Confirming a Middle Grades Leadership Model and Instrument

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Abstract

The purpose of this replication study was to confirm a model of middle grades principal leadership, Developmentally Responsive Middle Level Leadership (DRMLL), proposed by Brown and Anfara (2002) through the validation of the *Middle Level Leadership Questionnaire* (MLLQ), which was developed by Anfara, Roney, Smarkola, DuCette, and Gross (2006) to measure DRMLL. In this study, the principal form of the MLLQ was administered to middle grades principals in the State of Georgia. A factor analysis indicated the constructs of the principal form of the MLLQ support DRMLL, providing further confirmation of this model of leadership. However, the results of this study indicate principal responses and constructs may differ from those of teachers. The principal form of the MLLQ may provide an effective research tool to examine how antecedents, such as professional development, affect principal practice and how principal practice affects mediating factors to student achievement, such as teacher efficacy.

Introduction

The replication of research studies is fundamental to developing a body of knowledge that supports theoretical constructs and effectively informs practice. However, as Hough (2003) noted in his examination of middle grades research, "One finding we stumbled upon serendipitously (or fortuitously) was that virtually no middle level education studies were replications of prior efforts" (p. 6). As illuminated by the Hough study, principal leadership is an area of middle grades literature in need of replication studies. Researchers and middle grades proponents have touted the importance of the principal in supporting student learning (Jackson & Davis, 2000; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Marzano, Waters, & McNulty, 2005; National Association of Secondary School Principals, 2006). Leithwood and colleagues (2004) suggested, "Leadership is second only to classroom instruction among all school-related factors that contribute to what students learn in school" (p. 5).

Replicating studies of middle grades principal leadership is difficult because of the dearth of studies that specifically examine middle grades principalship (Brown & Anfara, 2002; Sweetland & Hoy, 2000). Particularly lacking are studies focusing on leadership practices that middle grades advocates purport as supportive of effective middle grades teaching, learning, and organizational structures (Brown & Anfara, 2002; Valentine, Clark, Hackmannn, & Petzko, 2002; Valentine, Clark, Hackmann, & Petzko, 2004). While general principal leadership research and models of effective practice are foundational to effective principal leadership, this body of literature often fails to account for the uniqueness of school context. General school leadership literature asserts school context is important (Hoy & Miskel, 2001; Moos, Krejsler, & Kofod, 2008), particularly as it relates to school climate and culture (Deal & Peterson, 1999; Hoy & Hannum, 1997; Sweetland & Hoy, 2000). Models of general school leadership, however, provide little guidance in the contextual difference in leadership at various levels of school configuration. Brown and Anfara (2002) and Anfara, Roney, Smarkola, DuCette, and Gross (2006) proposed a model of leadership— Developmentally Responsive Middle Level Leadership (DRMLL)—that addresses principal leadership in the middle grades. This model incorporated student, teacher, and organizational components to meet the contextual uniqueness of schools that serve young adolescents, ages 10–14. The initial research that formed the foundation for DRMLL led to the design of an instrument, the *Middle Level Leadership Questionnaire* (MLLQ). Anfara and associates (2006) developed the instrument to examine principal practice at the middle grades level. To date, validation studies of DRMLL as a model and MLLQ as an assessment instrument have not been conducted. The purpose of this study was to validate the MLLQ as an instrument of middle grades principal practices and thus support DRMLL as a model of middle grades leadership.

Foundations of Middle Grades Leadership

The underlying assumption of DRMLL is that effective leadership in the middle grades supports the tenets, structures, and practices that advocates suggest positively affect the learning of young adolescents (Anfara, Andrews, Hough, Mertens, Mizelle, & White, 2003; Brown & Anfara, 2002; Caskey, Andrews, Bishop, Capraro, Roe, & Weiss, 2010; Clark & Clark, 2002; Hough, 2003). According to middle grades education advocates, effective principals should support the general tenets of middle grades education through democratic involvement of the

school and community by developing relationships; providing a safe and healthy environment; and ensuring that curriculum and instruction are rigorous, relevant, challenging, integrative, and exploratory (Anfara et al., 2003; Carnegie Council on Adolescent Development, 1989; Jackson & Davis, 2000; National Forum to Accelerate Middle-Grades Reform, 2004; National Middle School Association, 1995, 2010). Middle grades organizations also suggest that exemplary principals support specific structures and practices to achieve the aims of schools educating young adolescents (Anfara et al., 2003; National Middle School Association, 2010). The structures of exemplary middle grades schools include grade configuration, heterogeneous class groupings, interdisciplinary team organization (teaming), flexible/block scheduling, exploratory curriculum, and advisory groups (Anfara et al., 2003; George & Alexander, 2003; Jackson & Davis, 2000; Kellough & Kellough, 2003; National Middle School Association, 2001, 2003, 2010; Wheelock, 1992).

Several instruments have been developed for the middle grades school context to understand leadership and teacher practices (Hoy, Sabo, Barnes, Hannum, & Hoffman, 1998; Middle Level Leadership Center, 2009b). These instruments, however, are primarily based on general leadership models with some adaptation. Three leadership models undergird these instruments and are congruent with exemplary middle grades education principles— shared/ participatory leadership, instructional leadership, and transformational leadership (Anfara, Brown, Mills, Hartman, & Mahar, 2000; Brown & Anfara, 2002; Clark & Clark, 2000; Hoy & Hannum, 1997; Roney, et al., 2004; Scribner, Cockrell, Cockrell, & Valentine, 1999). While similarities exist among the models, the key assumptions and foci vary.

Shared/participatory leadership is a school leadership model that advocates for the participation of teachers, sharing of decisions, distribution of leadership, and democratic practices across all functions of the school (Leithwood & Duke, 1999). The current literature purports various titles such as shared governance, distributive leadership, collaborative leadership, teacher empowerment, and democratic leadership, with a recent emphasis on distributive and collaborative leadership (Angelle, 2010; Louis, Leithwood, Wahlstrom, & Anderson, 2010). However, Roney and colleagues (2004) suggested that the foundation of each variation is collaborative participation in the leadership functions of the school by individuals associated with the school. Instructional

leadership, as defined by Murphy (1988), is principal practice focused on the functions related to the core of schools—teaching and learning. Hallinger and Murphy (1985) noted instructional leaders (1) defined the mission; (2) managed instructional programs, which included supervising and evaluating instruction and monitoring student progress; and (3) promoted a school climate that enforced academic standards and promoted professional development. Transformational leadership, according to Leithwood and Jantzi (1999), "fundamentally aims to foster capacity development and higher levels of personal commitment to organizational goals on the part of the leaders' colleagues. Increased capacity and commitment are assumed to result in extra effort and greater commitment" (p. 453). Based on their research, Leithwood and Jantzi (1999) proposed six dimensional practices of transformational leadership: (a) building school vision and goals, (b) providing intellectual stimulation, (c) offering individual support, (d) symbolizing professional practice and values, (e) demonstrating high performance expectations, and (f) developing structures to foster participation in school decisions.

Middle Grades Research And General Leadership Models

There is a small body of research to support how shared/participatory, instructional, and transformational models of leadership undergird principal practice in middle grades schools. The National Association of Secondary School Principals (NASSP) commissioned a set of three research projects in 1981 and 1983, 1992 and 1994, and 2002 and 2004, to compare a national sample of middle grades principals with a subset of 50 to 100 principals identified as leading effective middle grades schools (Keefe, Clark, Nickerson, & Valentine, 1983; Keefe, Valentine, Clark, & Irvin, 1994; Valentine, 1981; Valentine et al., 2002; Valentine et al., 2004; Valentine, Clark, Irvine, Keefe, & Melton, 1993). The findings from these sets of descriptive research studies indicated effective middle grades principals (a) exhibited practices of shared/participatory leadership, (b) provided instructional leadership, and (c) contributed to the transformation of their schools through a vision of exemplary middle grades education.

In the early set of studies (1981 and 1983), shared/ participatory leadership was not a prominent characteristic of effective principals. Effective principals were, however, more teacher-oriented, with concerns for providing teachers enough time for professional development. Data from the 1980 set of studies to the 2000 set of studies revealed that shared/participatory leadership was a major theme for effective leadership (Petzko, 2004). In the most recent research set, school leadership teams appeared in 94% of the effective schools, compared to 88% in the national sample. Leadership teams and team leaders were more likely to be involved in the school improvement process in the effective schools. In a review of the 2000 and 2004 national studies, Petzko (2004) confirmed that effective leadership was collaborative, involved shared decision making, and included participation of teachers in planning for improvement.

Results from the most recent NASSP national leadership studies (Valentine et al., 2004) also indicated effective leaders were more likely to value and exhibit practices that focused on instruction. Principals in effective schools placed greater value on the core of education (i.e., teaching and learning) in their schools, and they were 22% more likely to involve the entire faculty in best practices of exemplary middle grades education. In addition, effective schools were engaged in professional development more often, and these principals involved more of the staff in decisions about their own professional development.

Data from the 2000 and 2002 set of NASSP studies (Valentine et al., 2002) also suggested effective middle grades principals were more likely to exemplify transformational leadership practices. Effective middle grades schools were more likely to have a school vision and mission and were more likely to have comprehensive school improvement plans. Effective principals at these schools facilitated a greater level of implementation of the restructuring elements of exemplary middle grades education, such as higher levels of interdisciplinary teaming and advisory programs.

Anfara and colleagues (2000) and Brown and Anfara (2002) provided additional empirical evidence that effective middle grades leadership is associated with shared/participatory, instructional, and transformational leadership models. Anfara and colleagues (2000) identified five themes from interviews and surveys that had asked principals to define success. All themes supported the importance of shared/participatory leadership. First, effective middle grades principals had a positive outlook and were satisfied with their jobs, including providing encouragement and motivation to staff and students. Second, effective principals were teacher-oriented, providing teachers with common time to collaborate and plan and expecting teachers to be student-centered. Third, principals were supportive of parent and community involvement in their schools.

Fourth, effective principals tolerated ambiguity. Fifth, effective middle grades principals assembled, developed, and maintained a staff dedicated to middle grades education. The last theme, developing staff, also connoted the importance of professional development, an integral aspect of instructional and transformational leadership models.

In a reanalysis of the same data set, Brown and Anfara (2002) focused on the transformational leadership skills of middle grades principals. They examined the strategies used by these middle grades principals before implementing reform initiatives and during the process of transformation. From the data, the researchers gleaned principals' effective practices. Middle grades principals saw themselves as "accept[ing] their role as catalyst and as vision keeper" (p. 21). Brown and Anfara found effective principals recognized that school transformation required a change in school culture. Effective principals involved others in the process of culture building through democratic practices and shared decision making. Collaborating, building trust and consensus, training, and communicating were also found to be necessary to change norms and values, and effective principals incorporated these practices into their repertoire. This research supported the practices of the transformational leadership model as important in effective middle level leadership. Brown and Anfara's research also found shared/participatory leadership to be congruent with effective leadership that includes continual discussion, collaboration, democratic practices, and shared decision making.

Several examples of research instruments, based on these general models, examine middle grades leadership. For example, the Middle Level Leadership Center at the University of Missouri provides surveys for use by middle grades leaders, including the Audit of Principal Effectiveness (Middle Level Leadership Center, 2009a) and Instructional Practices Survey (Middle Level Leadership Center, 2009b). These surveys are adaptations of the transformational leadership model (Valentine et al., 2001). Hoy and Hannum's (1997) Organizational Health Inventory for Middle Schools, based primarily on the instructional leadership model, is another example of an instrument used to examine middle grades leadership.

An Integrated Model of Middle Level Leadership

According to Brown and Anfara (2002), shared/participatory, instructional, and transformational leadership models and the instruments derived from

these models were foundational but insufficient in guiding middle grades principal practice. They lacked the important contextual tenants, structures, and practices of middle grades education. Based on finding from their study of 44 principals in Pennsylvania, New Jersey, and North Carolina, and their involvement in previous research related to middle grades principals (Anfara et al., 2000; Brown & Anfara, 2003), Brown and Anfara proposed a model of leadership titled Developmentally Responsive Middle Level Leadership (DRMLL). DRMLL is three-dimensional: "(1) responsiveness to the developmental needs of middle grades students; (2) responsiveness to the developmental needs of faculty who support learning for middle grades students; and (3) responsiveness to the development of the middle school itself as a unique, innovative entity" (Brown & Anfara, 2002, p. 149). Each dimension included structures and practices of exemplary middle grades education, such as building a culture of community and a focus on curriculum, instruction, and assessment. Finally, the authors listed specific middle grades principal practices for each dimension. For the "responsiveness to students" dimension, principals must understand the intellectual, physical, psychological, social, moral, and ethical characteristics of young adolescents. Principals must also believe that all students can succeed. Understanding the need to connect educational administration to teaching and learning, and governing democratically and collaboratively are examples of practices presented for the "responsive to faculty" dimension. For the "responsive to the needs of the school" dimension included a knowledge and implementation of the structures and practices of exemplary middle grades education. In addition, principals must act as catalysts for change. DRMLL incorporated the three leadership models used as the basis for effective leadership outlined by middle grades advocates—shared/participatory, instructional, and transformational. DRMLL moved beyond these models to provide the contextual nuances of middle grades principal leadership not found in any one general leadership model.

Anfara and associates (2006), in an attempt to test and operationalize DRMLL as a model of leadership, developed a survey instrument, the Middle Level Leadership Questionnaire (MLLQ). The purpose of the MLLQ was to evaluate the behaviors of middle grades principals. The instrument consisted of questions related to the demographic characteristics of the participants and an inventory of middle school

practices. Anfara and associates (2006) and Roney and colleagues (2004) established content validity of the principal behavior portion of the MLLQ through a panel of 45 experts composed of middle level principals and middle level authorities. This group provided feedback on the original 65-item survey by indicating the importance and clarity of questions. Following a statistical analysis of the rankings generated by the panel, the MLLQ was reduced to 35 items using a five point Likert scale. Two forms of the final 35-item questionnaire were developed, one for principals (Form A) and the other for teachers (Form B). The two forms mirror each other with 35 items related to principal behaviors and an inventory of middle school practices. The MLLQ was administered to nine principals and the teachers in their schools. The response rate of teachers was not reported. A principal axis factor analysis with a Varimax rotation was conducted on both the principal and teacher questionnaire to establish construct validity. This analysis yielded five factors: (1) developmentally appropriate learning environments/support of teachers; (2) best practices; (3) developmentally appropriate learning environment/support of student needs; (4) student self-confidence and competence; and (5) responsiveness to student needs/support of teachers. Two items did not fit the factor construct, resulting in a 33-item instrument. Reliability was determined through measures of internal consistency (alpha coefficients) of items within each factor. The researchers reported alpha coefficients of .93, .89, .81, .76, and .72 for the five factors, respectively.

Roney and colleagues (2004) suggested that the five factors fit into the DRMLL model, with factor one and five corresponding to responsiveness to school needs, and factors three and four relating to responsiveness to students, while factor two remained associated with responsiveness to teachers. However, there were significant difference in responses between principals and teachers when t-tests were conducted comparing the two groups. Statistically significant differences were found between principals' and teachers' responses related to factor one, *developmentally appropriate learning environment/support of teachers, and factor five, responsiveness to student needs/support of teachers*. The limited number of principal responses and the variation in responses within constructs between principals and teachers suggests that replication and further examination of the MLLQ is warranted.

Methods

The purpose of this study was to confirm the construct validity and reliability of Part II of Form A of the MLLQ, which measured principals' perceptions of their own middle grades leadership behaviors. Confirming the validity and reliability of the principals' form of the MLLQ could provide practitioners with confidence that the instrument might support their efforts to improve practice. Validation of Form A could also provide an instrument for future research related to middle grades principals' perceptions of their leadership. Finally, confirmation of the validity of the MLLQ provides further support for a model of leadership specific to the context of the middle grades. If used in preparation programs, in conjunction with general leadership models, this model might enhance professional practice of aspiring middle grades principals. For these reasons, an exploratory factor analysis was used to establish factors for principal perceptions and for reliability using only Form A.

After the authors of the MLLQ granted their permission, the MLLQ was mailed to the entire population (*N* = 393) of full-time principals of middle grades schools in the state of Georgia[1] For the purposes of this study, middle grades schools were defined as schools, or portions of schools, containing grades 6, 7, and 8 or 7 and 8. The population, rather than a sample, was selected to provide sufficient numbers of returned responses for correlational analyses.

Correlational statistical procedures, including factor analysis and scale reliability testing, were used on the returned questionnaires to establish construct validity and internal reliability of the adapted MLLQ. Specifically, an exploratory factor analysis was conducted using a principle component analysis to determine factors for the adapted MLLQ. Factors were extracted and rotated using a Varimax rotation. Alpha coefficients for each factor determined through the factor analysis were used to establish construct validity and internal reliability of the adapted MLLQ.

Results

The response rate for 393 mailed surveys was 42.5%. Although 168 surveys were returned, one survey was not usable because a significant portion of the data was missing. It should be noted that missing data on individual items did occur. For example, some surveys were missing demographic data or data on an item of the adapted MLLQ. Such omissions constituted less than 5% of any respondent's total

responses. Although there is no definitive, agreed upon single standard for acceptable response rates to questionnaires, methodologists suggest rates of 50% to 75% may be appropriate (Cohen, Manion, & Morrison, 2000; Fowler, 2002; Rea & Parker, 1997). When response rates fall below these levels, as is the case in this study, questions arise as to how well the results generalize to the population. Methodologists suggest when response rates may be in question, researchers can minimize the difference between respondents and non-respondents if they can ascertain the differences that might exist between the two groups, such as age, experience, or socioeconomic level (Huck, 2000). The researcher in this study compared several demographic factors of respondents in this study with the general population of middle grades principals reported by the Georgia Department of Education (GDOE) (2005). Means were compared with respect to gender, ethnicity, and the free and reduced-price lunch status of the schools in which principals worked. The percentages of males and females among respondents in this study were 46% and 52%, respectively, with 1.8% of the principals not responding to this item. This compared to the population percentages of 47% and 53%, respectively. The ethnic backgrounds reported by middle grades principals in this study were 70% white and 27% African American, while the population ethnicity reported by the GDOE was 65% and 34%, respectively. The mean for free and reduced-price lunches at schools in which the principals worked was reported as 53% compared to the population percentage of 50%. No other comparable demographic data were available through the GDOE. However, the types of communities reported in this study were comparable to those reported in a dissertation study conducted by Warren (2002). In the Warren study, 17.4% of the middle grades principals reported working in urban schools, 37.5% reported working in suburban schools, and 45.1% reported working in rural schools. Similarly, respondents in the present study reported a distribution of 15.6% urban, 37.1% suburban, and 43.7% rural. A reasonable correspondence between the response sample and the general population appears to exist. Although the sample of respondents in this study tended to report slightly less diversity than the population, the other demographic factors were very similar. Based on these comparisons, it appears reasonable to assert a cautious generalization of the results of this study to the general population of middle grades principals in the state of Georgia.

While the principals in this study appeared to represent the middle school principals in Georgia, they did not represent those of the national middle school population. According to national research studies conducted by Valentine and associates (2002), principals in this study were much more likely to have a master's degree and specialist degree in middle level education (34%, 30%) than those of the national study (6%, 4%). In this study, 27% of principals were African American compared to only 5% in the national study. In addition, the majority of principals surveyed in this study were female (52%), while only 27% of the principals were female in Valentine and associates' (2002) study.

Factor Analysis

An initial factor extraction of the useable responses from the mailed MLLQ, using Statistical Package for the Social Sciences (SPSS) version 12.0, was conducted. The sample size for this analysis, 167, met the subjects-to-variables ratio criteria, which should be not less than five participants per item on the MLLQ, or a minimum of 165 participants (Bryant & Yarnold, 1995). Kaiser's criterion (1960), which SPSS uses by default, was applied. SPSS extracted nine factors with eigenvalues greater than 1. The first factor accounted for 35.57% of the variance, with the remaining eight factors accounting for an additional 33.92% of the variance, for 69.49% of the variance. Cattell's (1977) scree test was also performed to determine which factors to retain. Based on the data curve presented in the scree plot, two possible factor models were indicated—either a 3-factor or 5-factor model was justified. According to Green and Salkind (2005), a third criterion beyond eigenvalues and scree tests should be applied to the choice of factors to extract—the a priori conceptual constructs that may underlie the factors. Considering the 5-factor model outlined by Anfara and associates (2006) in the original testing of the MLLQ, five factors comprised a possible model solution. Alternately, the theoretical framework that supported the original MLLQ, Developmentally Responsive Middle Level Leadership (DRMLL), suggested three factors as a possible model solution corresponding to responsiveness to students, responsiveness to faculty, and responsiveness to exemplary middle grades education in schools, as it supports faculty and students.

With the scree plot and the a priori conceptual frameworks in mind, the researcher conducted both a 5-principal ($k = 5$) and 3-principal ($k = 3$) component analysis using a Varimax rotation with Kaiser

normalization. The component matrix for the 5-factor and 3-factor models, are displayed in Tables 1 and 2, respectively. The 3-factor model provided a better fit than the 5-factor model for three reasons. First, the 3-factor model provided a more equal distribution of variance among the factors. Second, the 3-factor model resulted in a more equal distribution of question items to be loaded on each factor. The third and most important reason for choosing the 3-factor model was its fit with the constructs of DRMLL. The 5-factor model matched neither the MLLQ factors presented by Anfara and associates (2006) nor the underlying constructs of the DRMLL model. The items of the 3-factor model grouped closely with the three constructs of the DRMLL theoretical model: developmental responsiveness of leaders to students, faculty, and exemplary middle grades education in schools as it supports faculty and students (see Table 3).

The minimum factor-loading criterion for retaining items in a factor model after rotation is .30 (Nunnally, 1978). Question 2, "As the principal of a middle school I promote the caring relationships between teachers, staff, and students through structures like advisory period etc.," did not load above a .30 on any of the factors in the 3-factor model. This item was eliminated from the model, and a final Varimax rotation of the 3-factor solution was conducted. The total variance explained by the model after rotation and without question 2 was 47.76%.

Reliability of the model was determined through internal consistency as measured by Cronbach's alpha coefficients of items within each factor. The alpha coefficients for factors 1 through 3 were .91, .87, and .80, respectively. Methodologists consider reliability correlation coefficients of .70 or greater adequate to establish reasonable confidence in the reliability of the instrument (De Vaus, 2002; Gay & Airasian, 2003).

Discussion

The results of this replication study indicate both similar and alternate conclusions from those made by Brown and Anfara (2002), Anfara and associates (2006), and Roney and colleagues (2004) in relationship to the MLLQ and the underlying model of middle grades leadership, DRMLL. Form A of the MLLQ, as adapted for this study (heretofore labeled the Adapted MLLQ), appears to be a valid and reliable instrument to assess principal perceptions of their own behaviors related to middle grades education. However, with a larger sample of principals in this study than the original, the

constructs that support the instrument are different from those found by Anfara and associates. The constructs that support the Adapted MLLQ in this study correspond directly to the model of leadership that undergirds the instrument, suggesting that the DRMLL is a model of leadership appropriate for framing middle grades principal leadership and informing principal practice in the middle grades. Specifically, middle grades principal leadership as outlined by responsiveness to the developmental needs of (a) middle grades students, (b) faculty who support middle grades students, and (c) middle grades schools as they support students, may provide a lens to guide effective practice through research and principal reflection.

The variations in results from this study and those of Anfara and associates (2006) can be attributed to the numbers of participants in each study. The original MLLQ consisted of 33 questions, which, according to Bryant and Yarnold (1995), would require 165 completed questionnaires to deal sufficiently with the subjects-to-variables ratio criteria. The limited number of principal responses (nine in the original study) may not have been sufficient to develop the constructs for the MLLQ in relationship to principals' perceptions of their own behaviors.

This variation highlights three issues related to the use of the MLLQ and the underlying DRMLL by various groups associated with middle grades education—practitioners, researchers, and those preparing educational leaders. Anfara and associates (2006) suggested that practicing principals use the MLLQ to improve practice. Principals can accomplish this by comparing their own perceptions of practice to faculty perceptions of their leadership behaviors. Anfara and associates have developed a scoring guide, combining teacher and principal responses to the MLLQ. Because the MLLQ form B was administered to an adequate number of teachers to satisfy the subjects-to-variables ratio criteria, it may provide the principal with valid and reliable information about his or her behaviors as a middle grades principal as perceived by the school faculty. However, if principals use the instrument to compare their own self-perceptions with staff perceptions of middle grades leadership, there may be difficulties with validity and reliability of the instrument, at least if the constructs are directly compared between principal and teacher results, as advocated by Anfara and associates. Valid and reliable instruments are critical. If principals invest the time to administer, tabulate, score, and compare

results to scoring tables, they should be confident the results provide them with accurate information that can be used to improve practice. Further research is needed to confirm the relationship between teacher and principal constructs of the MLLQ and how these constructs can be used to improve practice. Such research may determine if information obtained from comparing teacher and principal perceptions will accurately inform middle grades principals.

Alternately, the Adapted MLLQ may be an important instrument for comparing middle grades principal practice with outcome measures of effectiveness. Eventually, middle grades principal behaviors that are congruent with middle grades practices may be compared to student achievement data. However, with the indirect nature of principal behaviors on student outcomes, the results of the Adapted MLLQ may be used to compare middle grades principal practice with mediating factors that have been identified as influencing student achievement, such as teacher efficacy. The Adapted MLLQ may also be used to compare antecedents that influence principal practice, such as experience and preparation, or factors that may affect practice, such as professional development.

What distinguishes the Adapted MLLQ from other instruments developed to measure effective principal practice is its focus on the context of middle grades leadership and the developmental nature of middle grades students, teachers, and schools. Other instruments based on various general models of leadership, such as those developed by Heck, Larsen, and Marcoulides (1990) in relationship to instructional leadership, have provided important information about effective leadership by using the instrument in comparison to various antecedent, mediating, and outcome factors. There have also been attempts to develop instruments to be used by middle grades researchers and principals, such as the those developed by the Middle Level Leadership Center (MLLC) (2009a), that are based on general leadership models. However, the Adapted MLLQ is a valid and reliable instrument that supports a middle level leadership model and provides opportunities to further explicate the important nuances of leadership in the middle grades.

The notion of a model of leadership directly associated with the tenets and practices of middle grades leadership, supported by a valid instrument, also has the potential to enhance the education of aspiring principals. The vast majority of principals in the United States are K–12 certified, with only five states requiring a middle level credential (Gaskill, 2002). Beyond generic models of school leadership, the current Interstate School

Leaders Licensure Consortium (ISLLC) Standards (Council of Chief State School Officers, 2008) governing principal preparation are designed to apply to all school levels. The use of DRMLL as a model of leadership, supported by evidence of its validity, may provide those preparing school leaders with a tool to interject effective middle grades leadership practices into instruction in tandem with more general models and standards of preparation.

While this study provided evidence of a valid and reliable instrument that further confirms a middle grades leadership model, the investigation has several limitations. The greatest limitation is the question this study poses to the congruence of the MLLQ related to the two forms of the instrument, the principal form and the teacher form. This investigation did not attempt to replicate a study that could determine the construct validity or reliability of the MLLQ from the teacher's perspective. Without further study, the Adapted MLLQ and the MLLQ must be considered two instruments measuring related but different constructs. The Adapted MLLQ constructs included those of DRMLL— responsiveness to the developmental needs of middle grades students, faculty who support middle grades students, and middle schools as a unique innovative entity. The MLLQ (teacher form) constructs were identified as—developmentally appropriate learning environments/support of teachers, best practices, developmentally appropriate learning environment/ support of student needs, promotion of student self-confidence and competence, and responsiveness to student needs/support of teachers. Further studies need to be conducted to test the MLLQ with both principals and their faculties in large enough numbers to validate both forms of the instrument to determine if the differences in constructs are significant, both statistically and practically.

A second limitation of this study is the use of principal responses from one state in the United States. Just as there are contextual differences in leadership at various grade levels, there are differences between states, both in leadership requirements and in middle grades practices. As noted earlier, the principals in this study were dramatically different from those in the Valentine and associates' national study (2002). These demographic deviations, as previously stated, suggest studies with geographically more diverse participants are needed to substantiate this instrument.

Table 1
Rotated Component Matrix for 3-Factor Model

	Factors		
Question	**1**	**2**	**3**
Q_1	.111	.177	.358
Q_2	-.061	.238	.214
Q_3	.103	.256	.418
Q_4	.141	.196	.509
Q_5	.164	.397	.515
Q_6	.339	.186	.550
Q_7	.237	-.009	.646
Q_8	.275	.092	.644
Q_9	.178	.315	.576
Q_10	.615	.230	.346
Q_11	.258	.507	.273
Q_12	.319	.404	.225
Q_13	.537	.272	.433
Q_14	.521	.363	.321
Q_15	-.089	.090	.410
Q_16	.223	.707	.291
Q_17	.308	.549	.292
Q_18	.330	.531	.080
Q_19	.460	.610	.162
Q_20	.276	.706	.073
Q_21	.197	.706	.200
Q_22	.717	.277	.187
Q_23	.452	.634	.022
Q_24	.580	.297	.240
Q_25	.734	.212	.059
Q_26	.783	.303	.094
Q_27	.749	.213	.114
Q_28	.695	.099	.232
Q_29	.424	.371	.193
Q_30	.285	.089	.637
Q_31	.423	-.096	.511
Q_32	.476	.224	.160
Q_33	.661	.314	.218

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 8 iterations.

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Table 2
Rotated Component Matrix for 5-Factor Model

	Factors				
Question	1	2	3	4	5
Q_1	.042	.163	.347	.358	-.102
Q_2	.036	.143	-.128	.274	.476
Q_3	.132	.139	.111	.834	.042
Q_4	.180	.080	.174	.769	.188
Q_5	.128	.357	.364	.359	.244
Q_6	.257	.205	.562	.115	.187
Q_7	.125	.011	.694	.218	.040
Q_8	.173	.111	.668	.167	.142
Q_9	.065	.354	.629	-.030	.239
Q_10	.525	.281	.473	.039	.009
Q_11	.180	.512	.295	.245	-.045
Q_12	.233	.427	.306	.189	-.122
Q_13	.395	.342	.631	.041	-.091
Q_14	.380	.452	.557	-.131	-.051
Q_15	-.044	.052	.179	-.090	.660
Q_16	.148	.733	.306	-.039	.234
Q_17	.249	.563	.290	.069	.169
Q_18	.278	.532	.110	.261	-.143
Q_19	.407	.617	.179	.219	-.021
Q_20	.249	.717	.055	-.019	.190
Q_21	.219	.664	.008	.163	.385
Q_22	.686	.295	.224	.172	.003
Q_23	.405	.653	.076	.117	-.057
Q_24	.546	.323	.267	.018	.158
Q_25	.737	.217	.072	.195	-.031
Q_26	.778	.325	.123	.053	.095
Q_27	.759	.221	.104	.121	.098
Q_28	.653	.136	.316	.040	.034
Q_29	.410	.376	.161	.049	.199
Q_30	.289	.057	.440	.133	.562
Q_31	.440	-.122	.360	.163	.402
Q_32	.532	.204	.017	.010	.408
Q_33	.610	.339	.281	.158	-.024

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Table 3
DRMLL Constructs and Adapted MLLQ Questions Associated with Constructs

Factor	Question: As the principal of a middle school, I ...
Factor 1: Faculty	10. have a vision of what an exemplary middle school is and strive to bring that vision to life.
Factor 1: Faculty	13. demonstrate an understanding of the intellectual, physical, psychological, and social characteristics of young adolescents.
Factor 1: Faculty	14. demonstrate an understanding of the relationship between the cognitive and affective needs of young adolescents.
Factor 1: Faculty	22. make decisions based on young adolescent development and effective middle level practices.
Factor 1: Faculty	24. provide time for general education teachers to collaborate with special education teachers to meet the diverse needs of young adolescents.
Factor 1: Faculty	25. provide teachers time, grouping, and instructional strategies to help individual students to achieve mastery of subject matter.
Factor 1: Faculty	26. encourage teachers in their efforts to respond to the needs of young adolescents.
Factor 1: Faculty	27. encourage teachers in their use of a wide variety of instructional approaches and materials.
Factor 1: Faculty	28. encourage active discovery learning on the part of students rather than teacher lectures.
Factor 1: Faculty	29. encourage activities such as special-interest classes and hands-on learning.
Factor 1: Faculty	32. encourage teachers to make connections across disciplines to reinforce important concepts.
Factor 1: Faculty	33. require teachers to provide classroom activities that address the needs of academically diverse learners who vary greatly in readiness, interests, and learning profiles.
Factor 2: Students	11. provide curricular materials that enhance young adolescents' acceptance of self and others and that enable them to accept differences and similarities among people.
Factor 2: Students	12. provide adequate counseling/advisory opportunities.
Factor 2: Students	16. provide students with opportunities to explore a rich variety of topics to develop their identity and demonstrate their competence.
Factor 2: Students	17. develop connections with and involve families in the education of their children.
Factor 2: Students	18. provide age-appropriate, co-curricular (or extra-curricular) activities.
Factor 2: Students	19. provide students with opportunities to explore, make mistakes, and grow in a safe, caring environment.
Factor 2: Students	20. encourage mature value systems by providing opportunities for students to examine options of behavior and to study consequences of various actions.
Factor 2: Students	21. regard young adolescents as resources in planning and program development and involve them in meaningful roles.
Factor 2: Students	23. allow teachers and students to plan activities that integrate genders.

Table 3 (continued)
DRMLL Constructs and Adapted MLLQ Questions Associated with Constructs

Factor	Question: As the principal of a middle school, I ...
Factor 3: School	1. design and implement policies and procedures that reflect the needs of young adolescents.
Factor 3: School	3. provide transition programs from middle to high school for my middle school students.
Factor 3: School	4. provide transition programs from elementary to middle school for my middle school students.
Factor 3: School	5. organize the curriculum around real-life concepts.
Factor 3: School	6. advocate for middle schools and the middle school concept in the school district.
Factor 3: School	7. prepare a daily schedule that includes time for team planning and meeting.
Factor 3: School	8. stay current on what the research says about best practices for middle schools.
Factor 3: School	9. group students and teachers in small learning communities.
Factor 3: School	15. spend time each day with students.
Factor 3: School	30. create opportunities for professional development for teacher/staff that address strategies for meeting the needs of young adolescents.
Factor 3: School	31. support appropriate instructional strategies with the necessary resources (i.e., money, time needed, etc.).

Conclusion

Principals in most states are prepared and receive certifications for grades K–12 (Gaskill, 2002). Current models of leadership are also based on general principles of leadership applicable to principals guiding K-12 schools. Yet students and school contexts vary depending on the grade configuration of the school. This study contributed to validating a model of leadership that outlined principal behaviors congruent with effective middle grades education through testing an instrument based on that model. Results of this study also support the confirmation of the Adapted MLLQ as a measure of principal perceptions of their middle grades behaviors that are developmentally responsive to middle grades students, teachers, and the middle grades school. While this study provided support that the DRMLL may be an efficacious framework for examining middle grades principal practices, it did not confirm earlier research that the original principal form of the MLLQ is a 5-factor instrument, with the same constructs that undergird the teacher version of the instrument. Further studies are needed to explicate whether the Adapted MLLQ is two instruments—one measuring the three DRMLL constructs for principals and one measuring a compatible variation of the model for teachers based on five constructs.

Disaffirmation of the congruence of the teacher and principal forms of the MLLQ calls into question the use of the instrument by practicing principals who wish to compare the perceptions of their own middle grades leadership practices with those of their staff. Practitioners should have valid and reliable measures to support their efforts to improve practice. As suggested by Hough (2003), echoed by Anfara and associates (2003), and confirmed by this study, replication of research studies associated with middle grades education is important in providing valid information that practitioners can use, with confidence, to improve practice and support student outcomes.

The Adapted MLLQ, however, appears to be an instrument that can be used to examine middle grades principal perceptions of their own behaviors related to student outcomes or to mediated factors leading to student outcomes, such as teacher efficacy. In addition, the instrument may be a means to measure antecedents that affect middle grades principal practice, such as preparation and professional development. This study provided added support for the development of a leadership model, and an instrument supported by that model. Further confirmation of the DRMLL as a model of middle grades leadership may also support those preparing middle grades leaders through providing an additional model of leadership that specifically

highlights middle grades tenets, structures, and practices. With the limited research examining middle grades principal behaviors in relation to exemplary middle grades education, this study may advance our understanding of effective principal leadership for those working in the middle.

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Footnotes

[1]The complete MLLQ sent to all Georgia middle grades principals can be found in Anfara, V. A., Roney, K., Smarkola, C., DuCette, J. P., & Gross, S. J. (2006). *The developmentally responsive middle level principal: A leadership model and measurement instrument.* Westerville, OH: National Middle School Association.

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