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ARTICLE



Instructional leadership, and teacher's collective efficacy, commitment, and professional learning in primary schools: a mediation model

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ABSTRACT

This study tested the relationship between principals' instructional leadership, teacher collective efficacy, teacher commitment, and teacher professional learning in Iranian primary schools. Survey data collected from 121 principals and 886 teachers in primary schools in Mashhad city, Iran were analysed using confirmatory factor analysis, structural equation modelling, and bootstrapping. Findings confirmed a partial mediation model whereby principal instructional leadership has both direct and indirect effects on teacher professional learning. The research also revealed how instructional leaders influence the professional learning of teachers through teacher's collective efficacy, commitment. The present study contributes to the literature by investigating the key role of the principal's instructional leadership in supporting teacher professional learning.

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KEYWORDS

Principal Instructional Leadership; teacher Collective Efficacy; teacher Commitment; teacher Professional Learning

Introduction

The field of educational leadership and management has made considerable progress in identifying 'paths' through which school leaders influence student learning (Hallinger and Heck 1998, Witziers *et al.* 2003; Leithwood and Jacobson 2005, Leithwood *et al.* 2010). School leaders improve teaching performance and student learning, indirectly, and most powerfully, through influencing staff motivation, ability, and working conditions (Leithwood *et al.* 2008). One of these paths, which is the link between school-level leadership and teacher professional learning, has gained prominence in recent years (Drago-Severson and Pinto 2006, Printy 2008, Drago-Severson 2012, Qian and Walker 2013). Instructional leadership focus is an important pathway for teachers' professional improvement and student learning (Kaparou and Bush 2015). Empirical studies have consistently affirmed the positive effects of principal leadership on teacher professional learning and the development of teacher professional community (e.g. Darling-Hammond and Richardson 2009, Qian and Walker 2013, Somprach *et al.* 2017, Hallinger *et al.* 2017a). This emerging body of research has yielded the proposition that 'principal leadership effects on teacher learning' are largely mediated by teacher attitudes (e.g. commitment, efficacy) that shape their motivation to engage in professional learning (Hallinger *et al.* 2017b). The importance of these findings lies in a related body of research that has established the contribution of teacher learning to school improvement and sustainable education reform (Lieberman and Pointer-Mace 2008, Day *et al.* 2016).

Similar to other topics in educational leadership, the research on instructional leadership has emerged from decentralised or partly decentralised contexts in Western societies (e.g. Barth

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1990, Leithwood 1992, Elmore and Burney 1997, Flores 2004, Drago-Severson and Pinto 2006), where principals have substantial scope to determine how to lead and manage their schools. However, centralised education systems remain widespread across Africa, Asia, and Eastern Europe (Bush, 2014). Therefore, due to its high centralisation, principals' power and decision-making are limited to the rules of the system (Oplatka 2004). Hierarchical constraints and the principalship orientation of higher administration prevent school principals from devoting a lot of time to pedagogical activities, which limits their capacity to improve teaching and learning processes (Kaparou and Bush 2015). Based on some Asian countries' contexts, scholars have argued that instructional leadership functions are relatively rare in schools, and principals are likely to adopt a stance in favour of management and central administration (e.g. Oplatka 2004, Hallinger *et al.* 2015). However, a more democratic understanding of instructional leadership has started to appear in recent literature (Gumus, Bellibas, Esen, and Gumus, 2018). Interestingly, Kaparou and Bush (2015) found that instructional leadership is conceptualised as an informal collaborative leadership practice, interwoven with the official multi-dimension role of Greek principals and their 'semi-IL' role. From this perspective, although leadership is influenced by the context where it is exercised, it is not constrained totally by centralisation, as there were elements of informal instructional leadership. Also, Brauckmann and Schwarz (2014) noticed that the experienced autonomy of school leaders is not necessarily related to a 'defined' degree of autonomy which is set by educational law and driven by concepts of new public management. Their 'perceived' autonomy is due to factors that can be located at a rather individual level. Kalkan (2016) argued that bureaucratic school structures can foster collegiality, collaboration, innovation, and trust, depending on how principals practice power and communicate with teachers.

Evidence from diverse cultural contexts in Asian societies (Hairon and Dimmock 2012, Qian and Walker 2013, 2013; Somprach *et al.* 2017, Bellibaş *et al.* 2020) adds significantly to the empirical knowledge base on the relationship between school leadership and teacher learning. Nevertheless, scholars have voiced the need to better understand how the institutional and cultural contexts of different educational systems influence the practices of school leaders and their effects on the school and its students (Sailesh, Bruce Yan Piaw, We Mee, and Shafinaz, 2018; Seong 2019). Dimmock (2011) argued that scholars needed to take account of cultural differences when conducting research related to policy and practice in schools (Hallinger and Bryant 2013).

In line with previous studies, the current study sought to examine the role of principals' instructional leadership in leading teacher learning in the context of Iranian primary schools where the education system is highly centralised and principals' power is limited by the rules of the system. However, the highly-rated instructional leaders in such a context considered reducing bureaucracy and decentralising decision-making as a means of engaging teachers in more meaningful ways (Author, 2018). This study aimed to examine the relationship between instructional leadership practices, teacher collective efficacy, teacher commitment, and teacher professional learning by employing a mediated model in conceptualising the relationships among these constructs. More specifically, this study seeks to answer the following main research question: What is the nature of the relationship between principals' instructional leadership and teacher professional learning with a focus on the mediating role of teacher collective efficacy and teacher commitment in Iranian primary schools?

This study, in line with previous studies, has the potential to make contributions to school leadership research and practice both in centralised contexts (like that Iran) and globally by examining the relationship between instructional leadership and teacher professional learning as a growing field of interest (e.g. Leithwood *et al.* 2008, Printy 2008, Qian and Walker 2013; Hallinger *et al.* 2017b, Liu and Hallinger 2018), as well as the mediating role of two constructs of teacher collective efficacy, teacher commitment in this relationship (e.g. Ross and Gray 2006, Ware and Kitsantas 2007, Leithwood and Jantzi 2008, Durksen *et al.* 2017, Donohoo 2018, Chung 2019, Hong and Matsko 2019, Skelton 2019, Qadach *et al.* 2019, Cansoy *et al.* 2020).

Theoretical perspective

Conceptual model

Our conceptual model proposes the mediating effects of principal instructional leadership. We propose that principals' instructional leadership can have both direct and indirect effects on the professional learning of teachers with collective teacher efficacy and commitment acting as mediating variables (Figure 1).

Instructional leadership and teacher professional learning

Following the effective school movement, instructional leadership has gradually been recognised as one of several core roles of principals to improve the quality of school leadership and schooling in general (Hallinger and Wang 2015). Instructional leadership is highly concerned with the 'technical core of education', teaching and learning, where the focus is leading teachers' professional learning to improve student outcomes (Kaparou and Bush 2015). Edmonds (1979) also emphasised earlier that schools with effective instruction were led by principals who engage more actively in leading teaching and learning. The literature review shows that principals play in improving academic achievement by creating the conditions that support teaching and learning (Drago-Severson and Pinto 2006, Printy 2008, Leithwood *et al.* 2008, Darling-Hammond and Richardson 2009, Drago-Severson 2012, Hairon and Dimmock 2012, Qian and Walker 2013, 2013, Somprach *et al.* 2017, Hallinger *et al.* 2017a, 2017b, Campbell *et al.* 2019, Bellibaş *et al.* 2020).

One of the prevailing conceptual frameworks for understanding and measuring effective school leadership is the instructional leadership theory (Boyce and Bowers 2018). A popular conceptual framework for understanding 'Instructional Leadership' (IL) was developed by Hallinger and Murphy (1987). This framework continues to have relevance today emphasising the connection between leadership, teaching, and learning (Zepeda *et al.* 2017). Evidence for the validity of the instructional leadership conceptual framework is very strong (e.g. Leithwood *et al.* 2010, Hallinger *et al.* 2017b; Author 2017, Boyce and Bowers 2018, Liu and Hallinger 2018). Hallinger and Murphy (1987) suggested that the instructional leadership role of school leaders included defining the school's mission, managing the instructional programme, and creating a positive school-learning climate. Strong instructional leadership establishes a shared vision, builds a robust school culture, creates a positive instructional climate, promotes collective teacher efficacy, and engages with

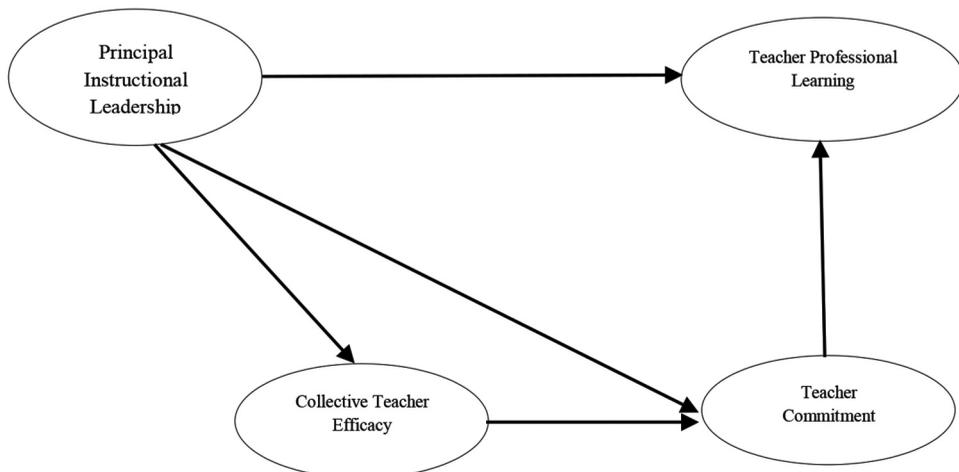


Figure 1. Hypothesised model of instructional leadership and teacher professional learning.

teachers to address curricular and instructional issues (Qadach *et al.* 2019). All three dimensions incorporate leadership practices that potentially influence the professional learning of teachers (Liu and Hallinger 2018). This claim was supported by several other researchers (Drago-Severson 2012, Hallinger *et al.* 2017b, Liu and Hallinger 2018, Gaikhorst *et al.* 2019) who asserted that school principals exercised a significant role in teacher professional learning. A recent study by Hallinger *et al.* (2017b), and Liu and Hallinger (2018) concluded that a partial mediation model whereby principal instructional leadership has moderate direct and indirect effects on teacher professional learning. Thus, the professional learning of teachers is selected as the dependent variable in this study. Our construct consists of four dimensions: collaboration, reflection, experimentation, and reaching out to the knowledge base (Hallinger *et al.* 2017a).

Teacher learning is conceptualised in different ways in the literature. According to Vermunt and Endedijk (2011), teacher learning is defined as a process in which teachers attain learning outcomes) changes in knowledge, beliefs, skills, and attitudes) through the use of cognitive, affective, regulative, and social learning activities. Professional learning of teachers can take place via formal structures such as professional development programmes, teaching research groups, or mentoring programs. Teachers also learn through informal interactions that occur during peer teaching, collaborative planning, shared assessment, and informal mentoring between colleagues (e.g. Durksen *et al.* 2017, Hallinger *et al.* 2017b, Vermunt *et al.* 2019, Yin *et al.* 2019). In this study, teacher professional learning was defined through collaboration, reflection, and experimentation (Liu *et al.* 2016).

The focus of teacher learning is on teachers' engagement in a variety of professional learning activities within schools and on becoming a participant in a community of learners (Thoonen *et al.* 2011). The recent literature tends to conceptualise the school as a social-professional learning environment. Ongoing learning opportunities often arise in the course of job-embedded activities in which teachers exchange ideas and share knowledge (Smylie and Hart 1999; Tynjala 2008, Qian and Walker 2013, Hallinger *et al.* 2017b). Schools as learning centres can effectively nurture and sustain the development of adults and children (Barth 1990, Qian and Walker 2013, Hallinger *et al.* 2017b, Yin *et al.* 2019). This highlights the role of cultural norms of collaboration and collegiality in influencing teacher learning (Hallinger *et al.* 2017a). Teacher learning also occurs through 'job-embedded and collegial' ways (Yin *et al.* 2019). Teachers' engagement in professional learning activities, in particular experimenting and reflecting, is a powerful predictor of teaching practices. Collaboration also provides opportunities for teachers to work together to solve problems, to provide feedback and information, and to assist and support (Thoonen *et al.* 2011).

Indeed, the establishment of a 'professional learning community' has been recommended as one of the means for facilitating continuous learning among teachers. Promoting teacher professional learning is central to professional learning communities (Yin *et al.* 2019). This process is influenced both by contextual factors as well as personal factors (e.g. Leeferink *et al.* 2015, Vermunt *et al.* 2019). There is a widespread acceptance of the key role that school leadership plays in developing and sustaining schools as communities of learners (Flores 2004). More specifically, Bellibaş *et al.* (2020) found that principals' leadership practices with specific emphasis on teaching and learning were important for enhancing a school culture in which teachers' participation in decisions and their enthusiasm for undertaking leadership practices are supported. Yet, few studies have examined how teachers' professional learning is associated with teachers' collective efficacy. For example, Durksen *et al.* (2017) have highlighted the positive relationship between motivational constructs and professional learning, specifically, when learning is collaborative. A systematic review conducted by Ping *et al.* (2018) has shown that research on teacher professional learning appears to be a growing field of interest but fragmented in focus.

The mediating role of collective teacher efficacy and teacher commitment

Consistent with Bandura's (1977, 1986, 1997) social cognitive theory, teacher self-efficacy (TSE) is the belief that teachers have about their abilities and skills as educators (Gavora 2010), and collective

teacher efficacy (CTE) refers to the perceptions of teachers in a school that the efforts of the faculty as a whole will have a positive effect on students (Goddard *et al.* 2000, Ware and Kitsantas 2007). Teachers with high teaching efficacy maintain personal achievement goals for teaching even when their schools emphasised conflicting goals (Cho and Shim 2013). According to Boyce and Bowers (2018), there are important differences in how teachers, individually and collectively, perceive leadership for learning in their schools. Individual teachers view leadership for learning as a combination of school influence, classroom control, collegial climate, student attendance, neighbourhood context, and teacher commitment whereas teachers collectively perceive leadership for learning as being a combination of instructional leadership, school management, and school social environment. As Durksen *et al.* (2017) noted that while successful teachers are likely to possess a strong sense of their self-efficacy, successful schools are characterised by teachers' collective efficacy.

It is widely accepted that the principal instructional leadership is positively related to collective teacher efficacy (Fancera and Bliss 2011, Calik *et al.* 2012, Goddard *et al.* 2017, 2015; Dou, Devos and Valcke 2017, Riggs 2017, Cansoy and Parlar 2018, Skelton 2019). For example, Cansoy and Parlar (2018) have indicated that effective school leadership behaviours were found to be positive and significant predictors of collective teacher efficacy perceptions. Goddard *et al.* (2015); (2017)) have also asserted that strong instructional leadership influences collective efficacy through increasing opportunities for teacher collaboration around instructional improvement. Effective principals are instrumental in attracting, supporting, and retaining high-quality teachers by supporting and sustaining school environments that positively affect school outcomes (Skelton 2019).

Moreover, Previous studies have emphasised that collective teacher efficacy is a prominent mediator between principals' instructional leadership and teacher professional learning (Leithwood and Jantzi 2008, Durksen *et al.* 2017; Author 2017) through teacher organisational commitment. indeed, our literature review highlighted relevant findings on teachers' organisational commitment as a predictor of student achievement at the organisational level, which is essential for school success (Selamat *et al.* 2013, Hong and Matsko 2019). Teachers who are committed to a school have strong beliefs in the school's goals and values, are willing to adopt those goals and values, and wish to remain part of the school (Hong and Matsko 2019). Studies have provided evidence that collective teacher efficacy is significantly associated with teacher commitment (Ross and Gray 2006, Ware and Kitsantas 2007, Donohoo 2018, Chung 2019, Qadach *et al.* 2019). In this line, Donohoo (2018) indicated that collective teacher efficacy is associated with other positive factors including greater job satisfaction, commitment to students and the teaching profession, and positive attitudes towards teaching students with special education needs and professional development. Qadach *et al.* (2019) also revealed that collective teacher efficacy emerged as a prominent mediator between principals' instructional leadership and a teacher's intent to leave. Therefore, it seems that greater teaching commitment tends to be expressed by those teachers who are higher in both collective and personal efficacy (Coladarci 1992).

An accumulating body of research highlights the relationship between principals' instructional leadership and teachers' commitment (Dou *et al.* 2017, Hong and Matsko 2019, Skelton 2019, Cansoy *et al.* 2020). For example, Dou *et al.* (2017) asserted the significant influence of instructional leadership on teachers' organisational commitment. Hong and Matsko (2019) have identified the combination of stronger leadership and high-quality mentoring and opportunities for engagement with teaching practice as the most effective for building teacher organisational commitment. The study conducted by Cansoy *et al.* (2020) has revealed that the school principals' instructional leadership behaviours could predict teachers' school commitment, mainly through influencing collaboration between teachers. Skelton (2019) has also reported that principals do impact the organisational commitment of teachers through the practice of functions of instructional leadership, particularly through the framing and communication of a school mission and school goals. Thus, we propose that the effects of principal instructional leadership on teacher professional learning are largely mediated by collective teacher efficacy and teacher organisational commitment.

However, few studies are focusing on PSE, collective teacher efficacy, and teacher commitment in the literature on educational leadership and management, it seems reasonable to propose a positive relationship among this cluster of variables (Hallinger *et al.* 2018). Thus, the current study aimed to provide a more direct investigation of the relationship between PSE, collective teacher efficacy, teacher commitment, and teacher professional learning. Indeed, a growing literature on the related construct of ‘academic optimism’ offers empirical support for the proposition that teacher commitment can be enhanced when principals articulate positive efficacy beliefs and demonstrate achievement-directed behaviours (Hallinger *et al.* 2018), and collective teacher efficacy shapes teachers’ attitudes towards the value of engaging in further learning as well as their patterns of engagement in professional learning activities (Liu and Hallinger 2018).

The Iran education context

The current study took place in the city of Mashhad, province of Razavi Khorasan, Iran. The education system in the Islamic Republic of Iran is highly centralised. Primary and secondary education follows a K-12 system, in addition to higher education. Most key policy and planning decisions are made at the government centralisation authority and local authorities (see Author 2017; 2019). The Fundamental Reform Document of Education serves as the cornerstone of education initiatives in Iran’s 2025 vision (National Education for All report of the Islamic Republic of Iran, 2000–2015). In this regard, a national school improvement program, called *Tadbir*, is the vehicle for education reform in Iran’s primary schools. Its main goal is to improve school performance through the development of teaching and learning quality. *Tadbir* particularly focuses on engaging school staff in decision making and continuous evaluation (Ministry of Education Iran 2018). However, the hierarchical structure of the education system in Iran has yielded limited autonomy for principals to intervene in the instructional aspects of schooling and top-down decision-making.

National curriculum reforms and restructuring were initiated in 2011 and, since then, have been creating a new ‘institutional context’ for school leaders and teachers. The new expectations also highlight the need for principals to be more active in leading teachers in the development of teaching and learning (Aliakbari and Sadeghi 2014). Nevertheless, the undertaken policy reforms since 2000 have encouraged Iran’s principals to embrace an expanded role that encompasses leadership and management responsibilities as well. For example, principals are now encouraged to share decision-making with school councils, teacher councils, and parent-teacher associations (UNESCO 2016). At least some of the tension observed in the efforts of Iranian school leaders to adapt to their changing roles can be traced to the cultural-political context of the Iranian society (Mehralizadeh *et al.* 2006, Aliakbari and Sadeghi 2014). Principals are expected to shift from a primary focus on the administration to also include instructional leadership. As in most Asian countries (e.g. Oman, Turkey, India, United Arab Emirates, Malaysia) the roles and responsibilities of school leaders are defined by policymakers in line with a country’s political, socio-economic, cultural, and educational context.

Method

In line with our conceptual framework, we employed the cross-sectional survey design following quantitative methods. This section describes the study sample and data collection analysis, variables, and associated measures.

Sample

The study was conducted survey data from principals and teachers in 230 primary schools out of a total of 566 public elementary schools in Mashhad city as the second-most-populous city in Iran

using Cochran's sample size formula with an alpha level of 0.05 (Cochran 1977). The questionnaires were submitted to all teachers and principals in each school. We obtained 886 valid questionnaires from teachers and 121 valid questionnaires from principals working in schools distributed in seven districts, which represent a range of socioeconomic statuses. The response rate for teachers and principals was 53%. All of the schools included in the study had a minimum response rate of five teachers per school. Notably, the data collected and analysed at the school level.

Education in Iran is single-gender. Therefore, in this study, about 50% of the primary schools were girls' schools and 50% were boys' schools. As female teachers can teach in the boys' schools, but male teachers cannot teach in girls' schools, the majority of teachers in the sample are females (84.3%), which is typical of the teacher population in Iran. The average teaching experience was 22.76 years and the average years of working with their principals was 2.44 years. In terms of principals' gender, 51.4% of the primary school principals were males and 48.6% were females. The average experience in the principal position was 10.66 years, and the average years working in the current school was 4.16 years (see Table 1).

Measures

The PIMRS (Murphy et al. 1982, 1990, Hallinger and Wang 2015) was selected as the instrument for collecting data on principal instructional leadership (PIL). The PIMRS uses a five-point Likert scale to assess the frequency of instructional leadership behaviours performed by the principal. The analyses reported in this paper draws upon data obtained using the 22-items 'PIMRS Teacher Short Form' teachers and the 50-items 'PIMRS Principal Form' (Hallinger and Wang 2015). This scale was analysed at the main construct and four-dimension levels.

The scale for teachers' professional learning (TPL) consisted of 25 items adapted from scales developed by Hallinger *et al.* (2017a). The TPL uses a five-point Likert scale to assess the frequency of engagement of teachers in collaboration, reflection, experimentation, and reaching out to the knowledge base. Collective teacher efficacy (CTE) was measured by a nine-item scale (Tschannen-Moran and Barr 2004) that used Likert response categories ranging from 1 (strongly disagree) to 7 (strongly agree). Teacher affective commitment was measured by a six-item scale (Meyer and Allen 2004) that used Likert response categories ranging from 1 (not at all) to 4 (very extensive). The original English version was subject to a sequence of translation and content validation procedures aiming to ensure the accuracy of the translation, succinctness of expression, ease of understanding, and cultural adequacy (see Author 2017).

Table 1. Demographic information for the full sample.

| Characteristics | Teacher sample (886) | | Principal sample (121) | |
|----------------------------|----------------------|------|------------------------|------|
| | n | % | n | % |
| <i>Gender</i> | | | | |
| Male | 97 | 10.9 | 53 | 43.8 |
| Female | 789 | 89.1 | 68 | 56.2 |
| <i>School Type</i> | | | | |
| Girl | 408 | 46 | 65 | 53.7 |
| Boy | 478 | 54 | 56 | 46.3 |
| <i>District</i> | | | | |
| 4 | 383 | 31.9 | 37 | 30.6 |
| 5 | 347 | 39.2 | 45 | 37.2 |
| 6 | 256 | 28.9 | 45 | 37.2 |
| <i>Years of experience</i> | | | | |
| < 2 years | 6 | 0.7 | 3 | 2.5 |
| 2–5 years | 17 | 1.9 | 10 | 8.3 |
| 6–10 years | 54 | 6.1 | 31 | 25.6 |
| > 10 years | 809 | 91.3 | 77 | 63.6 |

Data analysis

To assess the construct validity of the measurement model, we employed a Confirmatory factor analysis (CFA). All analyses were performed with Amos 24 and model fit evaluated based on standards suggested by Hu and Bentler (1999) with SRMR < 0.008, RMSEA < 0.06, CFI > 0.90, and chi-square (> 0.3) indicating acceptable fit. We employed structural equation modelling (SEM) to test the measurement model and analyse the path relationships between constructs (Chin 1998). Also, the bootstrapping method was used to verify both the direct and indirect effects of Principal Instructional Leadership on Teacher Professional Learning (Preacher and Hayes 2008).

Results

The results are presented in two parts. First, we present the descriptive analysis of the quantitative data and then examine the principal leadership effects on teacher professional learning using two mediators; collective teacher efficacy and teacher affective commitment in primary schools of Iran.

Measurement model

Data analysis began with establishing the reliability and construct validity of the measurement model. The measurement model for three latent variables regarding instructional leadership, four latent variables regarding teacher professional learning, and the latent variable of teacher commitment and collective teacher efficacy was also validated by CFA, indicating an acceptable data fit ($X^2 = 125.31$, $p < 0.001$, $Df = 49$, $X^2/df = 2.55$, $GFI = 0.97$, $NFI = 0.98$, $PNFI = 0.62$, $CFI = 0.99$, $RMSEA = 0.04$). All factors also had acceptable reliability, with Cronbach's alpha coefficients ranging from 0.79 to 0.90 (Nunnally and Bernstein 1994). The results presented in Table 3 show the average variance extracted (> 0.50) for the two main constructs and factor loadings (≥ 0.70) for the subscales met required measurement standards (Hair *et al.* 2013). According to these analyses, we concluded that the measurement model met the desired standards of reliability and construct validity.

Descriptive analysis of principal and teacher perceptions

Data from the PIMRS, presented in Table 2, indicate that both teachers and principals perceive the principals to be actively engaged in all three dimensions of instructional leadership. Although the obtained mean ratings from both the teachers and principals were 'high' (i.e. influence above 4 on the five-point Likert scale), the principals' mean self-ratings were higher than the teachers' rating of the principals across all three dimensions. This pattern of higher self-ratings from school principals

Table 2. Descriptive and comparative statistics for teacher and principal data.

| Construct/statistics | Teachers (n = 886) | | | | | | Principals (n = 121) | | | | | |
|---|--------------------|------|---------|------|------|----------|----------------------|------|---------|------|------|----------|
| | Mean | SD | Loading | AVE | CR | α | Mean | SD | Loading | AVE | CR | α |
| <i>Principal Instructional Leadership**</i> | 4.19 | 0.60 | - | 0.85 | 0.94 | 0.90 | 4.50 | 0.25 | - | 0.60 | 0.82 | 0.79 |
| Defines School Mission | 4.26 | 0.70 | 0.89 | 0.60 | 0.91 | 0.87 | 4.58 | 0.29 | 0.80 | 0.63 | 0.92 | 0.87 |
| Manages Instruction Program | 4.16 | 0.71 | 0.96 | 0.56 | 0.90 | 0.84 | 4.41 | 0.36 | 0.76 | 0.54 | 0.89 | 0.79 |
| Develops Learning Climate | 4.11 | 0.72 | 0.91 | 0.61 | 0.91 | 0.88 | 4.53 | 0.25 | 0.76 | 0.55 | 0.89 | 0.81 |
| <i>Teacher Professional Learning**</i> | 4.35 | 0.46 | - | 0.78 | 0.93 | 0.89 | - | - | - | - | - | - |
| Experimentation | 4.36 | 0.53 | 0.86 | 0.62 | 0.94 | 0.90 | - | - | - | - | - | - |
| Reach Out to The Knowledge Base | 4.23 | 0.56 | 0.87 | 0.58 | 0.92 | 0.87 | - | - | - | - | - | - |
| Collaboration | 4.53 | 0.48 | 0.88 | 0.58 | 0.92 | 0.89 | - | - | - | - | - | - |
| Reflection | 4.32 | 0.49 | 0.92 | 0.60 | 0.92 | 0.86 | - | - | - | - | - | - |
| <i>Collective Teacher Efficacy***</i> | 5.09 | 0.74 | - | 0.56 | 0.91 | 0.83 | - | - | - | - | - | - |
| <i>Teacher Commitment*</i> | 2.67 | 0.60 | - | 0.55 | 0.91 | 0.81 | - | - | - | - | - | - |

*Four-point Likert scale; ** five-point Likert scale; ***seven-point Likert scale. Teachers, n = 886; principals, n = 121.

Table 3. Bootstrapping results for the standardised effects of indirect effects of principal efficacy on teacher professional learning through mediator variables.

| Path Coefficient | Product of coefficients | | 95% Bootstrap CI | | 2-tailed sig (p) | |
|-------------------------------|-------------------------|------|------------------|-------|------------------|-----|
| | Estimate | SE | Lower | Upper | | |
| Standardised total Effects | | | | | | |
| PIL-TPL | 0.44 | 0.40 | 0.13 | 0.30 | 0.55 | ** |
| Standardised Indirect Effects | | | | | | |
| PIL-CTE-TC-TPL | 0.04 | 0.11 | 0.13 | 0.004 | 0.01 | ** |
| PIL-TC-TPL | 0.03 | 0.09 | 0.13 | 0.02 | 0.04 | ** |
| PIL-CTE-TC | 0.03 | 0.10 | 0.03 | 0.007 | 0.02 | ** |
| CTE-TC-TPL | 0.02 | 0.03 | 0.03 | 0.007 | 0.02 | ** |
| Standardised Direct Effects | | | | | | |
| TC-TPL | 0.17 | 0.15 | 0.03 | 0.10 | 0.23 | *** |
| PIL-TPL | 0.41 | 1.24 | 0.13 | 0.32 | 0.51 | *** |
| CTE-TC | 0.17 | 0.14 | 0.03 | 0.09 | 0.23 | *** |
| PIL-TC | 0.18 | 0.59 | 0.14 | 0.09 | 0.24 | *** |
| PIL-CTE | 0.20 | 0.79 | 0.19 | 0.05 | 0.29 | *** |

PIL: principal instructional leadership; CTE: collective teacher efficacy; TAF: teacher affective commitment; TPL: Teacher Professional Learning. *** $p < 0.001$, ** $p < 0.01$

has been reported in prior research (Hallinger and Wang 2015, Hallinger *et al.* 2017b). We used teachers' data to assess the instructional leadership construct in the present study, because, the contrasting pattern of variance between teachers and principals offers a further rationale for using teacher-reported data (Kulophas and Hallinger 2020).

Among the three instructional leadership subscales, *the defining school mission* dimension was similarly highly rated by both teachers ($M = 4.26$, $SD = 0.70$) and principals ($M = 4.58$, $SD = 0.29$). This result refers to the principal's responsibility for articulating and communicating a direction for learning in the school from the teachers' perspective. Mainly, the goals and all requirements for improving student outcomes have been outlined in the Tadbir program. All school principals needed to develop and submit an annual action plan. These action plans were expected to define all teaching and learning plans and activities. This provided a basis for focusing school resources on improving the quality of teaching, guiding teacher activities, and evaluating school effectiveness (Author, 2019). While there was a difference between principals' and teachers' ratings in the mean scores in *developing a learning climate* dimension, the *defining school mission* dimension was the most observed behaviour while *developing a learning climate* was the least observed by Iranian primary school principals from teachers' perspectives. According to Naidoo and Mestry (2019), it is expected that school principals provide visionary leadership to all stakeholders within their schools.

A similar pattern was observed concerning the teacher ratings on teacher professional learning with a mean score of 4.35. 'collaboration with other teachers' was reported as the most influential type of professional learning on teachers (see Table 2). In contrast, the statistics on collective teacher efficacy and teacher commitment suggest a somewhat lower absolute level on measures of teacher attitudes as compared to the principal variables (mean (M) = 5.09; $SD = 0.7$). Teacher commitment, measured with a four-point Likert scale, could be characterised as 'moderate' in magnitude, again with significant variability ($M = 2.6$; $SD = 0.6$). We note that these results are wholly consistent with the previous study of Author (2017) which was conducted with the same scales in Iran.

A path model analysis of the relationships of instructional leadership to teacher professional learning

Structural equation modelling was used to define the measurement model and then to determine the nature of the relationship between the principal's instructional leadership and teacher professional learning. SEM results for the path relationships indicate a mediate, positive, and statistically significant relationship between each set of variables in the conceptual model (see Figure 2). These

analyses indicated that instructional leadership had a significant positive effect on teacher professional learning.

This finding was supported by several international studies (e.g. Drago-Severson 2012, Hallinger *et al.* 2017b, Liu and Hallinger 2018, Gaikhorst *et al.* 2019) asserting the significant role of principals in teacher engagement with professional learning activities. This suggests that principals can make a difference in the level of teacher engagement in productive professional learning activities (Author 2017; Hallinger *et al.* 2017b). The path model is shown in Figure 2 indicates that instructional leadership effects on teacher professional learning were mediated by collective teacher efficacy and teacher commitment.

The path relationships show that principal instructional leadership was directly and significantly related to teacher professional learning ($\beta = 0.41, p < 0.001$), collective teacher efficacy ($\beta = 0.20, p < 0.001$) and teacher affective commitment ($\beta = 0.18, p < 0.001$). These findings are consistent with other research (Fancera and Bliss 2011, Calik *et al.* 2012, Goddard *et al.* 2017, 2015; Dou, Devos and Valcke 2017, Riggs 2017, Cansoy and Parlar 2018, Skelton 2019), which highlight the strong instructional leadership influence on collective efficacy through increasing opportunities for teacher collaboration around instructional improvement. Also, collective teacher efficacy was significantly related to teacher commitment ($\beta = 0.17, p < 0.001$). A similar result was reached by Coladarci (1992), Donohoo (2018), and Qadach *et al.* (2019) concerning the mediating role of collective teacher efficacy in the relationship between principals’ instructional leadership and teacher’ commitment. Moreover, the testing model in Figure 2 affirmed that principal instructional leadership affects teacher professional learning strongly and significantly ($\beta = 0.41, p < 0.001$). However, this path evidenced a small indirect effect on teacher professional learning through collective teacher efficacy and teacher commitment ($\beta = 0.03, p < 0.001$). This finding affirmed prior research that has identified the mediating role of teacher collective efficacy in the relationship between principals’ instructional leadership and teacher professional learning (Leithwood and Jantzi 2008, Durksen *et al.* 2017; Author 2017) through teacher’ organisational commitment.

Bootstrapping was used to further examine the mediator role of variables in the model. The bootstrapping tests elaborated on the main findings revealed in the SEM analysis (see Table 3). The total effect of principal instructional leadership on teacher professional Learning was both statistically significant and meaningful ($X^2/df = 2.81, <3$; GFI = 0.98, >0.90 ; AGFI = 0.96, >0.80 ; CFI = 0.99, >0.90 ; NFI = 0.98, >0.90 ; PNFI = 0.63, >0.60 ; RMSEA = 0.05, <0.08). Specifically, the bootstrapping analysis reaffirmed both the direct and indirect effects of principal instructional leadership on teacher professional learning. The ‘total effect’ (β) of PSE-PIL on PIL was 0.44 and of PIL on TPL was 0.41 ($p < .001$) (see Table 3). Findings also indicated that instructional leadership

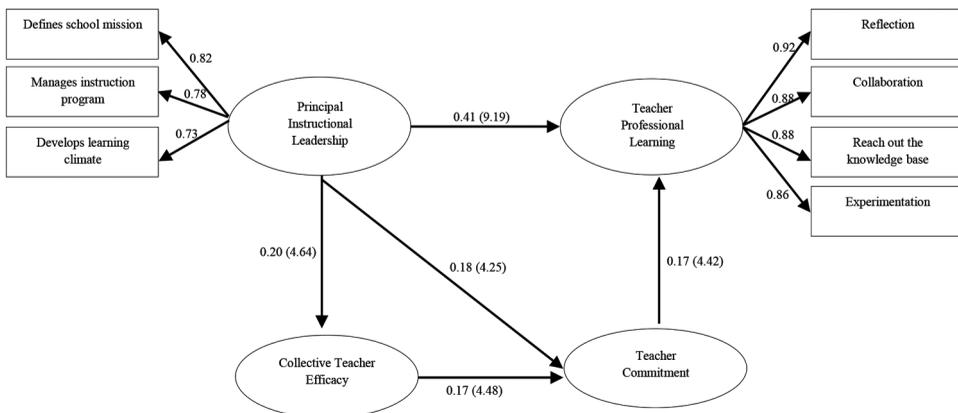


Figure 2. SEM model of principal instructional leadership and teacher professional learning. GFI = 0.98, AGFI = 0.96, RMSEA = 0.05.

alone explained 0.22% of the total variation in teacher professional learning and the effect of all three variables including PIL, TCE, and TC explained 33% of the total variance in teacher professional learning.

Concluding observations

Our findings contribute to the growing global discourse which affirms that instructional leadership has both direct and indirect effects on the professional learning of teachers. To be specific, this study is an effort to contribute to an emerging body of studies of PIL in Iran (Author 2017; 2019). Unlike the body of research on educational administration, management, and leadership in Iran, which largely focused on educational leadership, this study has focused on Instructional leadership, in particular. More specifically this study reports on empirical evidence about its effect on teachers' professional learning and by the mediating effect of collective teacher efficacy and teacher commitment.

Interpretation of the findings

We sought to investigate the effects of instructional leadership on teacher professional learning by mediating collective teacher efficacy and teacher commitment. The salience of this finding lies in the confirmation of a partial mediation model of principal instructional leadership on teacher professional learning. This result reaffirms that principals can 'make a difference' in the professional learning of teachers. Our results may be summarised in two broad conclusions: direct effect and indirect effect.

First, these findings align with prior research indicating the direct effects of instructional leadership on teacher professional learning (Flores 2004, Drago-Severson 2012, Hallinger *et al.* 2017b, Liu and Hallinger 2018, 2018, Gaikhorst *et al.* 2019). Indeed, there is a widespread acceptance that as instructional leaders, principals exercise in teacher professional learning. More specifically, Hallinger *et al.* (2017), and Liu and Hallinger (2018) indicated the principal's instructional leadership has direct effects on teacher professional learning. A principal's most important contribution includes being accountable for student achievement through being able to develop learning capacity within teachers and schools (Zepeda *et al.* 2017). This is a point that many scholars have asserted, which is principals can make a positive difference in the quality of teaching and learning in their schools (Tschannen-Moran and Gareis 2004, Leithwood and Jantzi 2008).

Following the restructuring of schools to empower teachers, principals around the world are encouraged to engage teachers in the process of continuous learning and fostering school climates that support teacher learning and development (Yin *et al.* 2019). This implies that school leaders change their role from one of managing teachers to one of nurturing teacher development and collaborative learning through learning-oriented school climates (Drago-Severson 2012, Zepeda *et al.* 2017). Although like most Asian countries the educational system, the education system in Iran is highly centralised and school principals' power is limited by the rules of the system (e.g. Blase and Blase 2000, Oplatka 2004, Calik *et al.* 2012, Hallinger and Wang 2015, Hallinger *et al.* 2017b, Cansoy and Parlar 2018, Liu and Hallinger 2018, Cansoy *et al.* 2020, Bellibaş *et al.* 2020), the undertaken policy reforms since 2000 that have resulted in a move away from bureaucratic control and towards professionalisation of teaching, have encouraged Iran's principals to share decision-making with teachers and to shift from a primary focus on the administration to also include instructional leadership. (UNESCO 2016). Although similar to most of the centralised education systems, principals in Iranian schools are responsible for implementing the Ministry of Education's policies and communicate the school direction/vision and goals to teachers in a top-down approach, principals have consistently adapted their school vision in collaboration with teachers (Seong 2019). Similarly, a study conducted by Author (2019) showed that the highly ranked principals in instructional leadership made frequent references to the *Tadbir* program as

a framework for their efforts to improve teaching and learning in their schools. Despite the bureaucratic routines, they described their efforts to involve teachers in collective decision-making and emphasised the need for having a relaxed environment and favourable conditions that teachers considered both safe and valuable for engaging in experimentation, reflection, and risk-taking.

Although core leadership practices may be applicable across societies, it needs to take into consideration differences in how they are adapted in different contexts (Hallinger *et al.* 2017b). Despite the highly centralised education system in Iran, a remarkable finding of this study was that the perceived value of PIL by principals and their teachers has been 'high'. It seems that consistent with the international studies focusing on principal' instructional leadership (e.g. Drago-Severson 2012, Hallinger and Wang 2015, Hallinger *et al.* 2017b, Liu and Hallinger 2018, Gaikhorst *et al.* 2019) principals in the primary schools in Iran is actively engaged in establishing a shared vision, building school culture, creating a positive instructional climate, promoting collective teacher efficacy, and engaging in curricular and instructional issues with teachers. However, it seems that principals in Iranian elementary schools have some tensions between collectivism and collegiality versus compliance and control (Author 2019). Taken together, studies of educational leadership, though few, witnessed the efforts of Iranian school leaders to adapt to these changing roles in the cultural-political context of the Iranian society (Aliakbari and Sadeghi 2014, Mehralizadeh *et al.* 2006; Author 2017; 2019).

Interestingly, the findings of this study show the perceived value of teacher professional learning by teachers is 'high' (Mean = 4.35) across all five dimensions. More specifically, 'collaboration with other teachers' is reported as the most influential factor that increases teacher professional learning. In line with a qualitative study conducted in primary schools in Iran (Author, 2019), it seemed the highly rated instructional leaders considered reducing bureaucracy and decentralising decision-making as a means of engaging teachers in collaboration, peer coaching, inquiry, collegial study groups, and reflective discussion into a holistic approach to promote professional learning (Blase and Blase 2000; Yin *et al.* 2019). Bellibaş *et al.* (2020) also asserted that principals' leadership practices with specific emphasis on teaching and learning were important for enhancing a school culture in which teachers' participation in decisions and their enthusiasm for undertaking leadership practices are supported. This highlights the role of cultural norms of collaboration and collegiality in influencing teacher learning (Hallinger *et al.* 2017b). Goddard (2015) and Goddard *et al.* (2017) studies have revealed the importance of instructional leadership in supporting teacher collaboration and instructional improvement. Thus, creating opportunities for teachers to cooperate often leads to the exchange of ideas and knowledge sharing (Smylie and Hart 1999; Tynjala 2008, Qian and Walker 2013, Hallinger *et al.* 2017b).

Second, our results broadly affirm prior research that has identified the teacher attitudes of CTE (e.g. Fancera and Bliss 2011, Calik *et al.* 2012, Goddard *et al.* 2017, 2015; Devos and Valcke 2017, Riggs 2017, Cansoy and Parlar 2018, Skelton 2019, Qadach *et al.* 2019) and organisational commitment as prominent mediators between principal's instructional practices and teacher professional learning and development (Leithwood and Jantzi 2008, Durksen *et al.* 2017, Coladarci 1992, Skelton 2019, Hong and Matsko 2019, Donohoo 2018; Author 2017), both of which have been associated with school quality and school improvement (Goddard *et al.* 2000, Leithwood and Jantzi 2008, Leithwood *et al.* 2010). This suggests that the commitment of teachers is also subject to the instructional leadership provided by the principal as well as the collective sense of the faculty that they can affect positive change in the school and their classrooms (Donohoo 2018, Chung 2019, Ware and Kitsantas 2007, Ross and Gray 2006, Qadach *et al.* 2019; Author 2017). Moreover, our results extend prior research conducted internationally on the significant relationship between principals' instructional leadership and teachers' commitment (Ross and Gray 2006, Ware and Kitsantas 2007, Donohoo 2018, Chung 2019, Qadach *et al.* 2019, Cansoy *et al.* 2020). This suggests school principals' instructional leadership behaviours could predict teachers' school commitment, mainly through framing and communication of a school mission and school goals and influencing

collaboration between teachers (Skelton 2019, Cansoy *et al.* 2020). In other words, teachers who are committed to a school have strong beliefs in the school's goals and values, are willing to adopt those goals and values and wish to remain part of the school (Hong and Matsko 2019).

In conclusion, this study provides support for the direct and indirect impact of the principal's instructional leadership on teachers' professional learning. Our findings extend prior research conducted internationally in the field of instructional leadership by revealing how school principals as an instructional leader influence the professional learning of teachers through shaping collective teacher efficacy and teacher commitment. More generally, the evidence from this study consistent with Kaparou and Bush's (2015)' study contributes to generating new knowledge on instructional leadership, especially in the centralised and bureaucratic contexts in developing countries. Previous studies were largely focused on Western countries.

Implications and future research

The findings of this study have several important implications for practice and future research. First, our findings require replication in a larger sample of schools across varying school contexts (e.g. primary/middle secondary schools, rural and urban schools). We suggest that further quantitative research on instructional leadership and teacher learning practices and interactions in Iran. Besides, the evidence from this study should be verified and elaborated by a detailed qualitative approach. We encourage Iranian scholars to undertake complementary qualitative and mixed methods studies aimed at a greater understanding of how school principal leadership behaviours are perceived as effective by teachers. Second, these findings provide some recommendations for policymakers and practitioners to develop the principal professional development program and to create a culture of collaborative learning in school that is illustrated in the following.

Developing the principal professional development program

The findings indicated that principals in Iranian primary schools as instructional leaders, need to improve their leadership content knowledge to know how to define school mission, manage instruction programs, and develop a learning climate. While policymakers have envisioned the role of the principal as a critical factor in the successful implementation of reforms related to the curriculum, instruction, and education quality, principals often felt ill-prepared to carry out their roles as instructional leaders (Author, 2019). It is suggested that leadership preparation programs must also be aimed at inspiring leaders to believe that they can make a difference in the quality of teaching and learning (Liu and Hallinger 2018; Author 2019). More specifically They should lead to instruction by knowing how to address a lack of teachers' pedagogical content knowledge and classroom practices. According to Blasé and Blasé (2000), programs should teach practicing and aspiring principals how to develop professional dialogue and collegiality among teachers through action research methods and reflective practice initiatives. It appears that these standards should be embedded into the redesign of pre-service and in-service education programs for principals. However, in many primary schools in Iran, principals exert significant influence on teachers' performance through engaging in informal learning on matters such as lesson study and conducting action research with their colleagues in their school. Since based on the Tadbir program, teachers are expected to engage in learning programs (e.g. lesson study, action research, peer observation, and discussions on instructional issues through teachers' council meetings), there is a need for systemic change that recasts the nature of leadership expected from principals as well as the level of lifelong learning expected from teachers.

Creating a culture of collaborative learning in school

As mentioned before, the education system in Iran is highly centralised, which limits the principals' formal authority. That said, our findings, consistent with other evidence from Iran and others in developing societies revealed the important role of principals in reducing bureaucracy and decentralising decision-making. Principals generally can provide efforts to promote collegiality and harmony in the school through building trust-based relationships between teachers. The cultural norms of collaboration and collegiality in influencing teacher learning are crucial (Hallinger *et al.* 2017a). As Kalkan (2016) asserted, a work environment characterised by trust facilitates collaborative learning and encourages people to share experiences, skills, and new ideas beyond the constraints of bureaucratic structure. According to Liu *et al.* (2016), building trust represents a useful strategy for principals who seek to establish productive learning environments for their teachers. Thus, we suggest to include in the *Tadbir* framework the principals' role in facilitating a professional learning community with an emphasis on creating a culture of trust, risk-taking, and support. This culture will encourage teachers to engage in improving teaching and learning.

Limitations

Some limitations of this study should be noted. First, this study has focused exclusively on primary schools located in a single city in Iran. Therefore, it is suggested that further studies should investigate a more representative sample of other provinces across Iran. Second, this study focuses on the mediating effect of instructional leadership on teacher professional learning. The model has been proposed and is supported by research evidence (e.g. Atherley 2014; Clark 2009, Fancera and Bliss 2011, Horton 2013, Lubbers 1988, Ruzicska 1989, Miller 2015; Author 2017, Cansoy and Parlar 2018, Liu and Hallinger 2018). Follow-up research should determine a causal relationship between these variables. Third, considering the complexity of the model and the limited number of primary schools ($n = 121$), the SEM used in this study has been conducted with factor means, rather than latent variables. Therefore, future research could consider increasing the number of schools and conducting SEM with latent variables to incorporate measurement errors in path analysis. Finally, we employ a single-level analysis, however, it seemed that multilevel analysis should be used due to the dataset demonstrated a two-level structure (teachers and principals). A review of the literature in this area does not provide some studies using a multilevel analysis (e.g. Liu and Hallinger 2018)

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