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Relationship Among Essential Leadership Preparation Practices and Leader, School, and Student Outcomes in K-8 Schools[1]

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Abstract

A questionnaire was administered to school principals (*N*=88). The questionnaire data, along with student data, were analyzed using hierarchical multiple regression to investigate the relationships among leadership preparation practices, self rated leader behavior, the school learning environment, and student achievement. After controlling for demographic variables, the amount of variance explained was incremented a statistically significant degree between: preparation practices and leader behaviors ($\Delta R^2 = 5\%$); preparation practices and student achievement ($\Delta R^2 = 5\%$); preparation practices and leaders' instructional knowledge ($\Delta R^2 = 6\%$); and leaders' instructional knowledge and instructional practices in schools ($\Delta R^2 = 5\%$).

Introduction

Research indicates that there are relationships between what school leaders do (leadership behaviors) and the school learning environment (Hallinger & Heck, 1998) and student achievement (Waters, Marzano, & McNulty, 2003). Further, research suggests that there is a connection between specific leadership preparation practices and leader behavior (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007). These findings suggest that leadership preparation programs have a role to play in readying effective leaders to guide school communities through the challenging, modern educational landscape (Davis, Darling-Hammond, LaPoint, & Meyerson, 2005; Leithwood, Seashore Louis, Anderson, & Wahlstrom, 2004). However, despite efforts to incorporate new practices into existing leadership preparation

programs (Murphy, 1999a), many in the field continue to criticize the quality of current preparation programs as inadequate to prepare leaders for today's schools (Davis et al.; Elmore, 2006, 2006a; Jackson & Kelly, 2002; Levine, 2005). These concerns contribute to a shortage of willing and qualified school leaders (Roza, Celio, Harvey, & Wishon, 2003).

In responding to the shortage of qualified candidates, many leadership preparation programs have developed and utilized specific practices that are referred to and further described in this study as *essential* (often identified in the literatures as alternative (Murphy, 1993, 1999), innovative (Jackson & Kelly, 2002; U.S. Department of Education (USDOE), 2004), and exemplary (Darling-Hammond et al., 2007) practices. While there is agreement around the essential preparation practices (Davis et al., 2005), more research is needed on the relationships among essential practices and outcomes for school leaders, the school learning environment and student achievement (Smylie, Bennett, Konkol, & Fendt, 2005).

To add to the research, quantitative survey research was used in this first phase of a mixed-method study to investigate the relationships among essential leadership preparation practices, leader behavior, the school learning environment, and student achievement. Data were collected through a questionnaire distributed to Rhode Island elementary and middle school principals and through school and student achievement data obtained from state databases. The qualitative second phase of the study explored a deeper understanding of the practices of preparation programs and school leaders' self reported behaviors (Braun, Gable, Kite, 2011).

Literature and Framework

Changing School Context and Leader Roles

Changing contexts for schools. The context that schools operate within is undergoing tremendous change due to a myriad of forces. As Darling-Hammond (2010) asserts, these forces

have great implications for the United States. As we move further into the 21st century toward a knowledge-based economy, the need for students to develop advanced skills and knowledge continues to grow. In the U.S., undereducated individuals have a greatly diminished ability to join the labor market. The lack of access is felt unequally amongst racial groups in the U.S., due to structural inequalities in place in public education. Access to resources, including high quality teachers, and high stakes assessment practices are large contributors to the structural inequities that maintain the unequal opportunity and outcomes among racial groups. Ultimately, because underserved (i.e. African American, Hispanic, and Native American) racial groups are not being given equal access to high quality education, the achievement of students from these underserved backgrounds is far lower than that of students from European American and Asian backgrounds. This trend threatens the economic viability of the country because students from underserved groups are increasing in number throughout the U.S. (Darling-Hammond).

Schools, leaders, and student achievement. While the political, social, and economic contexts that schools in the U.S. operate within have a dramatic impact on student achievement, the correlation of school-level practices to student achievement cannot be underestimated (Marzano, 2003). Further, though teacher quality and other factors play an immense role in this relationship (Darling-Hammond, 2010; Marzano), research has shown that a school leader also plays an integral role in influencing the school learning environment (Hallinger & Heck, 1998; Hallinger, Blickman, & Davis, 1996) and student achievement (Waters et al., 2003). In light of the need for reform facing schools nationwide, it is important to identify leader behaviors that can help guide schools through the change process. The Waters et al. study found seven distinct leader behaviors and responsibilities that are correlated with deep levels of change and reform for student achievement (intellectual stimulation of faculty and staff; change agent; monitor and

evaluate practice; operate with ideas and beliefs; knowledgeable of curriculum, instruction, and assessment; flexibility; and optimizer).

To meet the goal of high levels of achievement for all students, the role of school leaders must shift with everything else that is influencing schools (i.e., the economy, demographics). Many in the field advocate that a major part of such as shift should be for school leader's to primarily focused on improving instruction for schools to provide equitable experiences that open up access to successful pathways for all students (Bottoms & O'Neill, 2001; Brown, 2005; Elmore, 1999, 2006a; Fink & Resnick, 2001; Lambert, 2005; Murphy, 2002).

Shifting role of school leaders. In the last 30 years, principals have been called on to be instructional leaders, by focusing on teaching and learning, and transformational leaders, by focusing on changing their schools by empowering teachers as partners in decision making to reform the school (Marks & Printy, 2003). Recent findings suggest that neither of these conceptions of leadership is enough to impact student achievement, rather it is a combination of a transformational role and a *shared* instructional role that can impact school and student performance (Marks & Printy). This notion represents a turning point in the conceptualization of the role of school leaders in moving from a centrist (Pitre & Smith, 2004) view of the principal to one in which the role is to guide the distribution of leadership (Elmore, 1999) among stakeholders.

The new focus re-situates the role of school leaders closer to the classroom (Brown, 2005) for the purpose of improving instructional quality and student performance collaboratively with the school community (Elmore, 2006a). Knowing that the focus on instructional leadership has been expected of school leaders for a long time, it would be expected that school leaders today engage in a high degree of instructional leadership. Unfortunately, this is not so (Elmore, 1999).

Analysis of a national survey in the U.S. found that school leaders engage in management-related activities far more than often than they do in providing instructional leadership (Archer, 2004). Many constraints contribute to this reality.

School leadership has increased in complexity over the years to a point of role overload (Brown, 2005) as leaders are called on to lead enormously complex organizations (Archer, 2004; Brown; Pitre & Smith, 2005). Further, leaders face constraints such as those posed by lack of autonomy in guiding their schools due to the district locus of decision-making (Elmore, 1999) and those posed by collective bargaining agreements (Resnick & Glennan, 2002). Amidst these challenges, school leaders also face cultural resistance to changing their roles and reforming their schools due to the inertia of past practice. The reasons for the resistance are myriad: schools and teachers still operate in a high degree of isolation which makes a culture of collaboration difficult (Elmore); past leader roles are steeped in hierarchical structures of positional authority which have been deeply engrained in school communities' conception of a leader (Brown); and increased accountability demands for results put pressure on leaders to attend to short-term management solutions rather than long-term, collaborative growth solutions (Hargreaves, 2005).

Paradoxically, the implementation of the new conception of a school leader as a facilitator and capacity-builder to enable shared instructional leadership throughout the school would mitigate some of the constraints above. For example, distributed leadership reduces role overload. Also, shared instructional leadership builds ownership and empowerment over the change process, therefore, building support throughout the educational community for more school-level autonomy (Brown, 2005; Elmore, 2006a). So, what else can explain why leaders are not embracing a new role? A large body of research suggests they do not feel prepared by pre-

service preparation programs or professional development to enact the new role described above (Archer, 2004; Brown; Elmore).

Preparing Effective Leaders

In light of the vital and complicated role principals play in helping schools and students prepare for the new challenges they face, the notion of a shortage of effective principals is a serious concern. With 40% of school principals in the U.S. eligible for retirement soon (USDOE, 2004), a new crop of effective leaders to take the helm is needed. Even without this potential future shortage, schools are faced with the difficult task of finding quality leaders. Current research indicates that the quality of available candidates for school leadership vacancies is a more serious problem than the quantity of candidates (Roza et al., 2003). Developing school leaders who are able to adapt their practice and lead effectively in a changing school context has never been more important (Lashway, 2003; Levine, 2005) to enable all students access to the labor market (Darling-Hammond, 2010). Unfortunately, the university-based programs that prepare 88% of school leaders (Levine) have not kept up with the changing world (Brown, 2005; Levine). A majority (89%) of participants of conventional, university-based programs claim that the programs failed to prepare them for the rigors of real practice (Levine).

There is a large degree of variation in leadership preparation programs and the way they are categorized in different studies (Davis et al., 2005; Levine, 2005; Murphy, 1999; USDOE, 2004). For consistency, conventional leadership preparation programs in this study are defined as university-based programs that utilize the standard program structure, content, and delivery that most programs have been engaged in for decades. Likewise, preparation programs, whether they are university-based or not, that have implemented a high degree of *essential preparation*

practices (described subsequently) will be referred to as *alternative* leadership preparation programs.

In contrast to the data on conventional programs, program participants often report that the practices employed by alternative preparation programs were effective in helping them to feel prepared for their role as school leaders (Darling-Hammond et al., 2007; Milstein & Krueger, 1997; Southern Regional Educational Board (SREB), 2005). Also, once in a leadership position, participants of alternative programs report engaging in a high degree of leadership practices that are associated with effective leadership (Milstein & Krueger; LaPoint, Meyerson, & Darling-Hammond, 2005). The retention and placement rate of leaders trained in alternative programs is also much higher than those trained in conventional programs (USDOE, 2004; LaPoint et al.).

Many alternative preparation programs implement a high degree of *essential preparation practices* (Darling-Hammond et al., 2007). However, many conventional preparation programs have also begun to implement these essential practices (Murphy, 1999a). Table 1 describes three literature-based categories of essential preparation practices (structural, content, and delivery) that have received a high degree of support in the literature as essential for programs to implement to prepare highly skilled school leaders. The **structural** category includes organizational policy, partnerships, and conditions that preparation programs can implement. The practices in the **content** category represent the curricular focus of preparation programs. The final category, **delivery**, includes pedagogical practices employed by preparation programs. While there is widespread agreement on the importance of the essential practices (Davis et al., 2005), there is a paucity of research that links these promising practices to leader, school and student outcomes (Murphy & Vriesrenga, 2006; Smylie et al., 2005).

Table 1

Essential School Leader Preparation Practices and Supporting Literature

Practices	Supporting Research and Reviews of Literature
Structural	
• Partnerships between universities and districts	Darling-Hammond et al., 2007; Jackson & Kelly, 2002; Milstein & Krueger, 1997; Murphy, 1993, 1999, 1999a; Orr, 2006; SREB, 2006; USDOE, 2004
• Program developers' commitment	Darling-Hammond et al., 2007; USDOE, 2004
• Rigorous entrance requirements for strong and diverse candidates	Bredeson, 1996; Darling-Hammond et al., 2007; Hart & Pounder, 1999; Jackson & Kelly, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Milstein & Krueger, 1997; Murphy, 1993, 1999a, 2006; Orr, 2006; SREB, 2006; USDOE, 2004
• Financial support and release time for participants	Darling-Hammond et al., 2007; Leithwood & Jantzi, 1996; Milstein & Krueger, 1997; SREB, 2006
• Supportive district and state infrastructure	Darling-Hammond et al., 2007; Orr, 2006; SREB, 2006
• Program monitoring for improvement	Lauder, 2000; Leithwood & Jantzi, 1996; Milstein & Krueger, 1997; Murphy, 1999a; Orr, 2006; SREB, 2006; USDOE, 2004

Table 1 Continued

Essential School Leader Preparation Practices and Supporting Literature

Content	
• Standards-based content	Darling-Hammond et al., 2007; Jackson & Kelly, 2002; Lauder, 2000; Orr, 2006; SREB, 2006; USDOE, 2004
• Coherent and relevant curriculum	Darling-Hammond et al., 2007; Jackson & Kelly, 2002; Milstein & Krueger, 1997; Orr, 2006; SREB, 2006; USDOE, 2003
• Individualized content	Jackson & Kelly, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Murphy, 1993
• Focus on shared instructional leadership	Elmore, 1999; Jackson & Kelly, 2002; LaPoint et al., 2005; Leithwood & Jantzi; 1996; McCarthy, 1999; Murphy, 1999a, 1999b; Orr, 2006; SREB, 2006
• Focus on school reform and/or social justice	Jackson & Kelly, 2002; LaPoint et al., 2005; Leithwood & Jantzi, 1996; McCarthy, 1999; Murphy, 1999, 1999a; Orr, 2006; SREB, 2006
Delivery	
• High quality internship	Bredeson, 1999; Darling-Hammond et al., 2007; Hart & Pounder, 1999; Jackson & Kelly, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Leithwood et al., 2004; Milstein & Krueger, 1997; Murphy, 1993, 1999a, 2006; SREB, 2006; USDOE, 2004

Table 1 Continued

Essential School Leader Preparation Practices and Supporting Literature

• Problem-based learning	Darling-Hammond et al., 2007; Hart & Pounder, 1999; Jackson & Kelly, 2002; Kelly & Jackson, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Leithwood et al., 2004; McCarthy, 1999; Murphy, 1993, 1999, 1999a; Orr, 2006; SREB, 2006
• Mentoring or coaching	Darling-Hammond et al., 2007; Jackson & Kelly, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Milstein & Krueger, 1997; Murphy, 1993; SREB, 2006
• Cohort structure	Darling-Hammond et al., 2007; Hart & Pounder, 1999; Jackson & Kelly, 2002; Leithwood & Jantzi, 1996; McCarthy, 1999; Milstein & Krueger, 1997; Murphy, 1999a; USDOE, 2004
• Habit of Reflection	Davis et al., 2005; LaPoint et al., 2005; Lauder, 2000; Leithwood & Jantzi, 1996; Milstein & Krueger, 1997; Murphy, 1999a; SREB, 2006
• Performance assessments	Hart & Pounder, 1999; Jackson & Kelly, 2002; Lauder, 2000; Leithwood & Jantzi, 1996; Murphy, 1999a; Orr, 2006; SREB, 2006; USDOE, 2004

Need for Research on Preparation Practices and Programs

Though the body of research on leadership preparation programs and practices has grown in the last three decades (Murphy & Vriesenga, 2006), the majority of studies lack empirical support and strong theoretical background (Smylie et al., 2005). Many studies describe the structural, content, and delivery practices of leadership preparation programs (Davis et al., 2005; USDOE, 2004), yet fail to link these variables to outcomes such as leadership behavior, the school learning environment, and student achievement (Darling-Hammond et al., 2007; Murphy & Vriesrenga; Smylie et al.). Decision-makers need this information to prioritize the inclusion of essential practices in preparation programs that have the greatest relationship with effective leader behavior, improvement in the school learning environment, and an increase in student achievement (Davis et al.).

In an attempt to add to the research on the relationship between leadership preparation practices and leader behavior, the school learning environment, and student achievement, this study used the conceptual framework depicted in Figure 1 to guide an inquiry into an overarching research question: *To what extent and in what manner is there a relationship between leadership preparation practices, leader behavior, the school learning environment, and student achievement?* The organization of the framework was influenced by Hallinger et al. (1996); Leithwood et al. (2004); Pitner (1988); Riehl & Firestone (2005). Each box in Figure 1 describes a variable investigated in the study. The arrows represent (a) the literature that supports the relationships between the variables in the study and (b) a relationship that was investigated in the study through the following sub-questions: After controlling for school and leader demographic variables (see bottom row of Figure 1), to what extent and in what manner can the variation in:

a. leader behavior for deep change be explained by the variation in essential leadership preparation practices?
b. improvement in the school learning environment be explained by the variation in essential leadership preparation practices?
c. the school learning environment be explained by variation in leader behavior for deep change and the variation in essential leadership preparation practices?
d. student achievement be explained by the variation in essential leadership preparation practices?
e. student achievement be explained by variation in leader behavior for deep change, the variation in the school learning environment, and the variation in essential leadership preparation practices?

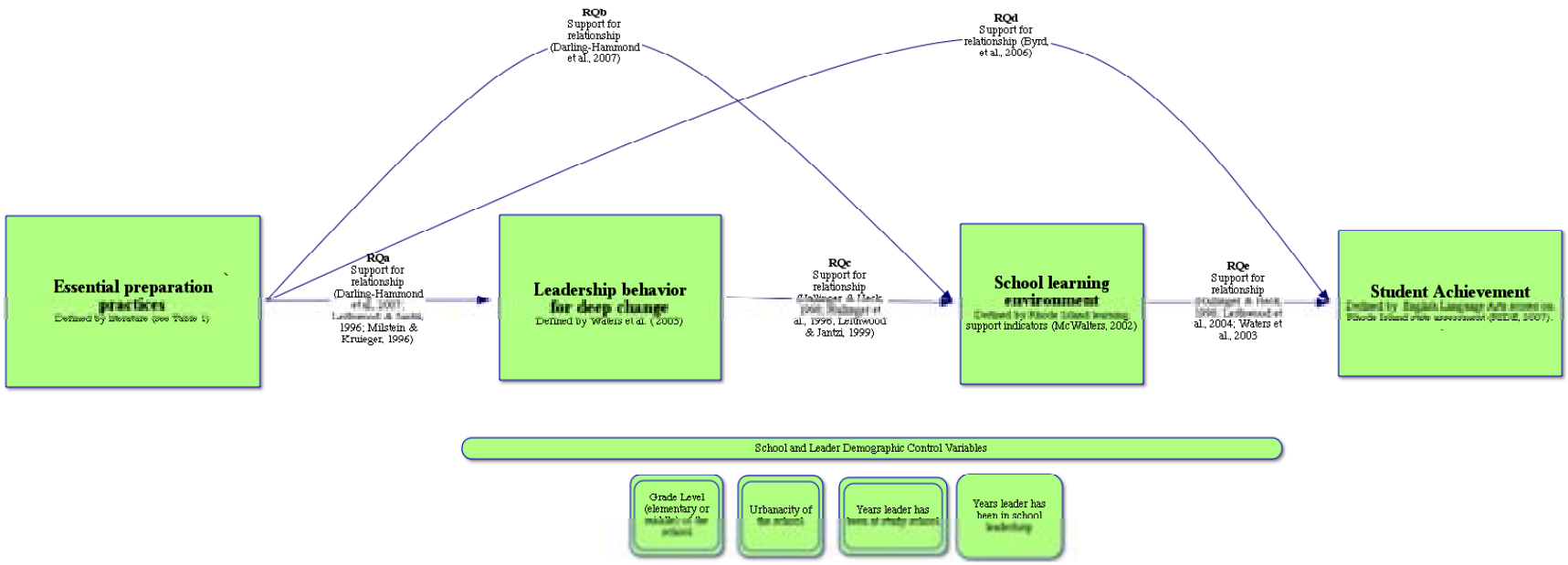

Figure 1. Conceptual Framework.

Methodology

Sample

The total number of principals practicing in Rhode Island is small (*N* = 341) and the number of kindergarten through eighth (K-8) grade principals is even smaller (*N*=273) (Rhode Island Department of Education (RIDE), 2006). Therefore, a census of the target population, defined as K-8 leaders practicing as principals at the same Rhode Island public school during the 2004/05, 2005/06 and 2006/07 school years (*N*=140) (Gariepy, 2004, 2005, 2006), were invited to participate in the study. Of those principals mailed questionnaires, 63% (*N*=88) completed and returned them to the researchers.

Data Collection and Descriptive Analysis

Two sources were used to collect data, a questionnaire and a state educational database. The questionnaire collected data on two of the studies main variables, preparation practices and leader behavior, and a set of control variables related to leader demographics. The state educational database was used to collect data on the other two main variables, the school learning environment and student achievement, as well as a set of control variables related to school demographics. Data collection, as well as the descriptive analyses used to organize the data for use in the hierarchical regression analyses, is described next.

Instrumentation. The *School Leadership Preparation* (see Figure 2 at end of article) questionnaire was developed to collect data on the following variables: (a) essential leadership preparation practices (11 items), (b) self rated leadership behaviors for deep change (28 items), (c) professional development experiences, (d) the number of years a respondent has been practicing as a school leader, and (e) the number of years respondents were a leader in the school they lead during the 2004-2007 school years.

Permission was obtained to use and adapt items from the Darling-Hammond et al. (2007) *School Leadership Study* questionnaire to measure the essential leadership preparation practices. Though three categories of essential preparation practices (structural, content, and delivery) were defined in Table 1, only the content and delivery categories were included in the questionnaire due to the difficulty in ascertaining structural characteristics of preparation programs through a questionnaire to principals. Therefore, 11 items were included to measure the literature-based content practices (see descriptive analysis of the five items in Table 2) and delivery practices (see descriptive analysis of the 6 items in Table 3).

Table 2

Descriptive Statistics: Content Preparation Practices Items

Content Items	*N*	*M*	*SD*
My leadership preparation learning experiences:			
emphasized how to lead for instructional improvement (item 3d)	80	2.68	.12
emphasized how to lead to improve the school and student achievement. (item 3e)	80	2.60	.11
engaged me in problem-based learning. (item 3f)	80	2.83	.12
were aligned to standards of practice. (item 3a)	70	2.86	.15
covered all areas I needed to be successful in first years of leadership. (item 3b)	80	2.89	.11
were adapted to meet my individual needs. (item 3c)	80	2.69	.13

Note. Scale associated with all items was 1 = Not at all, 2 = A little, 3 = A moderate extent, 4 = A great extent.

Table 3

Descriptive Statistics: Delivery Preparation Practice Items

Delivery Items	*N*	*M*	*SD*
My leadership preparation learning experiences:			
provided me with an excellent mentor. (item 3g)	79	2.51	.14
involved me in a cohort of learners. (item 3h)	80	2.50	.15
required me to reflect on my practice and analyze how to improve it. (item 3i)	80	2.95	.12
required me to complete performance assessments of my skill development and leadership competencies. (item 3j)	80	2.60	.14
required me to complete an internship that was an excellent learning experience for becoming a principal. (item 3k)	79	2.41	.15

Note. Scale associated with all items was 1 = Not at all, 2 = A little, 3 = A moderate extent, 4 = A great extent.

To assess the perceived leader behaviors for deep change, 28 questionnaire items were adapted from Marzano, Waters, & McNulty (2005) with permission from Mid-Continent Research for Education and Leadership. The Marzano et al. study identified 21 leadership behaviors that were divided into two categories: Seven behaviors were associated with leading for deep change and 14 behaviors were associated with leading for incremental change. Marzano et al. assert that many of the challenges schools are facing today require leaders to be proficient in the seven behaviors associated with leading for deep change. The 28 self rated leader behavior items in the *School Leadership Preparation* questionnaire represented four items for each of the seven leadership behaviors that Marzano et al. identified as associated with leading to deep change in schools (see Table 4).

Table 4

Descriptive Statistics: Leadership Behavior Sets

		Mean	
Leader Behavior Sets	*N*	*M*	*SD*
All Leader Behaviors (items 5a-5bb)	81	3.54	.04
Literature-derived sets of items			
Knowledge of Curriculum	81	3.57	.05
Change Agent	81	3.53	.05
Optimizer	81	3.68	.04
Ideals and Beliefs	81	3.75	.04
Monitoring & Evaluation	81	3.46	.05
Flexibility	81	3.54	.04
Intellectual Stimulation	81	3.28	.06

Note. Scale associated with all items was 1 = Not at all, 2 = A little, 3 = A moderate extent, 4 = A great extent.

Finally, to examine content validity by assuring the survey items represented the literature-derived constructs, the instrument underwent content reviews by seven professionals: a director of a leader preparation program, a central office administrator, a director of a professional association for principals, and four school administrators. As described below, factor analysis and alpha reliability calculations confirmed the data from *School Leadership Preparation* questionnaire that were appropriate to use for the analyses.

Deriving leadership preparation variables. Though the *School Leadership Preparation* items that represented the leader preparation practices included questions regarding two types of preparation practices, content and delivery (see Tables 2 and 3), an exploratory factor analysis revealed that all the preparation practice items together represented only one dimension where

the reliability of the data was .95. Therefore, the regression analyses used an average of all the preparation items in the analyses represented by the variable name, a*ll preparation items*.

Deriving leader behavior variables. An exploratory factor analysis of the 28 items that represented the seven leadership behaviors (Table 4) for deep change according to Marzano et al. (2005) was also conducted; the entire set of 28 items represented one dimension, referred to in the analyses as, a*ll leader behaviors* (α = .94). Further, the data from the items that represented five of the seven leadership behaviors for deep change had adequate reliabilities to also use as distinct dimensions in the analyses. The five dimensions included: (a) knowledge of curriculum, instruction, and assessment (α = .81); (b) change agent (α = .79); (c) ideals and beliefs (α = .79); (d) monitoring and evaluation (α = .84); and (e) intellectual stimulation (α = .81).

Professional development variables. The set of six items on the *School Leadership Questionnaire* that represented the professional development practices experienced by school leaders were also analyzed with an exploratory factor analysis. Unfortunately, although two dimensions were identified, the data from the two sets of items were not reliable (α = .60) and; therefore, the variable, professional development, was not used in the analyses.

Leader demographic variables. The two control variables that represented the leader demographic variables were: (a) the number of years respondents were a leader in the school they lead during the 2004-2007 school years, and (b) the number of years a respondent had been practicing as a school leader. Data were collected through the use of open-ended questions on the *School Leadership Preparation* questionnaire. Approximately, half the respondents in the study had been a principal in the school they lead during the 2004/05 – 2006/07 for five years or less; the other half for six or more years. Similarly, about half of the respondents had been practicing as a school leader for 10 or less years and the other half had been in school leadership for 11 or

more years. The variables are represented in the analyses in Tables 5 - 8, Block 2 as *years as principal in study school* and *years in school leadership.*

Collecting school and student data. Rhode Island Department of Education databases (RIDE, 2007) were used to collect data on the school learning environment and student achievement variables, and the control variables described subsequently. The student achievement data were represented by the mean of the index proficiency scores for all students in a school on the English Language Arts (ELA) New England Common Assessment Program 2006/2007 exams (RIDE). The school learning environment data were represented by three Learning Support Indicators (LSIs) compiled through a state-sponsored survey for each school in the study for the 2006/07 school year: (a) *instructional practices*; (b) *parental engagement*; and (c) *school climate* (National Center on Public Education and Social Policy (NCPESP), 2007; NCPESP, 2007a). The LSIs were compiled through a Rhode Island Department of Education accountability initiative and computed by aggregating items from state-sponsored questionnaires completed by staff, students, and parents in Rhode Island public schools (McWalters, 2002).

School demographic control variables. The following school demographic control variable data were collected through state databases (RIDE, 2007): (a) grade-level of school, (b) percent of students with high poverty status, (c) percent of minority students, and (d) the urbanacity of school. A trial regression analysis, using the data from the three control variables, urbanacity of school, percent of students with high poverty status, and percent of minority students, revealed a high degree of multicollinearity between the three variables. Due to the high correlation, it was determined to use the variable, urbanacity, as a proxy for all three variables. The urbanacity of a school was defined as the degree to which the school was categorized by Rhode Island Department of Education as residing in an urban district. There were three

categories: suburban (coded as 1), urban ring (coded as 2) and urban (coded as 3). There were more schools from suburban (*N* = 42%) and urban ring (*N* = 37%) districts in the target population and in the questionnaire respondents (suburban, *N* = 45%; urban ring, *N* = 35%) than in the urban core districts (*N* = 21% in the target population, *N* = 19% in the respondents).

The data for the variable, grade level of school, were categorized into elementary (coded as 0) and middle school (coded as 1). There were more elementary schools (*N* = 80%.) than middle schools (*N* = 20%) represented in the target population and more elementary schools (*N* = 83%) than middle schools (*N* = 17%) represented in the questionnaire respondents. Both school demographic variables, *urbanacity* and *grade level*, are represented in the analyses in Tables 5 – 8, Block 1.

Data Analysis

Descriptive statistics were compiled for the variables (see Tables 2-5) to allow an analysis of the degree to which the data appropriately met the assumptions of hierarchical regression regarding skewness and kurtosis. Further, standardized residual scatterplots were examined for degrees of homoscedasticity and linearity. Finally, to address another assumption, multicollinearity, a Pearson correlation was computed for each variable against every other variable used in the regression analyses. For each pair of variables with a correlation above .5, it was determined that those two variables would not be used as independent variables in the same regression analysis. Once the best way to represent the data was determined, a series of hierarchical regression analyses were performed to answer the overarching and sub-research questions.

Results

The results of the hierarchical regression analyses revealed four noteworthy findings. The first finding is presented in Table 5. The sets of school demographic (i.e., Block 1) and leader demographic (i.e., Block 2) variables were entered into the regression equation as separate blocks of predictors. In this manner, these two sets of demographic variables served as control variables so that the addition of the preparation practices variable in explaining variation in leader behavior could be analyzed. After controlling for the sets of demographic variables, the set of essential preparation practices measured through the *School Leadership Questionnaire* (mean of 11 items) accounted for a significant increase in the amount of variation ($\Delta R^2 = 5\%$, $F=4.28$, $p<.05$) explained in the set of self rated leader behaviors for deep change (mean of 28 items) (see Table 5, Block 3). These findings support results of two national-level studies by Darling-Hammond et al. (2007) and Leithwood and Jantzi (1996) regarding the relationship between the essential preparation practices employed by many alternative certification preparation programs and leader behavior.

Table 5

Hierarchical Regression Analysis: Demographic and Preparation Practices Predicting the Mean of All Leader Behavior Items

Variable	R	R^2	ΔR^2	ΔF	β
Block 1: School Demographic	.24	.06	.06	2.37	
Urbanacity					-.20
Grade level					.00
Block 2: Leader Demographic	.26	.07	.01	.29	
Years as principal in study school					-.09

Years in school leadership					.19
Block 3: Preparation Practices	.34	.12	.05	4.28*	
All preparation items					.25*

Note. N = 80

*p < .05.

Another notable finding was that, after controlling for demographic variables, the set of all 11 essential preparation practices accounted for significant increase (ΔR^2 = 5%, F=7.63, p<.05) in the amount of variation explained in student achievement measured by mean English Language Arts (ELA) scores on the state assessment (see Table 6, Block 3). Though it was expected that the learning environment variables would account for a significant degree of variation in ELA scores, the preparation practices accounted for a higher of degree of increased variation than anticipated. Linking preparation practices to student achievement is an area in the literature that has been described as a challenging gap (Smylie et al., 2005) and a major impetus for this study. However, a study of the degree to which the type of superintendent preparation program explained significant variance in the district-wide student achievement found that the type of preparation explained 10% of the variance in achievement (Byrd, Slater, & Brooks, 2006). Finally, though the variation in the self rated leader behaviors (Table 3, Block 4) did not contribute significantly to incrementing the amount of variation explained in ELA scores, two school learning environment variables, instructional practices and school climate (Table 6, Block 5), did significantly increase the amount of variation explained in the ELA scores (ΔR^2 = 5%, F=3.58, p<.05).

Table 6

Hierarchical Regression Analysis: Demographic, Preparation Practice, Leader Behavior, and Learning Environment Variables Predicting Schoolwide ELA Scores

Variable	R	R^2	ΔR^2	ΔF	β
Block 1: School Demographic	.66	.43	.43	58.91*	
Urbanacity					-.67*
Block 2: Leader Demographic	.67	.45	.02	1.22	
Years as principal in study school					.14
Years in school leadership					.05
Block 3: Preparation Practices	.70	.50	.05	7.63*	
All preparation items					.29*
Block 4: Leader Behaviors	.71	.50	.01	.91	
All leader behaviors					-.07
Block 5: Learning Environment	.74	.55	.05	3.58*	
Instructional practices LSI					-.11
School climate LSI					.24

Note. N = 81. The variable, Grade level and Parent engagement LSI were removed from the regression because of a high degree of multicollinearity with the variable, School climate LSI 06/07.

*$p < .05$

The other two noteworthy findings emerged from regression analyses that investigated the five leader behaviors that were determined to be appropriate to use in analyses as distinct dimensions, rather than in a dimension that represented the whole set of leadership behaviors, as was used in the analyses represented in Table 5 and Table 6. The self rated leader behavior dimension, *knowledge of curriculum, instruction, and assessment* (the mean of 4 questionnaire items), was found to have a significant relationship with the set of 11 essential preparation practices. Specifically, after controlling for the demographic variables, the variation in essential preparation practices accounted for a significant increase in the amount of variation ($\Delta R^2 = 6\%$, F=5.09, p<.05) explained in the self rated leader behavior dimension *knowledge of curriculum, instruction, and assessment* (Table 7, Block 3). This finding corroborates with those of Darling-Hammond et al. (2007) that linked essential preparation practices to increased knowledge of curriculum, instruction and assessment.

Table 7

Hierarchical Regression Analysis: Demographic and Preparation Practices Predicting the Mean of the Leader Behavior Dimension: Knowledge of Curriculum, Instruction, and Assessment

Variable	R	R^2	ΔR^2	ΔF	β
Block 1: School Demographic	.21	.04	.04	1.68	
Urbanacity					-.16
Grade level					.01
Block 2: Leader Demographic	.21	.04	.00	.01	
Years as principal in study school					-.02
Years in school leadership					.11
Block 3: Preparation Practices	.32	.10	.06	5.09*	

All preparation items	.28*

Note. N = 80.

*p < .05.

Finally, after controlling for the demographic variables, the variation in self rated leader behavior dimension, *knowledge of curriculum, instruction, and assessment*, accounted for a significant increase in the amount of variation (ΔR^2 = 5%, F=3.87, p<.05) explained in the school learning environment indicator *instructional practices* (Table 8, Block 4). These findings support the body of research that has shown that significant indirect relationships are observable through a path of influence from leaders' practice to variables related to the school learning environment, including teacher quality and instruction (Hallinger & Heck, 1998; Hallinger et al., 1996).

Table 8

Hierarchical Regression Analysis: Demographic, Preparation Practice, and Leader Behavior Variables Predicting Learning Support Indicator: Instructional Practices 06/07

Variable	R	R^2	ΔR^2	ΔF	β
Block 1: School Demographic	.38	.15	.15	5.78*	
Urbanacity					-.13
Grade level					-.37*
Block 2: Leader Demographic	.44	.19	.04	1.79	
Years as principal in study school					.20
Years in school leadership					-.06
Block 3: Preparation Practices	.47	.22	.03	2.48	
All preparation items					.11

Block 4: Leader Behaviors	.51	.26	.05	3.87*	
Leader Behavior: Knowledge of curriculum, instruction, and assessment					.23*

Note. $N = 75$.

*$p < .05$.

Implications

The relationships among the variables represented in the conceptual framework (Figure 1) were supported by the findings of this study. As such, a positive and significant relationship was found among the essential leader preparation practices, self rated leader behavior, the school learning environment, and student achievement. Notably, after controlling for demographic variables, the literature-derived essential leader preparation practices accounted for a significant increase in the amount of variation explained in both leader behavior and student achievement, as defined in the study.

For Research

Several suggestions for future research emerged from the findings and the limitations of the study. First, future research that attempts to investigate the outcomes of preparation practices on student achievement should find ways to conceive of student achievement as growth in achievement by subgroups of students and/or as the closing of the gaps in achievement by subgroups of students. This study attempted to measure achievement in this way, but was unable to do so because looking at data from one year to the next did not provide a long enough time frame to measure growth. Though conceiving of student achievement as growth or as the

decrease of gaps between subgroups is quite challenging, it is essential in light of the new role of schools and leaders – to bring all students to high levels of achievement.

A limitation of the study due to the sample size was the use of multiple regression analysis, rather than a more powerful analysis. If this study could be conducted on a larger scale, the use of causal modeling could better detect the complicated web of relationships between preparation practices and the outcomes for leaders, schools, and students.

Another suggestion for future research is to adapt the measurement of the leader behavior items in the study to strengthen the results. The relatively high self-ratings by respondents on many of the leader behavior items lead to three suggestions in subsequent studies: (a) use questionnaire items that represent both leader behaviors for deep change *as well as* items that measure leader behavior for incremental change to better differentiate reported leader behaviors; (b) revise the leader behavior questionnaire items to better reflect concrete leader behaviors and (c) send a similar questionnaire to faculty members in leaders' schools.

Further, research is needed that investigates the extent or quality of the essential preparation practices, especially those that are difficult to implement because they are so costly (e.g., internships, mentor relationships). Finally, the role of professional development after an aspiring leader obtains certification and a position as a school leader is another important area for future study.

For Practice

The relationships identified among leadership preparation practices and the outcomes in leader behavior, the school learning environment and student achievement in the study build support for the further inclusion of the identified essential preparation practices into leader

preparation programs to assist aspiring principals to strengthen their leadership behavior, improve the school learning environment, and contribute to increases in student achievement.

Further, the relationships revealed among the essential preparation practices; principals' knowledge of curriculum, instruction and assessment; and schools' instructional practices, suggest that the essential preparation practices may play an important role in developing instructional leaders for schools. The literature has shown significant agreement as to the importance of a principal's role involving high degrees of instructional leadership (Bottoms & O'Neill, 2001; Brown, 2005; Elmore, 1999, 2006a; Fink & Resnick, 2001; Lambert, 2005; Murphy, 2002) to lead schools through the improvement and change called for in the modern educational context. For this reason, the results of this study support the further implementation of essential practices in preparation programs to strengthen instructional leadership in schools.

School Leadership Preparation Questionnaire

Section 1: Leadership Preparation Experiences

1. Before assuming a position in school leadership, I experienced an internship that was:

o Full time o Part time o No internship (skip to question #3)

2. My internship lasted for: o 1-2 months o 3-4 months o 5-7 months o 8+ months

3. To what extent do the following statements describe your pre-service leadership preparation learning experiences (e.g. courses, internships, workshops)? Circle only one appropriate number using this scale:

Not at all	A little	A moderate extent	A great extent
1	2	3	4

My leadership preparation learning experiences:					Don't Know
a. were aligned with standards of practice (e.g. the ISLLC standards).	1	2	3	4	o
b. covered all areas I needed to be successful in my first years of leadership.	1	2	3	4	o
c. were adapted to meet my individual needs.	1	2	3	4	o
d. emphasized how to lead for instructional improvement.	1	2	3	4	o
e. emphasized how to lead to improve the school and student achievement.	1	2	3	4	o
f. engaged me in problem-based learning (e.g. action research, case studies).	1	2	3	4	o
g. provided me with an excellent mentor.	1	2	3	4	o
h. involved me in a group or cohort of learners.	1	2	3	4	o
i. required me to reflect on my practice and analyze how to improve it.	1	2	3	4	o
j. required me to complete performance assessments of my skill development and leadership competencies (e.g. portfolio, presentations).	1	2	3	4	o
k. required me to complete an internship that was an excellent learning experience for becoming a principal.	1	2	3	4	o

4. In the last *two* years, *how many times* have you participated in the following kinds of professional development? Please circle your responses below.

a. Individual university courses related to your role as principal	0	1-2	3-4	5+
b. Met or interacted with a mentor or coach as part of a formal arrangement	0	1-2	3-4	5+
c. Participated in a study group, book club, and/or Critical Friends Group	0	1-2	3-4	5+
d. Participated in meetings/activities of a principal network	0	1-2	3-4	5+
e. Attended workshops, conferences, or trainings	0	1-2	3-4	5+
f. Read professional books or articles	0	1-2	3-4	5+

Section 2: Leadership Behavior
Circle the most appropriate number using the scale below.

Not at all	A little	A moderate extent	A great extent
1	2	3	4

5. To what extent do the following statements characterize you or the school you were at during the *2004/05, 2005/06, and 2006/07 school year*?

a.	I am very knowledgeable about effective instructional practices.	*1*	*2*	*3*	*4*
b.	I consciously try to challenge the status quo to get teachers to think about changing their practice.	*1*	*2*	*3*	*4*
c.	I try to inspire teachers to accomplish things that might seem beyond their grasp.	*1*	*2*	*3*	*4*
d.	Teachers are aware of my beliefs and vision regarding teaching and learning.	*1*	*2*	*3*	*4*
e.	I continually monitor the effectiveness of our curriculum.	*1*	*2*	*3*	*4*
f.	I attempt to make major changes in how things are done.	*1*	*2*	*3*	*4*
g.	I stay informed of the current research and theory regarding effective schooling.	*1*	*2*	*3*	*4*
h.	In my school, we regularly consider new and better ways of doing things.	*1*	*2*	*3*	*4*
i.	I am very knowledgeable about curricular issues.	*1*	*2*	*3*	*4*
j.	I initiate changes that require people to re-examine their beliefs and values.	*1*	*2*	*3*	*4*
k.	I always portray a positive attitude about our ability to accomplish important initiatives.	*1*	*2*	*3*	*4*
l.	I continually monitor the effectiveness of our instruction practices.	*1*	*2*	*3*	*4*
m.	I encourage people to express opinions that are contrary to my own.	*1*	*2*	*3*	*4*
n.	I continually expose teachers to current ideas about how to be effective.	*1*	*2*	*3*	*4*
o.	I can be highly directive or nondirective as the situation warrants.	*1*	*2*	*3*	*4*
p.	I am very knowledgeable about effective classroom assessment practices.	*1*	*2*	*3*	*4*
q.	I try to be the driving force behind major initiatives.	*1*	*2*	*3*	*4*
r.	I have a well-defined vision and beliefs about schools, teaching, and learning.	*1*	*2*	*3*	*4*
s.	I continually monitor the effectiveness of my school's assessment practices.	*1*	*2*	*3*	*4*
t.	I adapt my leadership style to the specific needs of a given situation.	*1*	*2*	*3*	*4*
u.	In my school, we regularly have discussions about current research and	*1*	*2*	*3*	*4*

5. To what extent do the following statements characterize you or the school you were at during the *2004/05, 2005/06, and 2006/07 school year*?

	theory.				
v.	I provide guidance for teachers regarding effective classroom practice.	***1***	***2***	***3***	***4***
w.	In my school, we are consistently challenging ourselves to stretch and grow our practice beyond where we are currently comfortable.	***1***	***2***	***3***	***4***
x.	I believe that we can accomplish just about anything if we are willing to work hard enough and if we believe in ourselves.	***1***	***2***	***3***	***4***
y.	I have explicitly communicated my beliefs and vision to teachers.	***1***	***2***	***3***	***4***
z.	At any given time, I can accurately determine how effective our school is in terms of enhancing student learning.	***1***	***2***	***3***	***4***
aa.	In my school, we regularly read articles and books about effective practices.	***1***	***2***	***3***	***4***
bb.	My behavior is consistent with my ideals and beliefs regarding schools, teachers, and learning.	***1***	***2***	***3***	***4***

(The above items were used by permission of McREL, derived from Marzano, Waters, McNulty, 2005)

Section 3: Demographics

a. Your Name: _____

b. Name of school you were a principal in during 2004/05, 05/06, 06/07: _____

_____

c. Number of years as principal in this school: _____

d. Number of total years in school leadership, including other administrative positions: _____

Thank you for completing this survey, your input is incredibly valuable.

Figure 2. School Leadership Preparation instrument.

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