

A Psychometric Look at Principal Professional Development

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Abstract

This study evaluates aspects related to P12 principals' professional development needs in South Carolina regarding the three domains of school leadership: management, instructional leadership, and program administration. A survey to rate principals' current leadership knowledge, rank order their professional development needs, and provide a confidence rating regarding their abilities was given to over 1,100 principals and 85 superintendents. Through examining relationships with a psychometric model, results derived latent leadership ability scores and self-reported confidence ratings of principals as well as the superintendents' leadership scores and confidence ratings of their principals. This study found a significant discrepancy between principals' and superintendents' confidence ratings and their corresponding leadership ability scores, respectively. A further analysis of the rank-ordered professional development needs highlighted instructional leadership to be the most needed topic for professional development. Finally, atypical response patterns regarding principal's current leadership knowledge are also identified through person-fit analysis to provide additional information regarding P-12 principals' professional development needs.

Introduction

Research supports that the school leader is instrumental in teacher success and student achievement (Leithwood, Sun, & Schumacker, 2020; Pietsch & Tulowitzki, 2017;

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Terziu, Hasani, & Osmani, 2016). Consequently, the second most important influence on students, aside from the teacher, is the principal (Boren, Hallam, Ray, Gill, & Kuanchen, 2017; Coelli & Green, 2012; Wallace Foundation, 2013). School leaders, similar to teachers, need continued professional development to keep up with the ever-changing demands placed on them (Acton, 2021; Prothero, 2015; Rowland, 2017), as the principalship has changed drastically in the last decade or more (Daniel & Griffith, 2017; Goldring, Grissom, Rubin, Rogers, Neel, & Clark, 2018). Effective principals can no longer serve simply as a building manager (Bell, 1991; Bush, 2008); they are to fulfill the roles of aspirational leader, instructional leader, coach, change agent, and team builder (Acton, 2021; Alvoid & Black, 2014; Hallinger, 1992; Reid, 2020). Principal professional development needs have not been met by many districts, despite the suggestion that districts should share in this responsibility (Acton, 2021; Ford, Lavigne, Fiegenger, & Si, 2020; Richardson, Watts, & Hollis, 2016).

Principals are often torn between managing school operations and leading the instructional programs of the school (Bloom, Lemos, Sadun, & Van Reenen, 2015; Nurdianti & Nurdin, 2020; Stronge, 1993). Increased accountability demands principals serve as instructional leaders (Elmore, 2000; Ervay, 2006) but many are stuck in managing operations, behaviors, resources, etc. (Sepuru & Mohlakwana, 2020). This study is designed to examine principal roles and the perceived needed professional development in the various roles of manager, instructional leader, and program administrator (Hallinger, 2010b; Kowalski, 2010; Naidoo, 2019). Additionally, the study examines the reported leadership ability scores of principals versus their self-efficacy ratings, highlighting the discrepancies and how districts can help fill the needs of school administrators.

Conceptual framework

In a school setting, the principal must fulfill multiple roles simultaneously, from a manager of resources to an instructional leader to an administrator who deals with the day-to-day operations of the school (Hallinger, 2010; Kowalski, 2010; Naidoo, 2019). Current research focuses on the different leadership styles and their impact on teacher motivation (Bellibas & Liu, 2017; Collie, Shapka, & Perry, 2013; Eyal & Roth, 2011) and teacher retention (Bartanen, Grissom, & Rogers, 2019; Boyd, Grossman, Ing, Lankford, Loeb, & Wyckoff, 2011), as well as the dueling roles of the principalship (DeMatthews, 2014; Kowalski, 2010; Mestry, 2017); however, limited research exists on the perceived professional development needs of principals. Parvathy Naidoo (2019) emphasized the need for today's administrators to constantly transition between myriad leadership responsibilities (Spillaine & Healey, 2010). The distribution between leadership skills and management skills must be balanced so that a clear focus is apparent and support for teaching and learning is evident (Hallinger & Murphy, 2012; Pan, Nyeu, & Chen, 2015; Zhao, 2018).

Three of the most important roles required of principals include the leadership of the school and community, which requires program administration (Kempa, Ulorlo, & Wenno, 2017); the instructional leadership of the school (Zepeda & Lanoue, 2017) and the management of the school, which addresses personnel, finance, and programs (DeMatthews, 2014; Mestry, 2017; Spillaine & Healey, 2010).

Philip Hallinger (2011) began the study of the three-pronged approach to the principalship. The interplay among these different roles has created the need for professional development beyond a principal's initial preparation program (Naidoo, 2019; Rowland, 2017; Tang, Lu, & Hallinger, 2014). Hallinger (2011) examined the three main avenues through which leadership is believed to be linked to learning: vision and goals, academic structures and processes, and people. Vision and goals provide the school and the community the aspirations for the school and how that direction will be achieved: program administration. The academic structures and processes include the curriculum, teaching, and learning, which is instructional leadership, the basis for school improvement. Management skills are needed to handle personnel, students, and parents.

Principal preparation programs are often criticized for not adequately preparing school principals (Davis & Hammond, 2012; Orr & Orphanos, 2011). However, typically, at least five years pass between earning an administrative certification and acquiring an assistant principal's role (Bradley, Gooden, & Bowers, 2017; Petrides, Jimes, & Karaglani, 2014). During that time, individuals do not often have a chance to practice what they have learned and have limited exposure to all aspects of the principalship (Hausman, Nebeker, McCreary, & Donaldson, 2002; Westberry, 2020).

School management

The principal must be an effective manager. The managerial role includes areas such as finance, resources, personnel, and discipline (Grissom & Loeb, 2011; Naidoo, 2019). Managerial skills are still very important, as resource and personnel issues arise frequently. Additionally, social media has placed a priority on the principal's management skills and communication skills, as schools use social media platforms to build community relations (Bayram, 2017; Westberry, 2020). Furthermore, social media also requires more management skills when dealing with school discipline (Akomolafe & Ajayi, 2019).

Additionally, principals must manage organizational structures, conflict, personnel, budgets, and the efficient use of resources (Kowalski, 2010; Ulrick & Bowers, 2013); however, the shift from management to different forms of leadership highlights the transition to shared decision-making with administrative instructional priorities found in schools today (Bush 2008; Hallinger, 1992; Lochmiller & Mancinelli, 2019; Neumerski, Grissom, Goldring, Rubin, Cannata, Schuermann, & Drake, 2018).

Instructional leadership

In an era of increased accountability, instructional leadership has become the focal point of the principalship (Hallinger, 2007; Lashway, 2003; Lochmiller & Mancinelli, 2019). The principal's instructional leadership ability has been found to have a direct, positive impact on student achievement results (O'Donnell & White, 2005) as well as teacher self-efficacy (Bellibas & Liu, 2016; Liu & Hallinger, 2018). If the principal is not perceived as the instructional leader among the staff, the principal loses credibility with teachers, who are continuously pushed to learn and grow (Blase & Blase, 2000; Jones & Henry, 2020; Naidoo, 2019). The principal should be seen as a leader

and a resource for teachers in teaching and learning, but this skill set is not as common as it should be (Jazzar, 2004).

Instructional leadership not only helps with teacher self-efficacy but also with building trust in the principal, which helps to shape school culture (Ma & Marion, 2019). To establish a growth mindset (Kici & Scardamalia, 2018; Seaton, 2016), trust is fundamental. The core competencies of instructional leadership that have the greatest impact, according to Dorrell Ross and Jeffrey Cozzens (2016), include the following: curriculum and instruction, collaboration, and assessment. Principals must lead the efforts in teaching and learning in their schools. All of these elements combine to create the three elements of instructional leadership: defining the school's mission, leading the instructional program, and promoting a positive school learning environment (Hallinger, 2008, 2010; Hallinger & Heck, 1996).

Administration of programs

Today's principals must also engage the school community to garner maximum support for teaching and learning. Kathleen Abowitz (2019) stated,

the contemporary principal must also now juggle multiple demands from their community, as school choice rhetoric and policies have positioned citizens as educational consumers, whose role is often seen as that of trying to maximize the value of education for their own individual child or family. (p. 2)

Principals are also charged with implementing district policies and state mandates effectively (Matthews & Crow, 2003). This requires a leader to have a strong vision and goals that are clear and concise (Hollinger & Heck, 1996).

Hypothesis and research questions

Item response theory (IRT) is a core psychometric theory widely applied to relating participants' latent traits (e.g., P-12 school leaders' leadership abilities) to their observed responses to a measure (e.g., self-reported educational leadership survey) (Hambleton & Swaminathan, 1985; Lord, 1980). This latent trait is postulated to exist but can only be assessed through the observed responses of a person's test or task items (Meijer & Baneke, 2004; Sijtsma, 1998). The latent traits and the responses obtained from each participant are not the same; the latent traits can, however, be inferred from the obtained responses through IRT models by assuming that each participant with a latent trait value will get a corresponding probability of endorsing a survey question through a function of non-decreasing logistic or normal ogive curve (item characteristic curve). This unique property has greatly leveraged the applications of parametric IRT models in the educational measurement field (e.g., standardized testing). IRT is appropriate for this current study because this survey of principal leadership skills is similar in purpose to personality assessments: both are evaluating the latent ability of participants. IRT has already had a wide application to the latter personality assessments (Reise & Waller, 1990; Steinberg & Thissen, 1995; Waller & Reise, 1989).

Many studies have used psychometric models to evaluate and improve the scoring ability of various leadership scales (e.g., Childers, 1986; Kline, 2003; Podsakoff

& MacKenzie, 1994). Recently, research that employs psychometric models in school leadership studies has received growing attention. However, the majority of them are still using psychometric models to validate and study the psychometric properties of questionnaires (e.g., Hellström & Hagquist, 2019; Huang, 2013; Perera, Sumintono, & Jiang, 2018). No study has been found to extend a psychometric model's scoring ability to school administrators' leadership studies, making inferences about such abilities and further using these inferences to make practical suggestions. As one of the first to attempt this, this study hypothesizes that there is a discrepancy between principals' perceptions of their abilities and superintendents' perceptions of their principals' abilities. This potential discrepancy is important to recognize because superintendents may not know which areas principals need more support and development in, and research has shown the role of the superintendent as important to the development of teacher leaders (Wells, Maxfield, Klocko, & Feun, 2010). Furthermore, research has shown that there is a disconnect between what the system perceives as professional development needs versus individual perceived needs (Zepeda, Parylo, & Bengston, 2014). Specifically, this study is intended to further research in this area and answer the following research questions:

1. Is there a discrepancy in confidence levels between the principals' perceived and reported abilities?
2. Is there a discrepancy in confidence levels between the superintendents' perceived and reported abilities of their principals?
3. Is there a discrepancy in confidence levels between superintendents and principals?
4. What professional development needs do principals ask for the most?
Do the needs reflect the current shift in focus to instructional leadership?

Methods

Sample and instruments

Approximately 1,311 traditional principals are currently employed in the southern state where this study was conducted (South Carolina State Department of Education, 2020). Among them, about 58.35 percent are female and 41.65 percent are male. The data used in this study was collected to evaluate the professional development needs of P-12 administrators, both principals and superintendents, as part of an effort to provide customized professional development training to school administrators. The sample contains item responses from 228 P-12 administrators (210 principals and 18 superintendents and district administrators, for a response rate of 22.60%). Among the principal respondents, about 58.57 percent are female and 41.43 percent are male. An insignificant test result indicated that this decomposition closely matches the state-level decomposition.

This survey contains nine Likert-scale questions. The scale ranges from 1 through 5, with 1 being *rarely needs support* and 5 being *always needs support*. These nine questions address P-12 school administrators' professional development needs in the following areas, as previously reviewed in the literature: the administration of school programs and community, the instructional leadership of the school, and the management of the school. The survey also asks participants to a) rate their confidence in their knowledge as a principal with 1 being *very little* (just learning) and 5

being *most confident* and b) rank order the top five professional development needs for principals.

Analytic procedures

This study utilizes the graded response model (GRM) (Samejima, 1996) as the analytic tool to derive the latent leadership score of the participants based on the survey. The GRM is the extension of the IRT 2Parameter Logistic Model (PL) dichotomous model in the polytomous arena. It is designed to analyze the responses of items that are in ordered categories (e.g., Likert scales) (Jansen & Roskam, 1986).

The GRM can be expressed as below:

$$p_{ik}^*(\theta_j) = \frac{e^{D a_i(\theta_j - b_{ik})}}{1 + e^{D a_i(\theta_j - b_{ik})}} \text{ and } P_{ik}(\theta_j) = p_{ik}^*(\theta_j) - p_{ik+1}^*(\theta_j)$$

Under the GRM, item i is comprised of k ordered response options. Parameters are estimated for $k-1$ boundary response functions. Each boundary response function represents the cumulative probability of selecting any response options greater than the option of interest. The function for item i is characterized by two types of parameters: discrimination and difficulty. The discrimination parameter, a_i , indicates the degree to which an item is capable of differentiating between subjects with different trait levels. The location parameter, b_i , indicates the extremity or frequency of a behavior or an attitude. A person's probability of responding in category k to specific item i , $P_{ik}(\theta)$, is obtained by subtracting the probability of responding in or below category $k-1$ from the probability of responding in or below category k .

Variable k is the ordered response option; $P_{ik}(\theta_j)$ is the probability of responding to alternative k of item i with a trait level θ_j ; $p_{ik}^*(\theta_j)$ is the probability of responding to alternative k or above in item i with a trait level θ_j ; θ_j is the trait level of the subject; b_{ik} is the location parameter of the alternative k of item i ; a_i is the discrimination parameter of item i ; D is a constant (1.7).

The following steps were taken through this study:

- 1) Each participant received a latent score derived statistically from their observed series of responses to the nine survey questions. These latent scores were produced using Software IRTPro 4.2 (Cai, Thissen, & du Toit, 2011) under default convergence criteria.
- 2) These latent scores were then rescaled through a linear transformation to produce a leadership ability score for each participant. The purpose of the transformation is to convert the latent scores derived from IRTPro's GRM analysis to leadership ability scores. These scores preserve the same mean and standard deviation as the original sample and are the basis of analyses explored in this study.
- 3) For the participants who provided overall confidence ratings, their self-evaluated scores were compared with the leadership ability scores to see the degree to which they aligned.
- 4) Participants' rank-ordered top five professional development needs were analyzed by frequency to help professional development providers pinpoint the focus. The Friedman test, which is the non-para-

metric alternative to the one-way ANOVA with repeated measures, was used to test for differences between participants' ranking choices.

5) Last but not the least, a person-fit analysis was conducted to detect survey respondents with atypical response patterns. This atypical response is further analyzed with the pattern that was observed as a group to provide insight into individuals' professional development needs. R package "PerFit" was used for this analysis. A generalization of Van der Flier's U3 person-fit statistics to polytomous scored items (Emons, 2008) was produced for further interpretation. This nonparametric person-fit statistic has been proven to be as effective as its parametric counterparts (Emons, 2008).

Results

Characteristics of the survey

The Cronbach's alpha coefficient of this nine-item instrument is 0.90. After data response recoding for each item, a lower response value indicates a greater need for support and/or training on that item. As shown in Table 1, all items have a moderate and positive Pearson correlation, except a few that are below 0.40. The lowest correlations are between Item 1 ("Understanding and using data to inform instruction") and Items 4 ("Understanding how to implement successful multi-tiered systems of support programs"; $r = 0.39, p < .01$) and 9 ("Understanding how to manage their time effectively"; $r = 0.34, p < .01$), respectively. Means and standard deviations of each item are shown on the diagonal of Table 1. Overall, the range of mean responses of all the questions is between 2.19 and 2.88. Among them, Item 7 ("Understanding how to manage budgets") has the highest mean (2.88) and Item 4 has the lowest mean (2.19). A lower mean score on an item indicates a greater need for support and/or training on that specific topic.

Table 1: Descriptive statistics of survey responses

Item	1	2	3	4	5	6	7	8	9
1. Understanding and using data to inform instruction	2.69 (1.21)								
2. Developing a systems perspective	0.49*	2.50 (1.04)							
3. Understanding all elements of instructional leadership to include alignment, assessment, and observation	0.62*	0.55*	2.61 (1.15)						
4. Understanding how to implement successful multi-tiered systems of support programs	0.39*	0.47*	0.54*	2.19 (1.11)					
5. Understanding how to effectively progress monitor as an administrator	0.54*	0.47*	0.59*	0.56*	2.47 (1.06)				
6. Understanding how to deal with difficult teachers	0.54*	0.54*	0.63*	0.47*	0.51*	2.47 (1.23)			
7. Understanding how to manage budgets	0.42*	0.43*	0.56*	0.48*	0.50*	0.57*	2.88 (1.30)		
8. Understanding how to effect cultural change	0.41*	0.47*	0.48*	0.45*	0.41*	0.57*	0.54*	2.30 (1.14)	
9. Understanding how to manage time effectively	0.34*	0.48*	0.50*	0.46*	0.42*	0.56*	0.52*	0.47*	2.44 (1.23)

Note: * Correlaton is significant at the 0.01 level (2-tailed).

The rank-ordered top five professional development needs among all participants have also been investigated. The Friedman Test indicated that the nine needs had statistically different ratings, $\chi^2(8) = 253.50, p < .05$. The top three rank-ordered needs among all participants are “Understanding and using data to inform instruction,” “Understanding all elements of instructional leadership to include alignment, assessment, and observation,” and “Understanding how to effectively progress monitor as an administrator.”

Characteristics of the respondents

Software IRTPro 4.2 was run under the default convergence setting, and the latent scores derived from the analysis are rescaled to have a mean of 2.50 and a standard deviation of 1.20 to match the original sample mean and standard deviation. Group comparisons are tested on this leadership ability score. Even though tenured principals with 8–15 years of experience are the ones with the highest leadership ability scores, this study tested the mean score differences among participants with different years of experiences (1 year or less, 2–4 years, 5–7 years, 8–15 years, 16 or more years) and found no significant differences among different groups.

There was no significant effect for gender, $t(118) = -1.05, p = .30$, despite the fact that males ($M = 3.90, SD = 0.87$) demonstrated higher self-evaluated confidence scores than females ($M = 3.74, SD = 0.87$). Also, there was no significant effect for gender, $t(226) = -0.59, p = .56$, despite the fact that males ($M = 2.56, SD = 1.20$) demonstrated higher latent ability scores than females ($M = 2.47, SD = 1.10$).

However, when comparing mean leadership ability scores between different positions (principal versus superintendent and district administrators), principals had higher leadership ability scores ($M = 2.62, SD = 1.01$) than did the superintendents and district administrators ($M = 1.84, SD = 0.79$). This difference is observed to be significant ($t(226) = 3.19, p < .05$).

The superintendents all have mid-to-high self-reported confidence (a rating between 3 and 5) in their principals, but there were only a few whose self-reported confidence scores on their principals matched their corresponding statistically derived leadership ability scores about their principals. For the majority of the cases, the self-reported confidence scores are higher than the leadership ability scores. This difference is statistically significant $t(8) = 7.13, p < .05$.

There were 120 out of 228 (52.6%) participants who provided self-reported confidence scores. Of the 120 cases who responded to this question, 112 (93.33%) cases were from principals and eight (6.67%) cases were from superintendents, whose ratings were about their principals. This confidence rating item was later added to the survey; therefore, only 52.6% of participants were able to answer the question. When comparing mean score differences between leadership ability scores and self-reported confidence scores among principals, it is noticed that principals overall had higher self-reported confidence scores ($M = 3.80, SD = 0.88$) than their corresponding leadership ability scores ($M = 2.68, SD = 1.03$). This difference is observed to be significant ($t(111) = 8.16, p < .05$).

When comparing mean score differences between leadership ability scores and self-reported confidence scores among superintendents, they had higher self-re-

ported confidence scores on their principals ($M = 4.00$, $SD = 0.76$) than their corresponding leadership ability scores on their principals ($M = 1.67$, $SD = 0.54$). This difference is observed to be significant as well ($t(7) = 7.13$, $p < .05$).

Which is a better measure of quality: confidence or ability? Both are equally important. Self-efficacy, or confidence in one's abilities, has a direct impact on performance. So, confidence is an important factor. However, one's ability is equally important. Cynthia Lee and Philip Bobko (1994) studied Albert Bandura's (1986) concept of self-efficacy and noted the following:

Those who have a strong sense of self-efficacy in a particular situation will devote their attention and effort to the demands of the situation, and when faced with obstacles and difficult situations, these individuals will try harder and persist longer. (p. 364)

The difference in ratings may result from confidence derived from leadership in one or more domains, but not all three.

The person-fit statistics allow researchers to assess whether individual response patterns to this survey are plausible, given the other respondents in the sample or given a specified IRT model. Responses from 13 participants were identified after the person-fit analysis was conducted. These participants were identified as having response patterns that were inconsistent with the leadership ability scores that they received from their survey responses. Among these 13 participants, four (Group 1; 30.77%) received a leadership ability score below 2.5, and nine (Group 2; 69.23%) received a score above 2.5. The professional development need of "Using data to inform instruction" is the first choice of all participants in Group 1 who responded to this question. The other two needs that are ranked high for Group 1 are "Developing a systems perspective" and "Instructional leadership." Three participants in Group 1 (75%) were female and from rural districts. Only one participant (25%) was male and from a suburban district. Similar to Group 1, the top three needs of Group 2 are also "Using data to inform instruction," "Developing a systems perspective," and "Instructional leadership." Group 2, however, had a very evenly distributed composition of gender and district characteristics.

Discussion

Relationships among items

It is noted that the correlations among items are statistically significant, positive, and at a moderate level for the majority of the items. The moderate correlation between "Developing quality MTSS systems," and "Using data to inform instruction" is worth noting; likely the answer lies in the fact that to devise a quality system of supports for students, one must understand how to use data to inform instruction. The effective implementation of MTSS requires the use of data-based interventions and implementation (Forman & Crystal, 2015; Wright, 2016). Therefore, the lack of knowledge of how to use data to inform instruction demonstrates that administrators do not fully understand MTSS Systems.

Principal confidence levels versus ability scores

The results of the study indicate that principals' self-reported confidence scores are

significantly higher than their leadership ability scores. This difference may be attributed to confidence in one or more of the three domains of leadership, but not in the domain of instructional leadership. With the focus on instructional leadership (Acton, 2021; Alvoid & Black, 2014; Hallinger, 2007; Lashway, 2003), this disparity is further evidence of the need for professional development.

The results section also indicates that, although non-significant when compared to other groups, principals with 8–15 years of experience are the ones with the highest leadership ability scores. This makes sense in that growing a qualified principal requires time, effort, and exposure to real-world experiences. Principals with 8–15 years of experience are at the right career stage to fully expand and extend their knowledge and skills. These principals are facing changes to the required leadership skills but are experienced enough to feel confident in managing and leading the changes. Alan Shoho and Bruce Barnett (2010) found that new principals did not anticipate staying in their positions due to frustrations and lack of support. Therefore, their leadership ability scores would presumably be lower. The most tenured principals may have trained in principal preparation programs that were more theoretically based and did not prepare them for the job at hand (Lombardi, 2007).

However, the non-significant leadership ability scores among principals with different years of experience indicate that time and experience are not necessarily the deciding factors when it comes to career success as a principal. Because the role of the principal has changed drastically, more tenured principals may struggle just as much as new principals. For this reason, it is in a district's best interest to find ways to best support principal development (Ford, Lavigne, Fiegener, & Si, 2020).

Superintendent confidence levels versus ability scores

The fact that the majority of the superintendent's self-reported confidence scores about their principals' leadership abilities are statistically higher than the leadership ability scores indicates that, for the majority of responses, they were inflated. Superintendents often claim that they have strong confidence in their principals, but when they looked at the specific abilities and needs of their principals, this confidence dissipated.

This difference in ratings can be attributed to the domains of leadership discussed by Naidoo (2019). The three prongs of leadership include management, school program administration, and instructional leadership (Spillaine & Healy, 2010). Superintendents may feel confident in their principals when referring to one or two of the domains; however, the instructional leadership domain, which can be viewed as the most important domain today (Hallinger & Murphy, 2012; Pan, Nyeu, & Chen, 2015; Zhao, 2018), may be viewed as lacking. This disparity must be addressed in professional development for principals.

Discrepancies in confidence levels and ability scores between principals and superintendents

This study observed that principals scored higher on their mean leadership ability scores than on superintendents' and district administrators' confidence ratings in their abilities. It makes sense because principals often have a better assessment of their strengths and weaknesses than their supervisors. With increased accountability,

principals feel what is characterized as “scrutiny stress” (Lasalvia, 2011) and may not want to admit their weaknesses. However, that does not mean they are not aware of those weaknesses.

When examining leadership ability scores as compared to confidence ratings in and among principals and superintendents, this study highlights a discrepancy between perceived ability and actual ability within the superintendent group. Superintendents showed confidence in their principals, but the actual leadership ability scores of principals were much lower. Again, this discrepancy highlights the need for district support in the form of professional development.

Professional development needs

The top three rank-ordered needs among all participants are “Understanding and using data to inform instruction,” “Understanding all elements of instructional leadership to include alignment, assessment, and observation,” and “Understanding how to effectively progress monitor as an administrator.” All three of these elements reside in the instructional leadership domain of school administration. These findings are not surprising, as the focus on school improvement has a strong foundation in instructional leadership (Hallinger, 2007; Lashway, 2003). Additionally, these findings correlate with the differences in leadership ability ratings.

The least favored choices of the participants for professional development needs are “Understanding how to manage time effectively” and “Understanding how to affect cultural change.” These findings, again, are not surprising in that both elements fall into management and school program administration domains, the foundation of more dated administrative certification programs. Though affecting cultural change is arguably a part of instructional leadership, the interpretation of that indicator may have been more focused on community building. Incorporating the results from the person-fit analyses, this study verified that instructional leadership professional development is one of the most needed resources and supports for principals.

Implications and future studies

This study used a psychometric approach to evaluate school and district administrators’ responses to principals’ professional development needs. The survey was developed based on Hallinger’s (2010) theoretical framework; the magnitude of the correlations among these items and the high magnitude of reliability both indicate that this survey is appropriately designed.

Principal leadership has become a focus of research for many reasons, one of which is the impact on student learning. Future studies may focus on principal self-efficacy and pre- and post-targeted professional development. One would note the type and duration of professional development provided as well. Research has shown that principal performance may not improve with graduate coursework (Grissom & Harrington, 2010); therefore, other models of professional development may need to be explored. Longitudinal studies could analyze the impact on student learning and principal retention.

Additional studies could also utilize some qualitative data that would underscore the discrepancies in the ratings. Qualitative data may highlight perceptions on the

three prongs of leadership and the skills that are reinforced within a district. This type of study could highlight a change in professional development plans.

The current study does, however, highlight the need for principals to continue learning. Superintendents note, in the perceived ability ratings of their principals, that principals do need to continue to learn and grow. Principals, themselves, also note this need, especially in the domain of instructional leadership. The principal's instructional leadership ability has been found to have a direct, positive impact on student achievement results (O'Donnell & White, 2005) and teacher self-efficacy (Bellibas & Liu, 2016; Liu & Hallinger, 2018). Both of these factors are vitally important to a school's success.

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