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Addressing the Achievement Gap: Exploring Principal Leadership and Teacher Professional Learning in Urban and Rural Primary Schools in Thailand

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An interest in strategies for improving schooling have long been shared across societies throughout the world (Levin and Lockheed, 1993). This is also the case in developing societies where increasing educational access and improving education quality have formed the foundation of national development strategies over the past 60 years (Sayed, 2010; Stelmach, 2011; UNESCO, 2014). Nonetheless, even in developing societies that have succeeded in improving educational access, new problems have arisen over the unequal distribution of resources and educational quality (e.g., Hannum *et al.*, 2008; OECD, 2014). Thus, an unanticipated but common consequence of economic development in these societies has been a gap in the achievement of urban and rural students (Lounkaew, 2013; Sayed, 2010; Stelmach, 2011).

Internationally, numerous strategies have been proposed to address the urban-rural achievement gap (Hannum *et al.*, 2008; Sayed, 2010; Stelmach, 2011; UNESCO, 2014). Early policy proposals focused on the reallocation of additional financial and physical resources to rural schools (Kantabutra and Tang, 2006). However, more recent thinking has shifted towards reducing inequities in the quality of human resources available to urban and rural schools (Hallinger and Liu, 2016; OECD, 2014; Othman and Muijs, 2013). The rationale for this shift was articulated by Othman and Muijs (2013).

Most literature on urban-rural schools in developing countries seems to concentrate on physical resource differences, but research on school quality and effectiveness shows that this is not the only pertinent factor. Therefore, there is a need for more research on urban-rural differences in other school quality factors. Though there are some studies in developing countries that included other quality

factors besides educational resources. . . the number of such studies is limited, and they are infrequently concerned with urban-rural differences. (pp. 104-105)

These observations are relevant in Thailand where the past 30 years have witnessed a large-scale migration of rural adults to the metropolis of Bangkok (Braddock, 2010; Fang and Sakellariou, 2013). This has resulted in a widening gap in educational quality and outcomes between schools in urban and rural areas (Fry and Bi, 2013; Lounkaew, 2013; OECD, 2014; Pattaravanich *et al.*, 2005). For example, Jitradup (2016) asserted that “most concerns arising from exam results were about inequality and discrepancies in the Thai education system as seen in the wide gap between the scores of urban and rural students” (Bangkok Post, 2016, n.p.). Similarly, Nakornthap, stated that "inequality in the education system is the biggest issue. Poor scores are believed to be from small schools mostly in rural areas, while most students in urban areas and from leading schools are believed to have gotten higher scores” (Bangkok Post, 2016, n.p.). Finally, Nieto and Ramos (2013) concluded that among all relevant factors, principal and teacher quality represent the most powerful alterable variables influencing differences in the student achievement outcomes of urban and rural students.

This quantitative study examined how school leadership influences teacher professional learning in urban and rural primary schools in Thailand. More specifically, we inquired into whether there were differences in how the learning-centered leadership of principals influences teacher engagement in professional learning in a sample of 60 urban and rural primary schools. The study tested a conceptual model that proposed teacher agency and teacher trust as mediators of school leadership effects on teacher engagement in professional learning. We used

confirmatory factor analysis and structural equation modeling to analyze survey data collected from 1,011 teachers in 30 urban and 30 rural primary schools.

In light of the urgency accorded to finding solutions for reducing the urban/rural achievement gap (Lounkaew, 2013; *The Nation*, 2014), this research has implications for policy and practice in Thailand as well as other developing nations. More broadly, the study contributes to growing global (Geijsel *et al.*, 2009; Hallinger, 2011; Thoonen *et al.*, 2012), regional (Hallinger, 2001; Hallinger and Liu, 2016; Li *et al.*, 2016; Othman and Muijs, 2013) and Thai literatures concerned with leading learning in the context of education reform (Hallinger and Lee, 2011; Sakulsumpaopol, 2010).

### **Theoretical Perspective**

In this section we begin by contextualizing the research problem in Thailand. Then we present the conceptual model of principal leadership and teacher learning and define the main variables.

#### **Changing Education Context in Thailand**

Although Thailand's integration into the global economy has dramatically increased the nation's wealth over the past 25 years, the benefits have not been shared equally across different layers of Thai society (Braddock, 2010; Fang and Sakellariou, 2013; Fry and Bi, 2013; OECD, 2014). A migration of workers to urban centers has left many rural communities 'hollowed out' in terms of working-age adults. Consequently, the task of raising rural youth in Thailand is largely left to grandparents who lack the time, energy, and literacy to support their education (Lounkaew, 2013). Lack of home and community resources to support student learning is

exacerbated by school funding policies that often penalize schools located in rural communities (Kantabutra and Tang, 2006). Consequently, there is broad-based concern over the widening gap in the achievement of urban and rural children in Thailand (Lounkaew, 2013; Pattaravanich *et al.*, 2005; Sangnapaboworn, 2007; *The Nation*, 2014).

Research finds that school quality matters and can explain the performance differential between students in urban and rural areas in Thailand (Lounkaew, (2013). A recent assessment by the Office for National Education Standards and Quality Assessment (ONESQA) reveals that about 3,243 out of 15,515 schools assessed did not pass minimum quality requirements, and that the majority of low-performing schools were in rural areas. (OECD, 2014).

Teachers working in rural schools tend to face more difficulties not only in the workplace, but also at home (Klongklaew, 2012; Sangnapaboworn, 2007; Secretariat of Education, 2010). Sangnapaboworn (2007) elaborated on this issue stating, "Apart from the problems of debt and poor working conditions, teachers had inadequate access to new knowledge and information technology due to the lack of professional development. Many of them have never received any on the job training to develop new knowledge or professional skills" (p. 280). Consequently, given a choice, most teachers in Thailand would choose to work in more developed areas of the country (*Bangkok Post*, 2015; Pasathang *et al.*, 2016; Sangnapaboworn, 2007; *The Nation*, 2014).

Unfortunately, research has painted a less than optimistic portrait with respect to the capacity of Thailand's principals and teachers to address these deficiencies in rural schools (Hallinger and Lee, 2011, 2013; Sakulsumpaopol, 2010; Sangnapaboworn, 2007; Varavarn,

2011). Issues of motivation, access to quality professional development and insufficient leadership have been identified as impediments to the capacity development of Thai educators (Kamini, 2011; Pasathang et al., 2016; Pillay, 2002; Pongchit, 2005; Sangnapaboworn, 2007; Srinil, 2009). Moreover, as suggested, these limitations appear to disproportionately impact educational quality in rural schools (Klongklaew, 2012; OECD, 2014; Pongchit, 2005; Sangnapaboworn, 2007).

### **Conceptual Framework**

The conceptual model that guided this study was informed by prior research conducted on leadership and teacher professional learning in Hong Kong and mainland China (Hallinger and Liu, 2016; Hallinger and Lu, 2014; Li *et al.*, 2016; Liu, Hallinger and Feng, 2016). Our conceptual model proposed that principal leadership has both direct effects and indirect effects on teacher engagement in professional learning (see Figure 1). More specifically, we suggest that teacher agency and teacher trust represent ‘internal paths’ that mediate the principal’s influence on the professional learning of teachers. The direct path between leadership and teacher learning is shown as a dotted line because we hypothesize that most of the leadership effects will be indirect.

Insert Figure 1 about here

Our conceptualization of learning-centered leadership synthesized prior research conducted on instructional and transformational leadership (Hallinger, 2011; Hallinger & Lee, 2013; Leithwood and Jantzi, 2006; Slegers *et al.*, 2014). Research on instructional leadership highlights the role principals play in formulating a school mission, developing a culture focused on teacher and student learning, and supporting efforts to implement new skills in their

classrooms (Hallinger and Lee, 2011, 2013; Hallinger, Lee, and Ko, 2014). Transformational leadership practices seek to build a school environment that support the capacity development of both teachers and students (Leithwood and Jantzi, 2006). Relevant leadership practices include inspiring and motivating teachers, as well as modeling and reinforcing norms of learning throughout the school (Frost, 2006; Geijsel *et al.*, 2009; Thoonen *et al.*, 2012; Vanblaere and Devos, 2016).

In this study, we conceptualized teacher professional learning as continued professional development in the workplace (Opfer and Pedder, 2011). The workplace learning of teachers can take place in formal settings such as workshops, teaching research groups, and mentoring programs (Little, 2012; Timperly, 2011). However, teachers also learn through informal interactions during the course of peer teaching, collaborative planning, shared assessment, and informal mentoring (Lai *et al.*, 2016; Little, 2012; Liu *et al.*, 2016; Schechter and Qadach, 2012). Fundamental issues for both system- and school-level leaders concern how to motivate and support teachers, not only to engage in continued learning but to do so with enthusiasm and the intent to put new knowledge into practice (Kamini, 2011; Lai *et al.*, 2016; Li *et al.*, 2016; Liu *et al.*, 2016; Thoonen *et al.*, 2012; Slegers *et al.*, 2014).

As indicated above, we proposed that the relationship between school leadership and teacher learning is mediated by attitudes of the teachers. More specifically, we believe that attitudes such as 'trust' and 'agency' shape teacher motivation and interest to engage in further learning (Evers *et al.*, 2015; in de Wal *et al.*, 2011; Sangnapaboworn, 2007; Srinil, 2009; Timperley, 2011). For example, a growing literature highlights the role that trust can play in shaping teacher motivation to learn (Cosner, 2009; Cranston, 2011; Hallinger and Lu, 2014; Li *et al.*, 2016; McAllister, 1995; Wahlstrom and Louis, 2008). Trust can influence the willingness to

engage with colleagues in collaborative activities which foster exchange and shared learning. When these varied facets of trust describe professional relationships in the school environment, research suggests that teachers are more likely to cooperate, collaborate, and engage in professional learning (Bryk and Schneider, 2002; Cosner, 2009; Cranston, 2011; Hoy and Tschannen-Moran, 1999; Tschannen-Moran, 2004).

Teacher agency refers to related behaviors of teacher engagement, initiative and ownership in learning and change (Emirbayer and Mische, 1998; Priestley *et al.*, 2015; Yang, 2005). Teachers with a strong sense of agency demonstrate proactive engagement in collective efforts at change (Datnow, 2012; Priestley *et al.*, 2015). They take responsibility for directing their own learning and appear more willing to take risks (Frost, 2006; Kwakman, 2003). Given these characteristics, teacher agency has attracted increased interest from scholars and policymakers as a potential point of leverage in the implementation of nationally mandated education reforms (e.g., Priestley *et al.*, 2015; Shen, 2015; Yang, 2005). Notably, scholars have identified a variety of school conditions, including leadership, that can foster a sense of agency among teachers (e.g., De Neve *et al.*, 2015; Frost, 2006; Kwakman, 2003; Leithwood and Jantzi, 2006; Ross and Gray, 1992).

## **Method**

This study employed a quantitative survey research design to assess our conceptual model of leadership and teacher learning in Thailand. In this section of the paper we describe the sample, procedures for data collection, operationalization of the constructs, and the analytical techniques used to address the research questions.



## Sample

Using quota sampling, we determined that a sample size of 60 schools, comprised of 30 urban and 30 rural primary schools, would be sufficient to conduct the desired statistical tests. Two urban and two rural school districts were selected based on convenience for school visitations. After obtaining the names of primary schools in these districts, we sorted the schools based on size so that only medium-size primary schools (300 to 400 students) were included in the two working lists. The schools were then placed in a random order. As the researchers contacted the schools to seek their participation in the study, we continued to select schools from the list until we reached the desired quota of 30 urban and 30 rural schools.

## Data Collection

After obtaining participation of the selected schools, we collected survey data from principals and teachers by post. A package containing a cover letter reiterating the purpose of the study and procedures for data collection was sent to each of the principals. Data were collected from teachers at faculty meetings and returned to the researchers.

These procedures yielded a total of 1,011 teacher questionnaires (89% response rate) and 60 principal questionnaires (100% response rate). The sample of teachers was largely female (77%), older (62% > 40 years), and experienced (74% with more than six years of teaching experience); almost all had graduated from university with a bachelor degree (99%). As shown in Table 1, the urban and rural teacher cohorts were roughly similar on the selected criteria except for age, where the rural teachers were somewhat older. The principals were largely male (66%), older (95% > 50 years), experienced (98% > 10 years of experience), and held a graduate

degree (90%). These figures are largely in line with the population of Thai teachers and principals (World Bank, 2016).

Insert Table 1 about here

## Measures

Content validation procedures were aimed at ensuring that items would be 'meaningful' to the respondent group (i.e., Thai teachers and principals). A committee comprised of three university lecturers and two school principals reviewed the items independently and made recommendations for revisions. Small changes were made to about 10% of the items in order to ensure greater clarity of understanding among Thai teachers and principals.

The scale used to measure Learning-Centered Leadership consisted of four factors: *Builds a Learning Vision* (six items), *Provides Learning Support* (eight items), *Manages the Learning Program* (six items), *Modeling* (five items). The scale for Teacher Trust drew on 17 items from scales authored by Tschannen-Moran (2004) and McAllister (1995). The measure for Teacher Agency used 24 items from scales authored by Shen (2015) and Peng and colleagues (Peng *et al.*, 2006). The scale for Teacher Professional Learning consisted of 25 items drawn from several previously developed scales (i.e., Evers *et al.*, 2015; in de Wal *et al.*, 2014; Kwakman, 2003; Schechter and Qadach, 2012). Items comprising these scales were earlier described in a study by Hallinger and Liu (2016).

## Data Analysis

Data analyses followed the sequence of our research questions. We sought to determine if these leadership and teacher learning processes operated in a similar manner across the urban and

rural schools (research Question #1). Then, if they did, we would assess whether the 'strength' of these processes were similar or different in urban and rural schools. Together the analyses would give insight into whether there was a gap in 'human resource capacity' between our sample of urban and rural primary schools.

However, prior to addressing the first research question, we needed to establish the measurement properties of the instrument. Cronbach's alpha test was employed to test for reliability. Then we conducted second-order confirmatory factor analysis (CFA) to check whether the dimensions comprising each of the main constructs (e.g., learning-centered leadership, trust etc.) loaded onto a single latent factor. We employed several complementary indices ( $CFI > 0.90$ ,  $SRMR < 0.08$ , and  $RMSEA < 0.06$ ) to assess goodness of model fit (Hu and Bentler, 1999).

Our first research question sought to understand if there were differences in the operation of our conceptual model of leadership and teacher learning between the urban and rural samples. Before proceeding with this analysis, however, it was necessary to establish measurement invariance or equivalence of the constructs across the urban and rural groups (Byrne and Stewart, 2006; Chen et al. 2005). We employed multi-group confirmatory factor analysis to test for measurement invariance among the four constructs in the urban and rural schools (Chen et al. 2005; Meredith, 1993).

After establishing measurement invariance, we applied structural equation modeling (SEM) to generate and compare independent models of leadership and teacher learning for the urban and rural primary schools. We used Mplus Version 7.4 (Muthén, Muthén, 2005) to define the measurement model and analyze path relationships among constructs. Here we sought to

understand whether the paths within the two models were similar or different in the two sets of schools. The SEM analysis was complemented by bootstrap analysis, as recommended by Preacher and Hayes (2008) to test for mediation (see also Cheung and Lau, 2008).

Then, we turned to the second research question where we sought to determine if there were differences in the strength or levels of the variables across the urban and rural school settings. We used independent samples t-tests to determine the statistical significance of differences in mean scores for the constructs between the urban and rural schools. Finally, we tested the configural invariance and path coefficient invariance of the leadership and teacher learning model across the two groups to gain further insight into the nature of differences.

## Results

The results are presented in two main sections. First we examine the measurement model to confirm the viability of our approach to measuring the variables of interest. Then we present the substantive results with respect to the research goal of understanding the relationship of principal leadership and teacher learning in urban and rural primary schools.

### Measurement Model

The reliability analysis found that *alpha* coefficients exceeded .90 for all four constructs (see Table 2). This was consistent with results reported for the same constructs in Mainland China (Liu *et al.*, 2016).

Insert Table 2 here

CFA was conducted to test the measurement model for the rural and urban groups. In Table 3, a variety of model fit indices are presented, including chi-square, CFI, SRMR, and the

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90% confidence interval for RMSEA. The significant chi-square values are sensitive to the large sample size. Therefore, fit was assessed using CFI, SRMR, and RMSEA. These met the required standards which then allowed us to proceed with the invariance tests.

Insert Table 3 here

Multi-group confirmatory factor analysis was used to assess the measurement invariance of the four variables across the urban and rural school settings. Data presented in Table 4 confirmed measurement invariance on three indices: configural, metric, and scalar invariance. Configural invariance served as the baseline against which all remaining models were compared to determine measurement invariance.

Insert Table 4 here

Change in CFI values on learning-centered leadership was 0.002 for metric invariance and 0.001 for scalar invariance. Change in CFI values on teacher trust was 0.002 for metric invariance and 0 for scalar invariance. Change in CFI values on teacher agency was 0.002 for metric invariance and 0.001 for scalar invariance. Change on CFI values for teacher professional learning was 0.002 for metric invariance and 0 for scalar invariance. These data suggest that configural invariance for the nested models using the four main variables ranged from negligible to minimal (see Table 4). The indices used for measuring metric and scalar invariance also indicated a satisfactory fit even after constraining parameters and factor loading across the two groups. We conclude that there were no meaningful discrepancies in model fit for the four main constructs in urban and rural schools.

## Leadership and Teacher Learning in Urban and Rural Primary Schools

In the next step, we developed a general structural equation model of leadership and learning for the urban and rural schools. The structural model was based on the conceptual relationships shown earlier in Figure 1. The standardized parameter estimates shown in Figures 2 and 3 provide effect sizes associated with the partial mediation model for the urban and rural schools.

Insert Figure 2 about here

The data shown in Figures 2 and 3 reveal the following relationships among the leadership and teacher learning process constructs for urban and rural primary schools.

- Learning-Centered Leadership *did not* demonstrate a meaningful, significant direct effect on Teacher Professional Learning in either urban or rural schools.
- Learning-Centered Leadership *did not* evidence a meaningful direct effect on Teacher Agency in either urban and rural schools;
- Learning-Centered Leadership *did* demonstrate a strong, significant, positive direct effect on Teacher Trust in both urban ( $\beta=0.767$ ,  $p<.001$ ) and rural schools ( $\beta=0.851$ ,  $p<.001$ );
- While Teacher Trust was *not* directly associated with Teacher Professional Learning in either school setting, it *did* demonstrate a significant positive direct effect on Teacher Agency in both urban ( $\beta=0.664$ ,  $p<.001$ ) and rural schools ( $\beta=0.767$ ,  $p<.001$ );
- Teacher Agency *did* evidence a strong, significant, direct effect on Teacher Professional Learning in both urban ( $\beta=0.799$ ,  $p<.001$ ) and rural schools ( $\beta=0.837$ ,  $p<.001$ ).

Insert Figure 3 about here

Next we extended the SEM results using bootstrap analysis. Table 5 shows the 95% bias corrected bootstrap confidence intervals (based on 2,000 bootstrap samples) for the joint indirect effects of Learning-Centered Leadership through Teacher Trust and Teacher Agency (LCL>TT>TA>TPL). As shown in Table 5, the partial mediation models for the pooled sample, urban sample, and rural sample all met the standard for ‘acceptable fit’ to the data. We further note that the joint indirect effects did not include zero in either urban and rural settings (lower 2.5% limit = 0.407 and upper 2.5% limit = 0.740 for rural settings; lower 2.5% limit = 0.301 and upper 2.5% limit = 0.582 for urban settings). This reaffirms that, together, Teacher Trust and Teacher Agency acted as significant mediators of Leadership effects on Teacher Professional Learning.

Insert Table 5 here

The indirect effects of Teacher Trust (LCL-TT-TPL) include zero in both urban and rural settings (see Table 5). This reaffirms the SEM finding that Teacher Trust was *not* directly related to Teacher Professional Learning. The bootstrap analysis further indicated that the indirect effects of Learning-Centered Leadership on Teacher Professional Learning through Teacher Agency (LCL-TA-TPL) were *not* significant in the rural schools (lower 2.5% limit = -.043 and upper 2.5% limit = 0.267), but weakly significant in the urban schools (lower 2.5% limit = .010 and upper 2.5% limit = 0.244).

The total effect of Learning-Centered Leadership on Teacher Professional Learning was 0.614\*\*\* for urban schools and 0.546\*\*\* for rural schools (see Table 5). When the mediating variables (TT and TA) were included in the analysis, the direct effect of Learning-Centered Leadership on Teacher Professional Learning was reduced from 0.685\*\*\* to 0.116\* for urban

schools and from 0.791\*\*\* to 0.048 for rural schools (see Table 5). Although the inclusion of these mediating variables did not reduce the direct effect of Learning-Centered Leadership on Teacher Professional Learning to zero, the remaining direct effect was not meaningful in the urban schools (0.116\*) and non-significant in the rural schools. When considered in light of the results of the invariance analysis, these results offer further support for a *full mediation model* of leadership effects on teacher learning in both urban and rural schools sampled in our study (Preacher and Hayes, 2008).

Insert Table 6 here

Next, we examined whether there were differences in the ‘strength’ of these process variables between the rural and urban schools. Upon initial inspection we noted that mean scores for the constructs obtained from teacher ratings appeared high for both urban and rural schools (see Table 2). Nonetheless, results of independent samples t-tests indicated that the mean values on the four main variables (see Table 2) and all 15 subscales (not tabled) were consistently and significantly lower (~10%) for the rural schools ( $p < 0.001$ ) than the urban schools. This offers evidence of a human resource gap between the urban and rural schools.

Finally, we examined the equivalence of the structural models. The configural model, in which no equality constraints were imposed, represented a good fit to the data (see Table 6). This model served as the baseline. Then, when the path coefficients were constrained to be invariant across the urban and rural schools, we still found an excellent fit to the model ( $\chi^2=18823.502$ ;  $df=7988$ ;  $CFI=0.848$ ;  $RMSEA=0.052$ ;  $SRMR=0.083$ ). According to strictly statistical criteria ( $\Delta\chi^2$ ), the difference in adjustment between the baseline and the constrained model was statistically significant. However, the  $\Delta CFI$  value of -0.001 was smaller than -0.01 (see Table 6).



We can conclude that the model exhibits invariance of path coefficients across the urban/rural schools should not be rejected (Cheung and Lau, 2008; Greendemers *et al.*, 2008). These findings imply that although the leadership-teacher learning process model seems to operate in a similar fashion across the urban and rural schools, the strength of these human resource processes is ‘weaker’ in the rural sample.

## **Discussion**

Researchers have identified a ‘gap’ in the learning outcomes of urban and rural youth across numerous developing societies (Hannum *et al.*, 2008; Othman and Muijs, 2013; OECD, 2014; Sayed, 2010; Stelmach, 2011). In Thailand, public perceptions of differences in access to educational quality as well as in the academic achievement of urban and rural youth have become a factor fueling social conflict (Lounkaew, 2013; Fang and Sakellariou, 2013; Pattaravanich *et al.*, 2005). The social importance of this issue framed our interest in studying leadership and teacher learning in urban and rural primary schools in Thailand. In this section of the paper, we review limitations of the study, offer our interpretation of the results, and place the findings in broader social perspective.

### **Limitations of the Study**

Several limitations bear on the interpretation of our findings. First, the study focused only on primary schools, which scholars view as a more hospitable environment for learning-centered leadership and teacher collaboration than high schools. Thus, it is possible that different results could be found in high schools. Second, we noted that the mean scores obtained on the leadership and teacher learning constructs were somewhat higher than we had expected. Although data analysis affirmed the reliability and validity of the data, additional research is

warranted to verify that the scales are validly measuring the proposed constructs. Third, although our use of the term 'effects' is consistent with the common interpretation of the statistics generated by SEM and bootstrapping, the study's cross-sectional design is not capable of determining causal relationships within our conceptual model. Although longitudinal data are more costly to obtain, they could offer greater insight into the dynamic processes associated with leadership and teacher learning in the workplace (Hallinger and Heck, 2014).

### Summary and Interpretation of the Findings

The main results of the study can be summarized as follows.

- Learning-centered leadership evidenced a strongly positive (0.685 to 0.791), statistically significant ( $p < .001$ ) total effect on the professional learning of teachers in both urban and rural primary schools.
- The effects of principal leadership on teacher professional learning were wholly mediated by teacher trust and teacher agency in both urban and rural schools, with leadership having a strong direct effect on trust but no meaningful direct effect on teacher agency.
- Each of the statistically significant paths in the mediation model (i.e., LCL>TT>TA>TPL) evidenced moderate to strong, direct effects on the *adjacent* variables.
- There were no meaningful differences in the nature of variable relationships within the path model when comparing the urban and rural schools.
- Finally, the *magnitude* of mean teacher ratings of the constructs was significantly higher in the urban schools than the rural schools.

These results offer further evidence of an 'education quality gap' between urban and rural schools in Thailand (e.g., Lounkaew, 2013; Pattaravanich *et al.*, 2005; OECD, 2014; Sangnapaboworn, 2007; UNESCO, 2014). The teacher ratings suggested stronger leadership

from the urban principals and higher engagement in professional learning among the urban teachers as compared with the rural educators. This implies that the gap in initial qualifications of urban and rural teachers previously reported in Thailand likely grows over time due to lower levels of engagement in workplace learning among teachers in rural schools. This pattern of findings is remarkably similar to those reported by Hallinger and Liu (2016) in Mainland China.

Moreover, the indication that leadership effects on teacher learning are achieved first through building trust and then through teacher agency offers a potentially important insight with implications for school leadership and improvement. Past research has established the importance of trust as a foundation block for sustainable school improvement (e.g., Bryk and Schneider, 2002; Louis, 2007). Our findings offer an interesting elaboration on this broad prescription by suggesting that leadership which 'builds a trusting environment' does not necessarily translate into stronger teacher engagement in professional learning. Once trust is established, leaders must also employ empowerment strategies that gradually transfer responsibility, decision-making and ownership for teachers' learning (i.e., agency) to teachers.

We also wish to interpret the meaning of these results in the Thai cultural context. In Thailand, principals have traditionally played a role as symbolic-bureaucratic leaders (Hallinger, 2004). Thai principals were first and foremost 'figureheads' in both the school and community. Their role was to 'be' more than to 'do'.

This perspective was framed by Redmond (2012) who asserted: "Whereas Western power is held by "heads" [e.g., of governments, schools or corporations], Thai leaders are [called] *huan*—'heads in front,' front being rendered by the word *na*, which means 'face'" (p. 75). Indeed, in Thailand, school leadership (or better yet, administration) has traditionally been interpreted as

'presenting one's face' or playing a role. Thus, much of the Thai principals' time is consumed by participation in 'symbolic activities'. These include a host of rites, rituals, meetings and ceremonies conducted inside and outside of the school. This 'cultural interpretation' of the Thai principal's role helps explain why prior research has identified a slow uptake of new roles such as 'change leader' or 'instructional leader' (Hallinger, 2004; Hallinger and Lee, 2013; Sakulsumpaopol, 2010). Thai principals have neither been socialized nor trained to believe that their leadership role is primarily 'instrumental' in the sense, for example, of coaching teachers, monitoring student achievement scores, or using data for decision-making (Hallinger and Lee, 2013).

In this research our measure of 'teacher trust' was based largely on the theoretical work of Western scholars (e.g., Louis, 2007; McAllister, 1995; Tschannen-Moran, 2004). However, in the Thai context, trust is arguably even more complex in structure and meaning than in Western societies. For example, Moore (1992) identified at least 22 discrete words for 'trust' in the Thai language. These connote a more refined variety of 'faces of trust' in relationships, and highlight both the centrality and complexity of trust in Thai social interactions. Holmes *et al.* (1996) made this point in their discussion of management-staff interaction in Thailand.

Most successful expat managers [in Thailand] will tell you that gaining the trust of your people is the biggest step towards encouraging more assertive behavior. If they know you are open to all ideas and opinions and that they risk very little. . . then you may very well end up with a talkative staff in the long run. . . Thai's will talk, but preferably not at the risk of offending or being offended. (Holmes *et al.*, 1996, p. 88)

Western principals will, no doubt, assert that they too must establish trust with their teachers. However, we suggest that there is a significant difference in both the degree and manner by which this relational process unfolds in strongly hierarchical societies like Thailand. Thus, our finding has broader implications for principal efforts to motivate and support teacher learning in other societies where hierarchical relations are a distinctive feature of the culture.

Opposite from the Thais - and Asians in general - Australians, Americans and many Western Europeans are taught, from childhood, to stand up and speak out, even to question the teacher [or leader]. But the hierarchical society does not permit the risk of attack on another's pride, especially if the person is higher up on the social ladder. *And even if the person is not higher in rank, his feelings need to protected as well* [emphasis added]. (Holmes *et al.*, 1996, p. 87)

The above quotation further reinforces the point that even in a 'collectivist society' like Thailand (Holmes *et al.*, 2016), trust among one's colleagues is a precious commodity. It cannot be taken for granted and must be nurtured. Otherwise teachers will be very reluctant to share their knowledge with colleagues.

[In Thai culture] debate and innovation are seen to be literal trust-busters. Suspicion of knowledge as either too indispensable to be given out or too useless to be taken in creates a climate in which the fruits and foliage are more precious than the inner, unapproachable tree of knowledge itself. (Redmond, 2012, p. 195)

These cultural norms related to trust shape the willingness of Thai teachers to exercise agency, to take initiative, to 'own' ideas and assert their needs and priorities (Emirbayer and

Mische, 1998; Frost, 2006; Yang, 2015). Within strongly hierarchical societies (e.g., Thailand, China, Malaysia), teachers who exercise agency will often bump up against relational norms that threaten trust. Thus, our findings suggest that, in Thai schools teacher agency is only likely to be 'activated' *after* a strong foundation of trust has already been established between the principal and teachers, and among the teachers as a group. Moreover, we suggest that in the absence of leadership, these positive group norms often do not emerge and take root (see also McGuigan and Hoy, 2006; Saphier and King, 1985; Vanblaere and Devos, 2016; Wahlstrom and Louis, 2008).

In terms of research implications, our results support an emerging body of research that links the urban/rural gap in student achievement in developing societies to alterable educational quality factors (Hallinger and Liu, 2016; Hannum *et al.*, 2008; Li *et al.*, 2016; Liu *et al.*, 2016; Othman and Muijs, 2013). This advances the field beyond econometric analyses of differences in the allocation of financial and physical resources to urban and rural schools (e.g., Kantabutra and Tang, 2006). Notably, however, our study did not seek to test the relationship of leadership, teacher learning and student learning outcomes in the urban and rural schools. If scholars are able to access appropriate student achievement data, this would be a worthwhile direction for future research as it would move the field a step forward in establishing a causal relationship and provide a firmer basis for actionable strategies.

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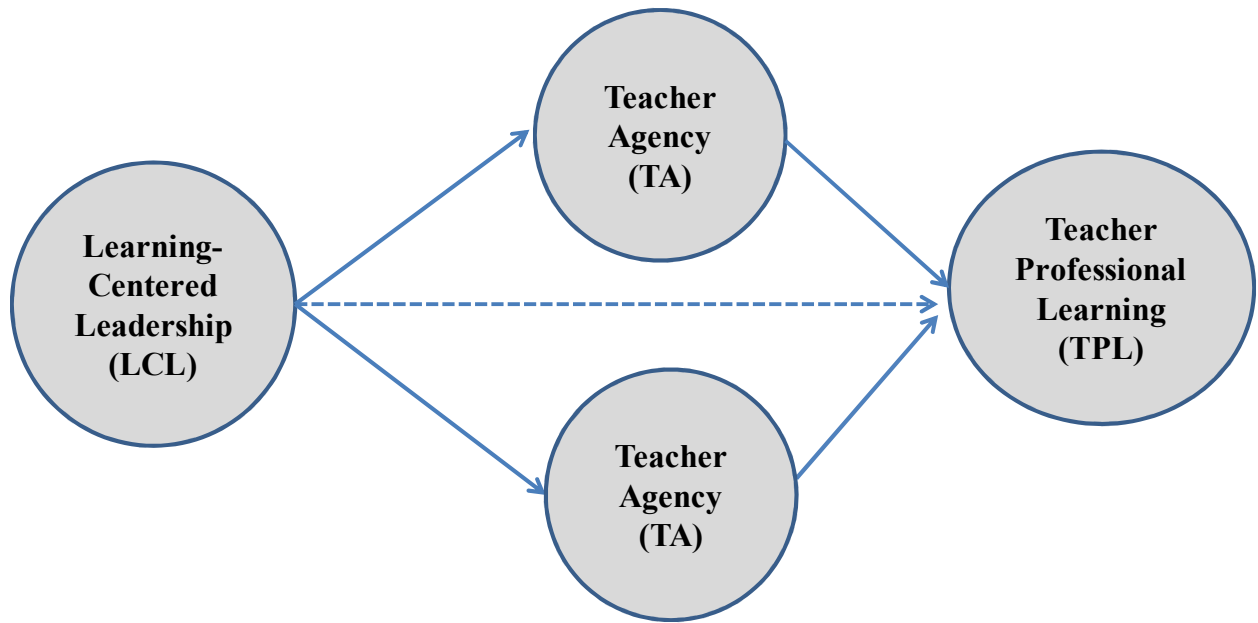
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*Figure 1.* Hypothesized model of leadership and teacher learning in Thai schools

$\chi^2=12505.054$  ;  $df=3983$ ;  $CFI=.811$ ;  
 $SRMR=.061$ ;  $RMSEA=.061$ .

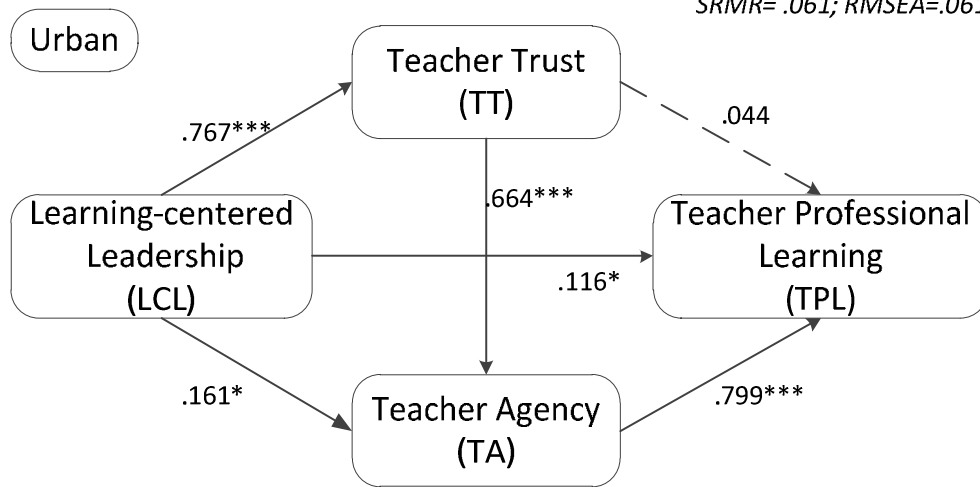


Figure 2. SEM model of leadership and teacher learning in Urban sample

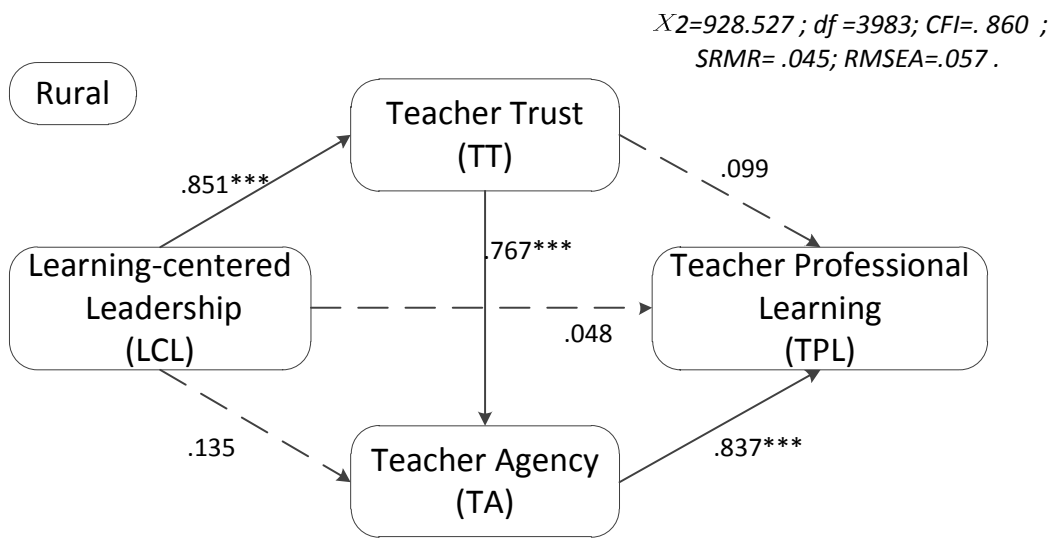


Figure 3. SEM model of leadership and teacher learning in Rural sample

**Table 1.** Characteristics of the teacher sample

<b>Teacher Characteristics</b>	<b>Urban</b>	<b>Rural</b>
<i>Gender</i>		
Female	78.27%	75.73%
Male	21.73%	24.27%
<i>Age</i>		
<30 years	20.14%	14.16%
31 - 39 years	22.97%	17.53%
40-49 years	17.67%	19.78%
50 years old or above	39.22%	48.54%
<i>Highest Education</i>		
Less than Bachelor's Degree	0.71%	1.57%
Bachelor's Degree	68.02%	71.69%
Master's Degree	30.92%	26.52%
Doctoral Degree	0.30%	-
<i>Years of work experiences</i>		
Less than 2 years	9.01%	7.64%
2-5 years	19.61%	14.83%
6-10 years	19.96%	14.61%
More than 10 years	51.41%	62.92%

**Table 2.** Descriptive statistics, internal consistency, AVE, and t-tests of constructs by school location

Constructs/Statistics	Urban Schools (30) (566 teachers)		Rural Schools (30) (445 teachers)		All Schools		Correlations among measures				All Schools	Urban v. Rural	
	Mean	SD	Mean	SD	Mean	SD	1	2	3	4	$\alpha$	AVE	t-test
<i>1 Leadership</i>	4.157	0.764	3.807	0.858	4.034	0.670	1				0.979	0.886	8.375***
<i>2 Teacher Trust</i>	3.896	0.712	3.862	0.779	4.037	0.568	.767**	1			0.952	0.824	7.718***
<i>3 Teacher Agency</i>	4.333	0.616	3.982	0.715	4.197	0.522	.725**	.791**	1		0.968	0.906	11.013***
<i>4 Teacher Learning</i>	4.240	0.664	3.917	0.766	4.121	0.561	.727**	.776**	.888**	1	0.972	0.897	9.122***

Note: \*\*\* =  $p < 0.001$ , 95% confidence interval; all analyses based on teacher data

**Table 3.** Model fit for the main variables in urban and rural schools

<b>Subsample</b>	$\chi^2$	<b>df</b>	<b>CFI</b>	<b>SRMR</b>	<b>RMSEA</b>
<i>Learning-Centered Leadership</i>					
Urban Schools	1556.540	271	0.905	0.039	0.092 (0.087~0.096)
Rural Schools	1098.327	271	0.927	0.033	0.083 (0.078~0.088)
Total sample	2139.710	271	0.927	0.031	0.083 (0.079~0.086)
<i>Teacher Trust</i>					
Urban Schools	675.201	116	0.885	0.051	0.092 (0.086~0.099)
Rural Schools	512.505	116	0.913	0.046	0.088 (.080~0.095)
Total sample	995.907	116	0.909	0.044	0.087 (0.082~0.092)
<i>Teacher Agency</i>					
Urban Schools	1367.136	248	0.878	0.051	0.089 (0.085~0.094)
Rural Schools	995.166	248	0.916	0.042	0.082 (0.077~0.088)
Total sample	1933.894	248	0.913	0.039	0.082 (0.079~0.085)
<i>Teacher Professional Learning</i>					
Urban Schools	2490.871	271	0.804	0.075	0.120 (0.116~0.125)
Rural Schools	1447.147	271	0.896	0.043	0.099 (0.094~0.104)
Total sample	3545.141	271	0.862	0.055	0.109 (0.106~0.113)

*Note:* Urban schools n=566; Rural schools n=445; Total sample=1,011; df=degree of freedom;

**Table 4.** Tests for invariance of variables by school location: Goodness-of-Fit Statistics

Models	$\chi^2$	df	CFI	SRMR	RMSEA (90%CI)	Model Comparison	$\Delta$ CFI
<b>Learning-Centered Leadership</b>							
Configural invariance	2125.698	567	0.917	0.087	0.074 (0.070~0.077)		
Metric invariance	2037.272	563	0.922	0.045	0.072 (0.069~0.075)	2 VS 1	0.002
Scalar invariance	2179.131	588	0.915	0.090	0.073 (0.070~0.076)	3 VS 1	0.001
<b>Teacher Trust</b>							
Configural invariance	1271.456	249	0.892	0.085	0.090 (0.085~0.095)		
Metric invariance	1209.339	246	0.898	0.052	0.088 (0.083~0.092)	2 VS 1	0.002
Scalar invariance	1292.113	263	0.891	0.087	0.088 (0.083~0.093)	3 VS 1	0.000
<b>Teacher Agency</b>							
Configural invariance	1982.251	520	0.897	.113	0.075 (0.071~0.078)		
Metric invariance	1887.761	516	0.903	0.055	0.073 (0.069~0.076)	2 VS 1	0.002
Scalar invariance	2050.274	540	0.893	0.123	0.074 (0.071~0.078)	3 VS 1	0.001
<b>Teacher Professional Learning</b>							
Configural invariance	2946.276	566	0.852	0.101	0.091 (0.088~0.094)		
Metric invariance	2838.781	563	0.858	0.069	0.089 (0.086~0.093)	2 VS 1	0.002
Scalar invariance	3035.864	588	0.847	0.111	0.091 (0.088~0.094)	3 VS 1	0

*Note:* CFI = robust CFI; SRMR = standardized root mean squared residual; RMSEA = robust root mean squared error of approximation; 90% CI = 90% confidence interval.



**Table 5.** Bootstrapping results for assessing the mediated effects model

	<i>Point Estimate</i>	<i>Product of Coefficients</i>		<i>95% Bootstrap CI</i>		Two-tailed Sig (P)
		<i>SE</i>	<i>Z</i>	<i>Lower</i>	<i>Upper</i>	
Standardized Total Effects						
LCL-TPL (Rural)	.791	.037	21.514	.714	.849	***
LCL-TPL (Urban)	.685	.031	21.877	.626	.742	***
Standardized Total Indirect Effects						
LCL-TPL (Rural)	.744	.043	17.335	.658	.819	***
LCL-TPL (Urban)	.569	.048	11.867	.467	.651	***
Specific Indirect Effects of LCL→TA→TPL						
LCL-TPL (Rural)	.113	.080	1.408	-.043	.267	--
LCL-TPL (Urban)	.129	.062	2.081	.010	.244	*
Specific Indirect Effects of LCL→TT→TPL						
LCL-TPL (Rural)	.084	.062	1.357	-.044	.201	--
LCL-TPL (Urban)	.034	.055	.605	-.086	.118	--
Specific Indirect Effects of LCL→TT→TA→TPL						
LCL-TPL (Rural)	.546	.084	6.499	.407	.740	***
LCL-TPL (Urban)	.407	.067	6.032	.301	.582	***
Standardized Direct effects						
LCL-TPL (Rural)	.048	.053	.890	-.046	.171	*
LCL-TPL (Urban)	.116	.054	2.164	.016	.241	--

*Note:* 2000 bootstrapped samples. CI=confidence-interval; LCL =Learning-centered Leadership; TT=Teacher Trust; TA=Teacher Agency; TPL= Teacher Professional Learning. Standardized indirect effects. 95% CI does not include zero. \*\*\*=P<0.001



**Table 6.** Goodness-of-fit for invariance of variable relationships by urban/rural schools

<b>Models</b>	$\chi^2$	<b>df</b>	<b>SRMR</b>	<b>CFI</b>	<b>RMSEA (90% CI)</b>	<b>Compare Models</b>	<b><math>\Delta</math>CFI</b>
Pooled sample model	16027.267	3983	0.045	0.865	0.055 (0.054~0.056)		
Urban Sample	12505.054	3983	0.061	0.811	0.061 (0.060~0.063)		
Rural Sample	928.527	3983	0.045	0.860	0.057 (0.056~0.059)		
Configural invariance (Model 1)	18792.819	7984	0.079	0.849	0.052 (0.051~0.053)		
Path coefficient (Model 2)	18823.502	7988	0.083	0.848	0.052 (0.051~0.053)	2 vs 1	-0.001

Note: df=degree of freedom; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Squared Residual; RMSEA = Robust Root Mean Squared Error of Approximation; 90% CI = 90% Confidence Interval.