cultural Diversity*.

OTHER INVITED PRESENTATIONS

- Huang, T. (2011, May). Finding Funding for NGOs in a Challenging Global Economy. United Nations Department of Public Information Non-Governmental Organizations Communications Workshop, New York.

COMPETENCIES

- Chinese
- Expertise in SPSS, Amos, SAS, Mplus
- Grant writing
- Experience in the manipulation and analysis of large scale data (e.g., TIMSS)