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International Journal of Educational Research

journal homepage: www.elsevier.com/locate/ijedures

School factors that are related to school principals' job satisfaction and organizational commitment

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ARTICLE INFO

Keywords:

School principal
Job satisfaction
Organizational commitment
Social interaction
School safety
School autonomy
Management type
Funding resource

ABSTRACT

Despite that principals' job satisfaction and organizational commitment are substantial for recruitment and retention of effective leaders, research exploring school factors for the deterministic role in such attitudes has been unexpectedly rare. Given the crucial role of a school principal in leading school success, understanding the status of the principal's psychological conditions and the antecedent school factors is important. This research is a secondary analysis using the TALIS 2013 dataset, and applied a rigorous quantitative approach. Latent Trait method was first applied to construct latent variables of principals' job satisfaction and organizational commitment to compare the interests across countries. Then a two-level Generalized Structural Equation Model was used to detect the structured relationship between a set of school factors and principals' attitudes with pooled 32-country data. Finally, Generalized Structural Equation Model was fitted for each country's data to investigate how school factors influence principals' attitudes in different contexts. The study revealed significant variations among countries and continents in the principal's job satisfaction and organizational commitment. The school's positive social interaction, safety, human resource, autonomy for staffing, school management type and the funding resources significantly predict the principal's attitudes towards the job and the school.

1. Introduction

The principal is regarded as an imperative leading force for school success (Leithwood & Seashore-Louis, 2011). Through the principal's leadership, schools can create optimal conditions to support student learning by fostering positive social interaction and stimulating intellectual development (Dimmock, 2013; Robinson, Lloyd, & Rowe, 2008). A school's organizational learning (Schechter, 2008) of maintaining effectiveness or transforming from failure to success needs consistent focus and continuous effort guided by school leaders (Fuller, Young, & Baker, 2007; Louis, Dretzke, & Wahlstrom, 2010). However, principals' turnover will potentially interrupt or even terminate the process because of inconsistency in school goals, missions, and efforts (Baker, Punswick, & Belt, 2010; Miller, 2013).

Retaining experienced principals is fundamental for school success (Printy, 2010). However, a report (Markow, Lara, & Helen, 2013) by Metlife revealed that regardless of demographic backgrounds, almost three-quarters of principals in the US indicated that their jobs had become too complicated. This same survey conducted since 2001 indicated the principal turnover intention was at a historical high that one-third was likely to leave the job in five years. The increase of principal turnover rate (Clifford & Chiang, 2016; Palmer, Watch, & Gibson, 2017) has resulted in extra costs and labor for schools to fill the vacancy. In addition, excessive principal

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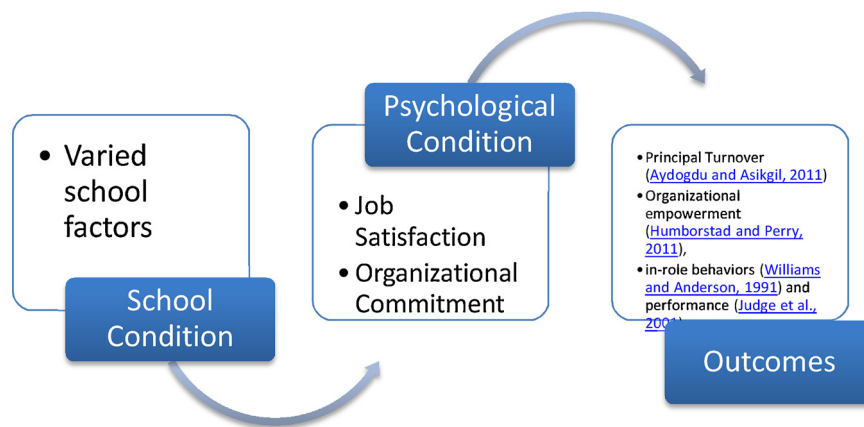


Fig. 1. Framework of the relationship among school factors, job satisfaction, organizational commitment and outcomes.

turnover is also associated with increased teacher turnover and decreased student outcomes (Fuller et al., 2007; Miller, 2009). Such negative effects of high principal turnover are even more notable and detrimental in low-performing and minority-student dominant schools (Béteille, Kalogrides, & Loeb, 2012).

To prevent principal turnover, it is strategically important to find out principals' attitudes toward the job before they leave. Job satisfaction (JS) and organizational commitment (OC) are two essential indicators for this purpose because job turnover intention is closely related to JS and OC (Aydogdu & Asikgil, 2011). Therefore, delving in the status and antecedents of these two job-related psychological features are crucial in providing supportive interventions. In addition, JS and PC are important factors that influence organizational empowerment (Humborstad & Perry, 2011), in-role behaviors (Williams & Anderson, 1991) and performance (Judge, Thoresen, Bono, & Patton, 2001). Therefore, the research on the principal JS and OC is vital not only for preventing turnover, but also for increasing principal effectiveness. Fig. 1 illustrates such relationship.

Despite the importance, there is surprisingly limited research for the topic. To date, researchers have been exclusively interested in JS and OC of teachers while mostly overlooking JS and OC of school leaders (Dude, 2012). There are only few studies that have provided empirical evidence on influential factors of principal JS and OC respectively (Chang, Leach, & Anderman, 2015; Eckman, 2004; Federici & Skaalvik, 2012; Suman & Srivastava, 2012). Given that JS and OC are related to each other (Liu & Printy, 2017), there is little evidence regarding how determining factors are related to JS and OC by controlling the covariance between them. In addition, there are few studies that have conceptualized school-related factors through a comprehensive lens and investigated the effect of the whole-school experience on principal JS and OC. The gap in the literature calls for rigorous research to investigate to what extent comprehensive school-related factors impact a principal's JS and OC in order to provide the information needed to prevent turnover of school principals. An international comparative study is even more meaningful as it can situate each individual country in a global community in order to reveal cross-national variation in principal attitudes and the factors that might impact such attitudes in different contexts.

2. Literature review

2.1. Principal job satisfaction

There is no agreed-upon definition for JS. Yet, the conceptual investigations of JS have revealed two major components in the definition and measuring of the concept: affective (emotional) and cognitive. One of the most widely used definitions of JS was produced by Locke (1976), who defined JS from an affective perspective. According to his statement, job satisfaction can be defined as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1300). From this perspective, JS is substantially related to one's emotions and therefore, "an individual's appraisal of the degree to which the job fulfils one's own job values can cause a positive emotional state of satisfaction or a contrasting negative feeling of dissatisfaction" (Coomber & Barriball, 2007, p. 297). In addition to affect, cognitive component of JS has also been acknowledged in the literature. Cognitive component of JS is defined in terms of discrepancy between an individual's perceptions of the situation and a known standard or his/her expectation level (Campbell, Converse, & Rodgers, 1976). Although two components (affective and cognitive) of JS may have different effect on organizations (Moorman, 1993), research has provided evidence that they are not totally separated from one another; indeed, they operate in parallel (Edwards, 1990).

JS is not only derived from how people perceive and feel about their jobs, it is also related to their experiences with the job. Therefore, the study of JS has drawn on two major theoretical bodies of knowledge (Spector, 1997). One is Process Theory, which emphasizes "how" and deals with processes by which factors such as expectations and procedures impact JS. The other one is Content Theory, which emphasizes "what" and is concerned with individual needs and goals for the job. For instance, Maslow (1975)'s Hierarchy of Needs, which list several categories of needs to be met for an individual to be satisfied with the work and (Herzberg (1966)'s Two-Factor Theory, which identifies maintenance and motivating factors determining an individual's satisfaction with the

job, are among two prominent Content Theories (Coomber & Barriball, 2007). In the present study, the primary focus was on Content Theory because principal JS is related to a broad of school factors that impact the principal experience (Waskiewicz, 1999). However, the focus here is not limited to the school factors in order to provide a comprehensive understanding of “what” influence principals’ JS. Raelin (1980) argued that JS research needs to consider two fundamental aspects: (1) the characteristics of the job condition and (2) the individuals’ traits. From this classification, not only do job-related factors influence the extent of JS, but also the principal’s individual characteristics. Therefore, it is imperative to take into consideration both job-related school factors and principal characteristics when exploring what matters for principal JS.

2.2. Factors predicting principal job satisfaction

As to what factors impact principal JS, the available research has an intense interest in how principal and school characteristics matter. It has been reported that there is variation of JS among principals according to race (Barry, 2002), gender (Eckman, 2004), experience and location (Sodoma & Else, 2009), as well as school enrollment (Graham & Messner, 1998). Previous research has also identified both extrinsic and intrinsic aspects of a principal’s job that can impact JS, including the expectation of safety (Halawah, 2005), trust (Louis, Louis, Murphy, & Murphy, 2017), a sense of success and autonomy for school decision-making (Dou, Devos, & Valcke, 2017), career advancement opportunities and salary (Sun & Ni, 2016), perceived school effectiveness (Eckman, 2004), and student behavioral issues and resources (Friedman, Friedman, & Markow, 2008). The research has also examined how school accountability and increased instructional responsibilities, changes in student demographics, lack of support, politics, and the job stress impact principal JS (Byrd, 2010).

By reviewing these studies, it stands out that previous research has focused intensively on how principals’ characteristics, needs, expectations, school resources, and daily job-related experiences impact satisfaction. One important school factor that has not been fully examined is the dynamic relationship among the staff. School social capital is an imperative element in building organizational capacity (Bryk, Sebring, Allensworth, Luppescu, & Easton; Dimmock, 2013).

2.3. Principal organizational commitment

Organizational commitment is the individual’s psychological attachment to their organization (O’Reilly & Chatman, 1986). It refers to an individual’s strong belief in and acceptance of goals and values of his/her organization, willingness to do best for his/her organization, and eagerness to stay as a member of the organization (Mowday, Steers, & Porter, 1979). A committed person is more likely to remain with the organization, possess substantial motivation to achieve the goals of his/her organization (Steers, 1977), and is ready to give something of his/her self for the success of the organization (Mowday et al., 1979). An individual’s commitment is not limited to his/her expression of belief or opinions but could be inferred from his/her daily actions (Mowday et al., 1979). OC is therefore seen as a substantial solution for the personnel’s turnover intention (Steers, 1977; Williams & Hazer, 1986).

The foci of the OC research had been the definition and the scale of measurement until Meyer and Allen (1991) developed the Three-Component Model. Their model integrated previous definitions of OC that had proliferated in the literature. They generalized three themes: affective attitudes toward the organization (affective commitment), perceived costs associated with leaving the organization (continuance commitment), and obligation to remain with the organization (normative commitment). These three types of the OC established a decent framework to define and interpret the OC research, and have provided the groundwork for current research measuring principal OC more focusing on affective commitment.

2.4. Factors impacting principal organizational commitment

The majority of studies examining the antecedent of OC in education have focused on working conditions and experiences. The scope of research in this category is broad as researchers have looked into different aspects including socialization practices (Kammeyer-Mueller & Wanberg, 2003), work challenge (Colquitt, Lepine, & Wesson, 2011), task autonomy (Aubé, Rousseau, & Morin, 2007), the roles of the job (Williams & Anderson, 1991), and group relationship (Farooq, Payaud, Merunka, & Valette-Florence, 2014), among others. The scope of the work experience has been found to have the strongest and most consistent correlations with affective commitment across studies (Morrow, 2011). These studies reaffirm that explorations of antecedents of principal OC need to include complete school factors because these factors influence the work experience of a principal and their social attachment to the school.

One study focusing on school principals particularly found that job autonomy, psychological empowerment, and distributive justice are associated with principal OC (Dude, 2012). Another study found perceived fairness, organizational tenure, perceived organizational support, and the principal’s age to be positive predictors of OC (Hawkins Jr, 1998). Nevertheless, studies of the antecedents of OC for the school principals are very limited in the literature (Chang et al., 2015).

2.5. School factors, job satisfaction, and organizational commitment

In earlier parts of the literature review, a discussion for the definitions of JS and OC and related school factors is provided. It is indicated that both JS and OC has substantial consequence for organizations by their inverse effect on employee turnover. However, the two concepts do not refer to the same phenomenon. There exist several points that enable us to differentiate JS from OC (Mowday et al., 1979). First of all, while OC is the key to the employee to determine whether to remain with the organization, JS refers to the

extent to which a job fulfils one's values or the degree to which the job meets a given standard or specific expectations of the employee. Second, OC refers to an individual's attachment to the employing organization in general, including the goals and values, yet JS is more about a specific task environment in which the individual performs his responsibilities. Third, OC develops slowly and remains stable over time yet JS includes immediate reactions to a specific task related to the work. Therefore, an individual could be dissatisfied with a specific part of his/her work (eg. payment) but may still not have an intention of leaving the job. Finally, OC is not affected by day to day events but JS is likely to change by every day experience of the employee.

As discussed earlier, when principal JS and OC are the interest of a study, it is important to explore the reciprocal relationship among school factors, principal characteristics, and principal JS and OC. School factors and the impact on staff have continuously been an interest of research, exploring what a school is like, and how this may impact the people inside (Cohen, McCabe, Michelli, & Pickeral, 2009). Over time, researchers look at the atmosphere, culture, resources, social networks of a school (Loukas & Murphy, 2007) to investigate how one aspect or aspects impact people. From a comprehensive perspective, each school has its unique social, financial, managerial and physical factors, which Cohen et al. (2009) synthesized as four dimensions: physical and social-emotional factor, quality of teaching and learning, interpersonal relationship and collaboration, and the structural environment. Prior research has demonstrated that school factors are essential for teacher JS (De Nobile, McCormick, & Hoekman, 2013; Desai, Karahalios, Persuad, & Reker, 2014), teacher commitment (Bogler & Somech, 2004), and student outcomes (Bryk et al., 2010). However, there is no solid evidence to validate how broad aspects of school factors impact principal JS and OC.

3. Current study

In sum, the knowledge base is not yet complete about principal JS and OC, and the antecedents of such attitudes. There are three major limitations. First and foremost, there is very limited research about principal JS and OC generally. Given the importance of school principals for the success of schools, and the increasing principal turnover rate, there is not enough evidence regarding what makes principals feel satisfied with their jobs and committed to their schools. Second, previous research has investigated the antecedents of school principal JS and OC with personal and organizational demographic factors as well as the expectations and needs of the job. However, this research has failed to investigate how a comprehensive model of school factors including school safety, social interaction, resources, organizational structural, professional development opportunity, student composition as well as school and principal characteristics impact principals' JS and OC. Third, a large-scale, international comparative study is missing from the literature, so there is no opportunity to situate countries in an international context to understand the status of principal JS and OC as well as what makes principals more satisfied and committed in different contexts. Outside the educational arena, a comparative study done by Karin Andreassi, Lawter, Brockerhoff, and Rutigliano (2014) found regional patterns for JS. Asian employees were among the least satisfied, followed by European workers. North American employees were more satisfied but still not comparable to their counterparts in South America. Whether this finding translates to school principals in educational settings remains unknown.

Specifically, we have three research questions. First, the researchers intend to compare the current status of principal JS and OC across counties and regions. Second, the researchers aspire to provide empirical evidence regarding how a comprehensive scope of school factors might be related to principals' JS and OC, by controlling the variation between countries, principals and schools. We separate this question into two sub-questions, and were particularly interested in first, how the relationship exists between school factors and principals' JS and OC using international pooled data through a global lens. Second, given TALIS data was actually conducted in each individual country, the researchers are interested in how a comprehensive scope of school factors are related to principals' JS and OC within each participating country. Fig. 2 illustrates such interest in the conceptual framework of the study.

4. Method

4.1. Data sources and samples

The data employed in this study comes from the second round of the Teaching and Learning International Survey (TALIS) conducted in 2013. TALIS was administered by the Organization for Economic Co-operation and Development (OECD), which aims to understand educational systems of the participant countries. The TALIS study focuses on multifaceted issues. While 24 countries participated in TALIS in 2008 during the first round, the number of participants increased to 34 in 2013 for "core" study (OECD, 2014b). TALIS had two surveys for teachers and principals. This study used 6045 principals' survey data at the lower secondary level from 32 countries. TALIS study used a two-stage cluster sampling approach that first sampled 200 schools from each participant country, then randomly sampled 20 teachers from each selected school. Given the feature of the complex survey design, the weight has to be used to adjust for the unequal probability of selection due to the cluster sampling approach and the varied response rates (OECD, 2014b). The principal survey final weight was used for the study. OECD calculated the final weight as the product of a base weight and of one or many adjustment factors; the former is the inverse of the selection probability, the latter compensates for non-response and other random occurrences that could possibly induce biases in the estimates (OECD, 2014b).

The OECD's report (OECD, 2014a) provides a preliminary descriptive analysis by comparing participating countries' principal JS for profession and environment, but the data have not been fully utilized to its capacity when it comes to investigating the nuanced relationship between a comprehensive set of school factors and principal JS and OC.

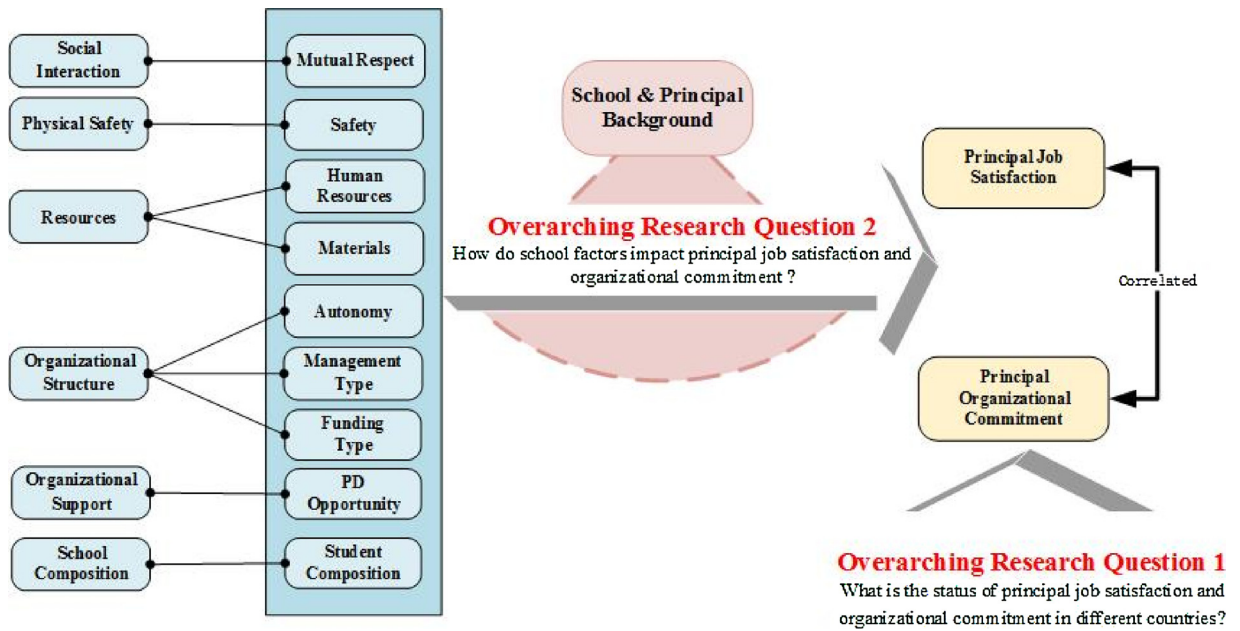


Fig. 2. Conceptual framework for the study.

4.2. Dependent variables

Principal JS and OC are the dependent variables. In the TALIS data, there is a set of questions probing principals’ attitudes toward their job and school on a four-point measurement, namely “strongly disagree”, “disagree”, “agree” and “strongly agree”. Whilst we can rank the levels, we cannot place a “value” to them; we cannot say that “strongly agree” is twice as positive as “agree”. Since the items are categorical variables, this study used the Latent Trait Analysis (LTA) to transform these categorical variables into two continuous latent variables in one model with covariance between JS and OC. LTA is form of factor analysis for binary (dichotomous) or ordered-category data (Langeheine & Rost, 2013; Muthén, 1984). LTA tends to be used over Confirmatory Factor Analysis if the data set is large and the focus is on the scale and the item character, which is the case for this study (Meade & Lautenschlager, 2004). Fig. 3 might be able to adequately illustrate the connection between theory, measurement and the data.

The construct of the latent variables was specified to handle the complex data appropriately (Langeheine & Rost, 2013; Muthén &

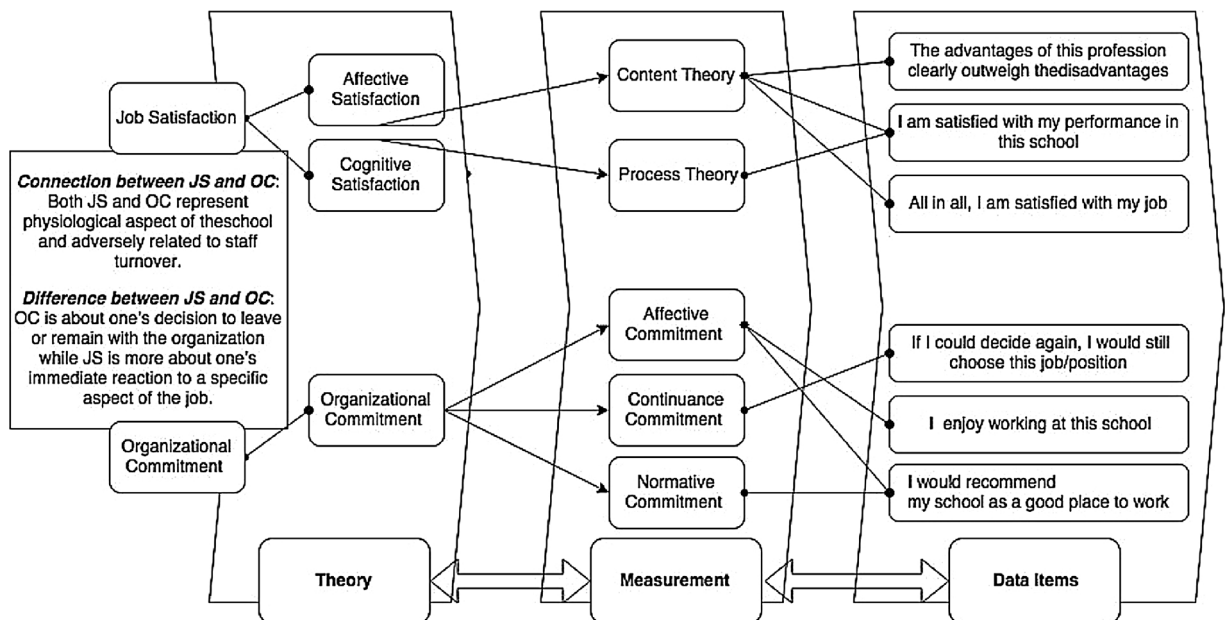


Fig. 3. Connections between theory, measurement and data.

Table 1

Model fit index and descriptive statistics for principal job satisfaction and organizational commitment.

VARIABLE	Items	Mean	SD	Min	Max	CFI	TFI	RMSEA
Principal Satisfaction (PSATIS)	TC2G39A The advantages of this profession clearly outweigh the disadvantages	-0.019	0.819	-2.998	1.433	0.977	0.967	0.041
	TC2G39H I am satisfied with my performance in this school							
	TC2G39I All in all, I am satisfied with my job							
Principal Commitment (PCOMIT)	TC2G39 B If I could decide again, I would still choose this job/ position	-0.020	0.859	-3.292	1.592			
	TC2G39E I enjoy working at this school							
	TC2G39F I would recommend my school as a good place to work							

Muthén, 2015). The TALIS 2013 used a two-stage stratified sampling method that may amplify the estimated error. Therefore, OECD calculated sample weights to compensate for the unequal probability due to stratified sampling and varied response rates, as well of overlapping samples at individual levels (OECD, 2014b). The school level final sampling weight, which was the combination of the base weight and the other weights that need to be adjusted necessarily, was included when fitting the model (Asparouhov, 2005). The overall model fit (see Table 1) was satisfactory according to the rule of thumb (Hu & Bentler, 1999) that the CFI and TFI are both above 0.95, and RMSEA is below 0.08. The latent variables were used for the country-wide comparison.

4.3. Independent variables

The independent variables in this study include social interaction, safety, resources, organizational structure and support, as well as student composition. Items used for latent variable construct have been listed in the appendix.

4.3.1. Staff mutual respect

The variable staff mutual respect was constructed through Latent Trait analysis using four questions. These questions asked about school principals' perceptions regarding whether "school staffs have an open discussion about difficulties; there is mutual respect for colleagues' ideas; there is a culture of sharing success, and relationships between teachers and students are good" on a four-point Likert scale. The internal reliability for pooled samples was above 0.70.

4.3.2. School safety

School safety was constructed through four items asking how often the following activities occur: vandalism and theft; intimidation or verbal abuse among students; physical injury causes by violence among students; and intimidation or verbal abuse of teachers or staff. All questions were answered using a 1–5 measurement where 1 was "never", 2 was "rarely", 3 was "monthly", 4 was "weekly" and 5 was "daily". All the items were reversely-coded when generating factor scores. The internal reliability from the international pooled samples was above or close to 0.70.

4.3.3. Organizational resources

The set of variables measure whether the school was short of human and material resources. The human resource variable is constructed with three items asking whether the school was lack of teachers and staff. The lack of material resource is constructed using five items asking whether the school had the shortage or inadequate instructional supplies, computers, or other materials. All items were measured using 1 for "not at all", 2 for "very little", 3 for "to some extent" and 4 for "a lot"

4.3.4. Organizational structure

This category includes three sets of variables: school autonomy, school management type and funding structure. School autonomy variables were coded using a set of questions asking whether the school leader and teachers had the responsibility for school staffing, budgeting, and instructional practice (OECD, 2014b). The coded variables are dummy variables with 1 for "autonomous", and 0 for "no autonomy." The school management type and funding structure are single items coded as one (versus zero) if the school is a public school and it receives funding from the public sector.

4.3.5. Organizational support

This index was constructed using variables indicating whether principals received professional development either in a professional network, mentoring, research activity, courses, conferences or observational visits. The variable was coded from 1 to 5 to indicate the strength of the professional development.

4.3.6. The school compositional variables

This set include three single variables asking the proportion of students from low social-economic families, minority students, and students with special needs using 5 categories (1 for none, 2 for 1% to 10%, 3 for 11% to 30%, 4 for 31% to 60%, 5 for more than 60%).

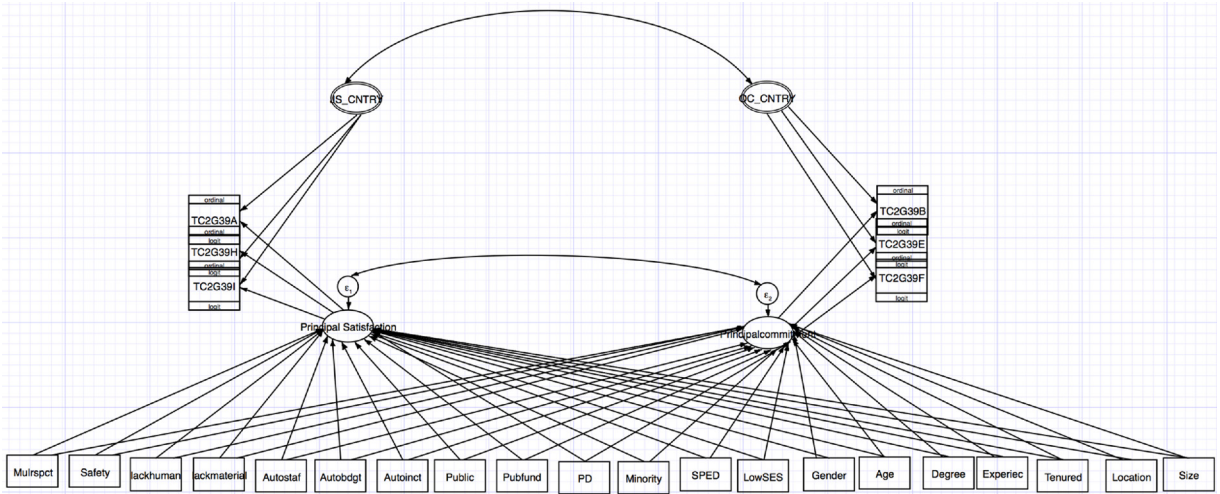


Fig. 4. Two-level GSEM for pooled data of all countries.

The control variables include a set of principal demographic information with two school variables as size and school location. The statistics are in Appendix

4.4. Data analysis

To answer the first research question, we first constructed latent variables for both JS and OC, thereafter, we applied ANOVA to compare the extent of principals’ JS and OC across countries and continents.

4.4.1. Two-level generalized structural equation model

Two answer the second question, a two-level Generalized Structural Equation Model (GSEM) was fitted using the pooled data of all 32 countries. This hierarchical model could appropriately deal with the nested data structure to control effect of the country variation on dependent variables (Raudenbush & Bryk, 2002). TALIS used a stratified sampling method so the schools selected are dependent to one another within each individual country (OECD, 2014b). GSEM is a multivariate statistical approach that handles multiple dependent variables for the structural relationship with capacity to deal with categorical variables (Bowen & Guo, 2012) that we have as the manifests to measure the JS and OC.

The model is illustrated in Fig. 4. GSEM uses the ordinal logit to link categorical manifests to responding latent variables of JS and OC (Huang, Wang, Chen, & Su, 2013). The structural models investigated how a set of school factors are related to principal JS and OC with the school and principal backgrounds controlled. Principals’ JS and OC have been proven to be related (Liu & Printy, 2017). A covariance model using both the JS and OC as dependent variables while simultaneously controlling for the covariance is more appropriate for this study. In addition, the two-level model added a country-level measurements of both JS and OC in order to include country-level variance in the model that might impact JS and OC (De La Torre & Douglas, 2004; Muthén, 1984; Raudenbush & Bryk, 2002)

4.4.2. Generalized structural equation model for the individual country

To answer the third research question to examine how school factors are related to principals’ JS and OC in each country. We

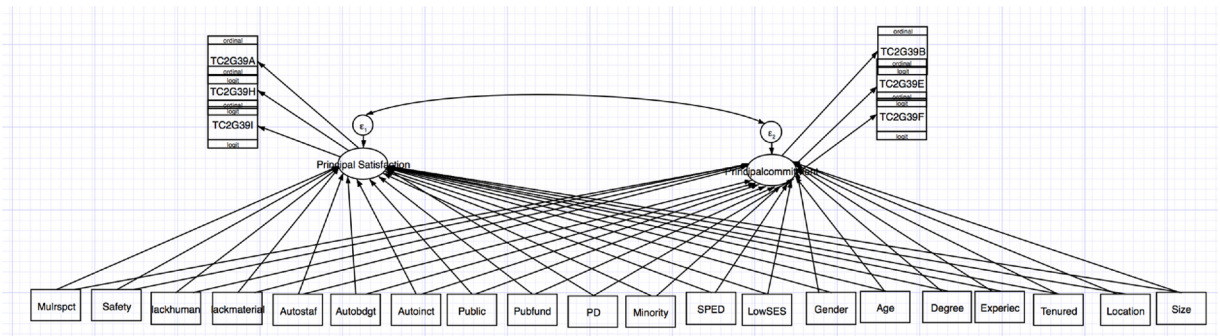


Fig. 5. GSEM for Each Individual Country.

Table 2
ANOVA Result for principals’ satisfaction and commitment comparison (32 countries).

Country	N	Job Satisfaction			Organizational Commitment		
		mean	sd	se(mean)	mean	sd	se(mean)
MEX	186	0.615	0.723	0.053	0.605	0.662	0.049
AUS	109	0.397	0.752	0.072	0.439	0.721	0.069
CHL	148	0.375	0.844	0.069	0.337	0.828	0.068
MYS	145	0.372	0.833	0.069	0.296	0.687	0.057
ISR	181	0.360	0.843	0.063	0.330	0.793	0.059
SGP	142	0.33	0.855	0.072	0.301	0.782	0.066
DNK	123	0.32	0.757	0.068	0.352	0.716	0.065
CAB	173	0.292	0.833	0.063	0.115	0.829	0.063
ESP	192	0.175	0.883	0.064	0.169	0.856	0.062
ROU	195	0.126	0.840	0.060	-0.046	0.814	0.058
ENG	150	0.124	0.917	0.075	0.150	0.918	0.075
USA	98	0.113	0.840	0.085	0.185	0.820	0.083
PRT	175	0.086	0.749	0.057	0.147	0.748	0.057
AAD	128	0.024	0.977	0.086	-0.033	0.919	0.081
NOR	106	0.023	0.730	0.071	0.072	0.72	0.07
BRA	1050	-0.021	0.889	0.027	-0.065	0.831	0.026
KOR	162	-0.038	0.991	0.078	-0.063	0.866	0.068
FIN	146	-0.057	0.804	0.067	0.024	0.786	0.065
BFL	151	-0.074	0.795	0.065	-0.045	0.801	0.065
NLD	115	-0.111	0.790	0.074	0.010	0.734	0.068
POL	187	-0.183	0.747	0.055	-0.155	0.724	0.053
SVK	186	-0.209	0.685	0.050	-0.192	0.712	0.052
CZE	220	-0.218	0.699	0.047	-0.137	0.707	0.048
SWE	170	-0.229	0.778	0.060	-0.183	0.807	0.062
SRB	185	-0.242	0.792	0.058	-0.300	0.800	0.059
HRV	196	-0.257	0.781	0.056	-0.284	0.745	0.053
BGR	197	-0.260	0.801	0.057	-0.307	0.785	0.056
FRA	173	-0.267	0.811	0.062	-0.159	0.767	0.058
ITA	194	-0.282	0.799	0.057	-0.179	0.759	0.054
LVA	110	-0.282	0.664	0.063	-0.290	0.666	0.064
EST	195	-0.297	0.716	0.051	-0.155	0.684	0.049
JPN	192	-0.733	0.806	0.058	-0.645	0.754	0.054
Total	6080	-0.02	0.859	0.011	-0.019	0.819	0.011
One-way ANOVA		$F = 21.06^{***}$			$F = 19.21^{***}$		

Note.
*** $P < 0.001$.

applied single-level Generalized Structural Equation Modeling (GSEM) for each country (Fig. 5).

5. Findings

5.1. The variation of principals’ job satisfaction and organizational commitment

Our first interest was to compare principals’ JS and OC across participant countries. The ANOVA result indicated that there is a significant difference for principals’ JS ($F=21.06^{***}$) and OC ($F=19.21^{***}$) across countries. On average, principals in Mexico, Australia, Chile, Israel, Malaysia, Singapore, and Denmark reported higher level of JS and OC. On the other hand, principals in Italy, Japan, Latvia, Estonia, France, Bulgaria, Croatia, and Serbia exhibited the lower level of JS and OC.

Table 3
Principals’ satisfaction and commitment across five continents.

Continent	N	Job Satisfaction			Organizational Commitment		
		mean	sd	se(mean)	mean	sd	se(mean)
Oceania	109	0.397	0.752	0.072	0.439	0.721	0.069
North America	271	0.227	0.838	0.051	0.141	0.825	0.05
South America	1384	0.107	0.894	0.024	0.068	0.846	0.023
Asia	950	0.023	0.972	0.032	0.008	0.877	0.028
Europe	3366	-0.117	0.798	0.014	-0.09	0.783	0.013
Total	6080	-0.02	0.859	0.011	-0.019	0.819	0.011

Table 4
Two-Level GSEM Results.

	PRINCIPAL JOB SATISFACTION	PRINCIPAL ORGANIZATIONAL COMMITMENT
Independent Variable		
Mutual respect and Collaboration	0.418 ^{***}	0.286 ^{***}
Collaboration	(0.014)	(0.014)
Safety	0.108 ^{**}	0.114 ^{**}
	(0.013)	(0.013)
Lack_humanresource	-0.165 ^{***}	-0.160 ^{***}
	(0.016)	(0.016)
Lack_material	0.062	0.053
	(0.023)	(0.024)
Autonomy_staff	0.065	0.072
	(0.067)	(0.072)
Autonomy_budget	-0.082 ^{**}	-0.085 ^{**}
	(0.072)	(0.070)
Autonomy_instructional policy	-0.065 [†]	-0.064 [*]
	(0.054)	(0.056)
Public	-0.033	-0.056
	(0.069)	(0.067)
Publicfund	-0.106 ^{***}	-0.116 ^{***}
	(0.062)	(0.062)
PD	0.009	0.024
	(0.027)	(0.027)
Minority	-0.054	-0.037
	(0.028)	(0.027)
SPED	0.034	0.034
	(0.045)	(0.044)
LowSES	0.074 [†]	0.103 ^{**}
	(0.023)	(0.022)
Controlled Variables		
Location	0.064	0.078 [*]
	(0.021)	(0.021)
Size	0.121 ^{***}	0.121 ^{***}
	(0.000)	(0.000)
Gender	0.017	0.045
	(0.051)	(0.053)
Age	-0.014	0.027
	(0.004)	(0.004)
Degree	0.023	0.026
	(0.102)	(0.110)
Experience	0.122 ^{***}	0.115 ^{***}
	(0.004)	(0.004)
Tenured	0.039	0.049
	(0.122)	(0.120)
	(0.309)	(0.308)
Variance		
var(cntry)	0.040 [†]	
	(0.020)	
var(e.PSATIS)	0.517 ^{***}	
	(0.031)	
var(e.PCOMIT)	0.527 ^{***}	
	(0.024)	
cov(e.PCOMITe.PSATIS)	0.489 ^{***}	
	(0.026)	
N	4879	

Note: Standardized beta coefficients, Standard errors in parentheses.

Table 2 displays that there is a substantial difference in principals' JS and OC across the five continents. On average, the highest level of JS and OC is among principals in Oceania. Oceania is followed by North America and South America. The lowest level of JS and OC are found among European and Asian principals (Table 3).

5.2. Two-Level generalized structural equation model results for pooled data

We report the standardized coefficient, so the effect size is comparable as small(.1), medium(.3) or large (.5) (Jacob Cohen, Cohen, West, & Aiken, 2013). The results of the two-level GSEM in Table 4 indicated there was a significantly positive relationship

between principal JS and staff mutual respect ($\beta = 0.418^{***}$), school safety ($\beta = 0.108^{**}$), and the proportion of low income students ($\beta = 0.074^*$), yet negative association with a school's lack of human resources ($\beta = -0.165^{***}$), school autonomy in budgeting ($\beta = -0.082^{**}$), school autonomy in instructional policy ($\beta = -0.065^*$), and receiving more than 50% public funding ($\beta = -0.106^{***}$).

There is a significantly positive relationship between principal commitment and staff mutual respect ($\beta = 0.286^{***}$), safety ($\beta = 0.114^*$) and the proportion of low-income students ($\beta = 0.103^{**}$). On the other hand, there was a significantly negative correlation between principal OC and a school's lack of human resources ($\beta = -0.160^*$), school autonomy in budgeting ($\beta = -0.085^{**}$), school autonomy in instructional policy ($\beta = -0.064^*$) and public funding ($\beta = -0.116^{***}$). In addition, the one demographic factor that was positively associated with a principal's JS and OC is the principal's experience.

5.3. Results of generalized structure equation model for each country

5.3.1. Influential factors of principals' job satisfaction

This section reveals how school factors impact principals' JS and OC within different countries. Results are included in Table 5. First of all, the most important finding is that there is a significantly positive correlation between principals' perceived JS and their perception of staff mutual respect of all participating countries in TALIS 2013. The effect size ranges from medium to high 0.268 to 0.573.

In addition, the result showed that school safety was an influential factor of principals' JS in countries including the United Arab Emirates (Abu Dhabi) ($\beta = 0.233^{***}$), Brazil ($\beta = 0.168^{**}$), Denmark ($\beta = 0.258^{**}$), France ($\beta = 0.201^*$), Japan ($\beta = 0.206^{***}$), Slovak ($\beta = 0.166^{**}$), and the US ($\beta = 0.300^{**}$). This implies that principals' JS declines with an increase in school delinquency and violence in these countries.

As for school resources, a school's lack of human resources was negatively related to JS in Australia ($\beta = -0.372^{***}$), Belgium (Flanders) ($\beta = -0.177^{**}$), Canada (Alberta) ($\beta = -0.134^*$), Chile ($\beta = -0.204^*$), England ($\beta = -0.411^{***}$), and the US ($\beta = -0.343^{**}$). A lack of material resources was a negative factor in Czech ($\beta = -0.122^*$), Serbia ($\beta = -0.225$), Slovak ($\beta = 0.190^{**}$), and Sweden ($\beta = 0.187^*$), but it was positively associated with principal JS in the US ($\beta = 0.271^{**}$).

In addition, results indicated that school autonomy in staffing was positively related to principals' JS in Bulgaria ($\beta = 0.189^{**}$), Japan ($\beta = 0.403^{***}$), Romania ($\beta = 0.067^{***}$) and the US ($\beta = 0.245^{**}$), but was a negative indicator in England ($\beta = -0.162^*$). School autonomy in budgeting was positively associated with principals' JS in Bulgaria ($\beta = 0.169^{**}$), while it was a negative factor in Canada (Alberta) ($\beta = -0.176^*$), Singapore ($\beta = -0.122^*$), and Sweden ($\beta = -0.148^*$). Finally, school autonomy in instructional policies was negatively related to principals' JS in the United Arab Emirates (Abu Dhabi) ($\beta = -0.174^*$), Czech ($\beta = -0.139^*$), and the US ($\beta = -0.267^{***}$), but it was positively related to JS in Latvia ($\beta = 0.193^*$) and Sweden ($\beta = 0.238^{**}$). In addition, principals in public schools were more satisfied in Belgium (Flanders) ($\beta = 0.156^*$) and Japan ($\beta = 0.363^{***}$), but less satisfied in Bulgaria ($\beta = -0.132^{***}$). With regard to the school funding structure, publicly-funded schools tended to have more satisfied principals in Singapore ($\beta = 0.076^{***}$) but less satisfied principals in France ($\beta = -0.199^*$) and Poland ($\beta = -0.103^*$). The professional training was a significant indicator for principal JS only in Sweden ($\beta = 0.248^*$).

With regard to student composition, the proportion of minority students was negatively related to principal JS in Belgium (Flanders) ($\beta = -0.316^{**}$), Spain ($\beta = -0.283^{**}$), and Portugal ($\beta = -0.201^*$), but positively associated with principal JS in Norway ($\beta = 0.345^{***}$). The percentage of special-need students was negative in Croatia ($\beta = -0.173^*$), but positive in Czech ($\beta = 0.204^{**}$), Italy ($\beta = 0.177^*$), Mexico ($\beta = 0.145^*$), and Poland ($\beta = 0.144^*$). Lastly, the proportion of low socioeconomic students was positively related to JS in Belgium (Flanders) ($\beta = 0.310^{**}$); Canada (Alberta) ($\beta = 0.186^*$), Chile ($\beta = 0.291^*$), and Korea ($\beta = 0.163^*$). Two countries had a negative relationship: Italy ($\beta = -0.221^*$) and Norway ($\beta = -0.404^{***}$).

5.3.2. Factors influencing principals' organizational commitment

This section reports results how school factors are related to principals' OC. Results are included in Table 6. Again, the most consistent and important finding is that there is a positive and significant relationship between staff mutual respect and principals' OC in 30 countries with an effect size ranging from 0.156 to 0.483. The only two exceptions to this trend are Sweden and the US.

The second most important result indicated that school safety is an influential factor for principals' OC in the United Arab Emirates (Abu Dhabi) ($\beta = 0.257^{***}$), Brazil ($\beta = 0.125^*$), Denmark ($\beta = 0.190^*$), Finland ($\beta = 0.214^*$), Japan ($\beta = 0.204^{**}$), Slovak ($\beta = 0.184^{**}$), and the US ($\beta = 0.337^{**}$).

With regards to school resources, a school's lack of human resources was negatively related to OC in Australia ($\beta = -0.379^{**}$), Canada (Alberta) ($\beta = -0.195^{**}$), England ($\beta = -0.435^{***}$), Finland ($\beta = -0.155^*$), Italy ($\beta = -0.212^*$), Singapore ($\beta = -0.176^*$), and the US ($\beta = -0.341^{**}$). The principal' OC was positively related to a school's lack of material resources in the US ($\beta = 0.307^{**}$) and Japan ($\beta = 0.144^*$), but the lack of material resources was negatively associated with principal OC in the United Arab Emirates (Abu Dhabi) ($\beta = -0.225^{**}$), Mexico ($\beta = -0.228^*$), Serbia ($\beta = -0.282^{**}$), Slovak ($\beta = -0.212^{**}$), and Sweden ($\beta = -0.210^*$).

Other key variables are school autonomy. The results indicated that school autonomy in staffing is positively related to commitment in Belgium ($\beta = 0.173^*$), Japan ($\beta = 0.404^{***}$), Romania ($\beta = 0.075^{***}$), and the US ($\beta = 0.253^*$). However, the relationship was negative in England ($\beta = -0.193^*$) and Malaysia ($\beta = -0.125^{***}$). School autonomy in budgeting was positively associated with principals' OC in Bulgaria ($\beta = 0.194^{**}$) and Italy ($\beta = 0.228^*$), but there was a negative association in Canada ($\beta = -0.247^{**}$), Poland ($\beta = -0.176^*$), Singapore ($\beta = -0.130^*$), and Sweden ($\beta = -0.171^*$). Finally, the correlation between school autonomy in instruction and principals' OC was positive in Netherlands ($\beta = 0.229^*$) and Sweden ($\beta = 0.221^{**}$). However,

Table 5
Influential factors for principal job satisfaction.

	Social Interaction				Resources				Organizational Structure				Organizational Support				
	Physical Safety		Safety Collaboration		Lack_Humanresource		Lack_material		Autonomy_staff		Autonomy_budget		Autonomy_instruc-tion		Public	Publicfund	Support PD
	Mutual respect	Collaboration	Lack_Humanresource	Lack_material	Autonomy_staff	Autonomy_budget	Autonomy_instruc-tion	Public	Publicfund	Support PD							
AAD	0.328**	0.233**	0.168	-0.148	0.169	0.059	-0.174*	0.229	-0.092	0.063							
AUS	0.507***	-0.275*	-0.372**	-0.011	0.109	0.046	0.015	0.045	-0.079	-0.075							
BFL	0.533**	0.016	-0.177**	0.041	0.139	0.058	-0.040	0.156*	0.000	0.060							
BGR	0.503	-0.029	-0.036	-0.114	0.189**	0.169**	0.044	-0.132***	0.000	0.101							
BRA	0.472	0.168*	-0.052	0.005	0.034	0.065	-0.118	0.125	-0.128	0.101							
CAB	0.393**	0.150	-0.134*	-0.074	-0.076	-0.176*	-0.020	0.007	-0.076	0.079							
CHL	0.474	0.188	-0.204*	-0.009	-0.064	0.069	0.020	0.095	0.032	-0.082							
CZE	0.334**	0.123	-0.141	-0.122*	0.025	-0.050	-0.139*	-0.014	-0.049	0.063							
DNK	0.470**	0.258**	-0.003	0.091	-0.015	-0.150	0.100	-0.032	0.000	0.081							
ENG	0.360**	-0.010	-0.411***	0.028	-0.162*	0.089	-0.016	-0.109	0.043	-0.009							
ESP	0.517***	0.038	-0.122	0.053	0.018	-0.043	0.120	0.128	0.057	0.009							
EST	0.486**	0.071	-0.102	-0.012	-0.009	0.055	-0.053	0.046	0.072	0.078							
FIN	0.356**	0.139	-0.129	-0.091	-0.091	0.003	0.100	0.014	0.053	-0.006							
FRA	0.375**	0.201	-0.065	-0.133	0.026	0.000	0.047	0.085	-0.199*	-0.015							
HRV	0.546***	0.089	-0.000	0.014	0.020	0.031	-0.010	-0.136	-0.049	0.052							
ISR	0.509**	0.096	0.076	-0.141	-0.043	-0.028	0.004	0.078	-0.107	0.109							
ITA	0.326**	0.069	-0.141	-0.082	0.049	0.132	0.016	0.107	0.040	0.029							
JPN	0.501**	0.206	-0.006	0.124	0.403***	-0.174	0.076	0.363**	-0.088	0.102							
KOR	0.393**	0.145	-0.094	-0.035	0.047	0.053	-0.056	0.116	0.002	0.013							
LVA	0.316	0.081	-0.111	0.086	0.009	0.121	0.193	-0.144	-0.129	0.226							
MEX	0.521***	0.108	0.081	-0.136	0.255	0.008	-0.066	0.313	-0.058	0.149							
MYS	0.548***	0.015	-0.069	0.050	-0.069	-0.022	0.057	0.000	-0.039	-0.032							
NLD	0.573**	0.043	-0.019	0.014	0.015	0.026	0.115	-0.152	0.000	0.137							
NOR	0.558**	-0.016	-0.068	0.181	-0.059	0.078	0.153	0.110	0.072	0.087							
POL	0.469**	0.039	0.010	0.067	-0.077	-0.107	0.054	0.058	-0.103*	-0.122							
PRT	0.361**	0.193	-0.093	0.087	-0.072	-0.064	-0.110	0.115	0.128	-0.058							
ROU	0.555**	0.044	0.129	-0.060	0.067**	0.069	0.027	0.000	-0.071	0.021							
SGP	0.428**	0.056	-0.154	-0.021	-0.086	-0.122*	-0.070	0.000	0.076**	-0.026							
SRB	0.455**	0.150	-0.072	-0.225**	-0.040	-0.062	-0.066	0.000	0.000	0.090							
SVK	0.268	0.166**	-0.075	-0.190**	0.093	0.093	-0.075	-0.017	-0.130	0.106							
SWE	0.367***	0.052	-0.043	-0.187*	0.030	-0.148*	0.238**	-0.152	0.000	0.248*							
USA	0.314**	0.300**	-0.343**	0.271**	0.245**	-0.124	-0.267***	-0.094	0.106	0.015							

	Student Composition				School Characteristics				Principal Characteristics				Sample Size
	Minority	SPED	LowSES	Size	Location	Size	Gender	Age	Education	Experience	Tenured		
AAD	0.024	-0.060	0.003	0.313**	-0.085	0.313**	0.311***	0.126	0.001	-0.087	-0.432	109	
AUS	0.180	0.032	-0.196	-0.058	-0.023	-0.058	0.010	-0.258*	0.075	0.145	1.009**	100	
BFL	-0.316**	0.028	0.310*	0.406***	0.068	0.406***	0.006	0.111	0.005	-0.051	-0.769**	119	
BGR	-0.080	0.037	-0.029	0.284**	-0.008	0.284**	-0.017	-0.051	0.142**	-0.069	0.000	141	
BRA	-0.005	0.037	0.022	0.116	0.051	0.116	0.054	0.143	-0.049	-0.025	0.114	530	
CAB	0.001	-0.087	0.186*	0.081	0.088	0.081	0.045	0.227*	-0.001	0.182	0.103	158	
CHL	-0.009	0.046	0.291*	0.101	0.186	0.101	-0.053	0.066	0.114	-0.013	-0.181	105	

(continued on next page)

Table 5 (continued)

	Student Composition				School Characteristics			Principal Characteristics				Sample Size
	Minority	SPED	LowSES	Location	Size	Gender	Age	Education	Experience	Tenured		
CZE	0.033	0.204**	0.067	0.034	0.076	0.043	-0.073	-0.098	0.083	-0.268	210	
DNK	0.034	-0.050	0.041	-0.025	-0.044	0.106	-0.010	0.000	0.080	0.000	104	
ENG	0.117	0.011	-0.018	0.009	-0.125	-0.134	-0.122	0.147**	0.086	-0.956*	135	
ESP	-0.283**	0.084	-0.054	0.087	-0.026	0.054	-0.143	0.050	0.271**	-0.020	178	
EST	-0.011	-0.039	-0.044	0.165*	0.038	0.117	0.080	-0.016	0.024	0.169	189	
FIN	0.012	-0.080	-0.024	0.036	0.094	-0.004	0.106	-0.026	0.026	0.505*	139	
FRA	0.091	0.063	0.029	-0.007	0.094	-0.138	0.123	-0.136*	-0.066	0.000	158	
HRV	-0.053	-0.173*	0.095	-0.065	0.099	0.108	0.037	0.201*	0.125	0.000	150	
ISR	-0.012	0.072	-0.073	0.020	0.103	-0.033	0.037	0.049	0.100	1.449**	149	
ITA	-0.000	0.177*	-0.221*	-0.021	0.103	0.171*	0.214*	-0.117	0.005	0.000	163	
JPN	-0.045	-0.015	-0.044	0.082	0.029	0.021	-0.104	-0.140**	0.156	0.000	184	
KOR	-0.040	-0.042	0.163	0.002	-0.006	0.042	0.151*	0.058	-0.082	0.000	150	
LVA	0.164	0.170	-0.090	-0.086	0.191	-0.126	0.186	0.000	-0.175	0.188	102	
MEX	-0.050	0.145*	0.073	0.080	-0.049	0.063	-0.075	0.041	0.035	0.104	138	
MYS	-0.105	0.138	0.025	0.113	-0.101	-0.134	0.030	0.000	0.121	0.000	128	
NLD	0.068	0.033	0.000	-0.167*	-0.032	0.094	0.077	-0.130*	-0.047	-1.103*	113	
NOR	0.345***	0.032	-0.404***	0.162	0.009	-0.065	-0.052	0.000	0.037	-0.090	93	
POL	-0.040	0.144*	-0.165	0.038	0.131*	0.169*	0.015	0.038*	0.057	-0.031	158	
PRT	-0.201*	0.097	-0.120	0.045	-0.168	-0.016	-0.178	0.088	0.205*	0.805	116	
ROU	-0.049	-0.023	-0.019	0.068	0.110	0.128*	0.119	-0.072	0.083	0.274**	184	
SGP	-0.121	-0.019	0.042	0.000	0.120*	-0.055	0.015	0.158*	0.086	0.000	138	
SRB	-0.011	-0.042	0.128	-0.053	0.222*	-0.077	0.030	-0.195	0.012	0.000	137	
SVK	-0.002	-0.030	0.050	-0.046	0.165	0.217**	-0.188	0.066	0.391***	-0.071	168	
SWE	-0.157	0.007	0.116	0.058	0.161	0.119	0.044	-0.041	-0.095	0.429	134	
USA	-0.086	0.014	-0.045	0.178	0.174*	-0.017	-0.071	0.079	0.212**	-0.386	98	

Note: Standardized beta coefficients, Standard errors in parentheses.

* p < 0.05.

** p < 0.01.

*** p < 0.001.

Table 6
Influential factors for principal organizational commitment **Sample Size**.

	Social Interaction			Physical Safety		Resources		Organizational Structure				Organizational Support	
	Mutual respect and Collaboration	Safety	Physical Safety	Lack_Human resource	Lack_material	Autonomy_staff	Autonomy_budget	Autonomy_instruc-tion	Public	Publicfund	Support	PD	
AAD	0.222***	0.257***	0.249**	-0.225***	-0.225***	0.134	0.089	-0.186*	0.227	-0.129	0.058	0.058	
AUS	0.368***	-0.152	-0.379**	-0.021	-0.021	0.110	0.127	-0.060	0.164	-0.042	-0.029	-0.029	
BFL	0.346***	0.080	-0.094	0.057	0.057	0.173*	0.073	-0.090	0.074	0.000	0.102	0.102	
BGR	0.314**	-0.018	-0.080	-0.117	-0.117	0.124	0.194**	0.066	-0.176***	0.000	0.126	0.126	
BRA	0.391***	0.125	-0.069	-0.040	-0.040	0.125	0.196	-0.158	0.119	-0.085	0.025	0.025	
CAB	0.242**	0.131	-0.195**	-0.052	-0.052	-0.115	-0.247**	-0.062	-0.083	-0.087	0.073	0.073	
CHL	0.412***	0.142	-0.173*	-0.099	-0.099	-0.093	0.092	0.081	0.131	0.044	-0.111	-0.111	
CZE	0.176	0.080	-0.124	-0.135	-0.135	0.057	-0.086	-0.158*	0.011	-0.059	0.097	0.097	
DNK	0.334**	0.190	-0.010	0.029	0.029	-0.004	-0.161	0.149	-0.019	0.000	0.037	0.037	
ENG	0.177*	-0.061	-0.435***	-0.032	-0.032	-0.193	0.068	0.035	-0.102	0.027	-0.034	-0.034	
ESP	0.375**	0.160	-0.101	0.078	0.078	0.056	-0.084	0.111	0.217	0.048	0.025	0.025	
EST	0.369***	0.077	-0.093	-0.045	-0.045	-0.017	0.009	-0.011	0.083	0.022	0.083	0.083	
FIN	0.219*	0.214**	-0.155*	-0.144	-0.144	-0.089	0.022	0.084	-0.054	0.060	-0.014	-0.014	
FRA	0.245	0.171	-0.064	-0.096	-0.096	0.005	0.000	0.044	0.019	-0.156	-0.035	-0.035	
HRV	0.466***	0.122	0.030	-0.004	-0.004	0.002	-0.003	0.024	0.019	-0.085	0.074	0.074	
ISR	0.291**	0.134	0.021	-0.110	-0.110	-0.038	0.061	-0.019	0.038	-0.060	0.104	0.104	
ITA	0.156	0.115	-0.212*	-0.080	-0.080	0.049	0.228*	0.034	0.189	0.060	0.019	0.019	
JPN	0.383***	0.204*	0.071	0.144*	0.144*	0.404**	-0.173	0.075	0.325**	-0.058	0.143*	0.143*	
KOR	0.325***	0.143	-0.017	-0.075	-0.075	0.027	0.054	-0.073	0.165	0.028	0.052	0.052	
LVA	0.193	-0.003	-0.166	0.157	0.157	-0.030	0.162	0.114	-0.126	-0.186	0.227	0.227	
MEX	0.378***	0.124	0.089	-0.228*	-0.228*	0.220	0.030	0.017	0.432*	-0.169	0.159	0.159	
MYS	0.513***	0.043	0.000	0.036	0.036	-0.125***	-0.042	0.067	0.000	-0.042	-0.022	-0.022	
NLD	0.439***	-0.061	-0.095	0.076	0.076	-0.039	-0.031	0.229*	-0.153	0.000	0.112	0.112	
NOR	0.439***	-0.037	-0.113	0.142	0.142	-0.042	0.022	0.128	0.088	0.002	0.095	0.095	
POL	0.374**	0.094	0.015	0.073	0.073	-0.024	-0.176*	0.066	0.035	0.160	-0.136	-0.136	
PRT	0.258**	0.126	-0.081	-0.062	-0.062	-0.090	-0.130	0.028	0.116	-0.082	-0.067	-0.067	
ROU	0.483***	0.006	0.118	-0.061	-0.061	0.075**	0.109	-0.019	0.000	0.046	0.046	0.046	
SGP	0.267***	0.033	-0.176*	-0.023	-0.023	-0.070	-0.130*	-0.038	0.000	0.092**	-0.045	-0.045	
SRB	0.307**	0.151	0.008	-0.282**	-0.282**	-0.001	-0.110	-0.147	0.000	0.014	0.104	0.104	
SVK	0.159	0.184*	-0.073	-0.212**	-0.212**	-0.037	0.048	-0.072	0.033	-0.069	0.032	0.032	
SWE	0.154	0.026	-0.044	-0.210*	-0.210*	0.009	-0.171*	0.221**	-0.200*	0.000	0.277*	0.277*	
USA	0.147	0.337**	-0.341**	0.307**	0.307**	-0.253*	-0.115	-0.270**	-0.119	0.133	0.018	0.018	

	Student Composition				School Characteristics				Principal Characteristics				Sample Size
	Minority	SPED	LowSES	Location	Size	Gender	Age	Education	Experience	Tenured			
AAD	0.045	-0.024	-0.033	-0.120	0.341**	0.306***	0.172	0.006	-0.116	-0.032	109		
AUS	0.162	0.053	-0.180	-0.041	-0.027	-0.031	-0.269*	0.079	0.164	0.096*	100		
BFL	-0.306**	0.060	0.355***	0.082	0.429***	0.048	0.152	0.033	-0.063	-0.129**	119		
BGR	-0.090	0.106	0.029	-0.023	0.297**	-0.021	-0.071	0.151***	0.040	0.000	141		
BRA	-0.007	0.042	0.033	-0.028	0.144*	0.057	0.161*	-0.044	-0.026	0.070	530		
CAB	-0.058	-0.140	0.263*	0.128	0.110	0.017	0.290**	0.043	0.134	0.024	158		
CHL	-0.120	0.120	0.229*	0.185	0.132	-0.015	0.078	0.043	-0.030	-0.037	105		

(continued on next page)

Table 6 (continued)

	Student Composition				School Characteristics			Principal Characteristics				Sample Size	
	Minority	SPED	LowSES		Location	Size		Gender	Age	Education	Experience		Tenured
CZE	0.045	0.195*	0.025	0.042	0.045	0.020	0.067	0.020	-0.067	-0.021	0.120	-0.081*	210
DNK	0.041	-0.054	-0.019	-0.039	0.007	0.121	0.032	0.121	0.032	0.000	0.109	0.000	104
ENG	0.056	-0.060	0.053	0.063	-0.152	-0.171	-0.053	-0.171	-0.053	0.132	0.081	-0.145*	135
ESP	-0.256**	0.096	0.003	0.153	-0.036	0.064	-0.096	0.064	-0.096	0.041	0.299**	-0.021	178
EST	0.030	-0.129	0.019	0.165	0.075	0.065	0.078	0.065	0.078	-0.021	0.024	0.036	189
FIN	-0.002	-0.091	-0.014	0.032	0.107	-0.010	0.157	-0.010	0.157	-0.027	0.021	0.143**	139
FRA	0.070	0.089	0.094	-0.016	0.135	-0.164	0.171*	-0.164	0.171*	-0.097	-0.053	0.000	159
HRV	-0.045	-0.115	0.097	-0.047	0.045	0.049	0.033	0.049	0.033	0.220**	0.083	0.000	150
ISR	-0.104	0.141	-0.061	-0.007	0.121	-0.027	0.054	-0.027	0.054	0.030	0.160	0.175**	149
ITA	0.061	0.217*	-0.189*	-0.057	0.115	0.203*	0.257**	0.203*	0.257**	-0.057	0.050	0.000	163
JPN	0.005	-0.108	-0.062	0.121	0.009	0.039	-0.073	0.039	-0.073	-0.183**	0.167	0.000	184
KOR	-0.043	-0.059	0.159	-0.002	0.003	0.036	0.117	0.036	0.117	0.057	-0.090	0.000	150
LVA	0.120	0.127	-0.088	-0.077	0.147	-0.098	0.231	-0.098	0.231	0.000	-0.161	0.115	102
MEX	-0.029	0.120	0.061	0.095	0.039	0.062	-0.037	0.062	-0.037	0.063	0.007	0.087	138
MYS	-0.142	0.100	0.058	0.123	-0.065	-0.107	0.047	-0.107	0.047	0.000	0.071	0.000	128
NLD	0.003	-0.004	0.007	-0.149	-0.014	0.101	0.185	0.101	0.185	-0.151**	-0.139	-0.191*	113
NOR	0.355**	-0.057	-0.319*	0.145	-0.005	-0.106	-0.070	-0.106	-0.070	0.000	0.038	-0.006	93
POL	-0.041	0.127	-0.111	0.081	0.141*	0.202*	-0.008	0.202*	-0.008	0.009	0.064	-0.030	158
PRT	-0.228*	0.133	-0.169	0.076	-0.197*	0.012	-0.167	0.012	-0.167	0.070	0.176*	0.313**	116
ROU	-0.064	0.005	-0.001	-0.025	0.142*	0.119	0.044	0.119	0.044	-0.074	0.192	0.133	184
SGP	-0.107	-0.015	0.030	0.000	0.105	-0.059	0.062	-0.059	0.062	0.190**	0.028	0.000	138
SRB	-0.080	-0.049	0.209**	-0.047	0.277*	-0.026	0.054	-0.026	0.054	-0.315**	0.001	0.000	137
SVK	0.051	0.030	0.096	0.076	0.153	0.250***	-0.219*	0.250***	-0.219*	0.071	0.435**	-0.002	168
SWE	0.022	-0.032	0.047	-0.010	0.136	0.129	0.127	0.129	0.127	0.020	-0.104	0.037	134
USA	-0.079	-0.021	-0.028	0.205*	0.150	0.064	-0.016	0.064	-0.016	0.082	0.176	-0.115	98

Note: Standardized beta coefficients, Standard errors in parentheses.

* p < 0.05.

** p < 0.01.

*** p < 0.001.

school autonomy in instructional policies was negatively related to principals' OC in the United Arab Emirates (Abu Dhabi) ($\beta = -0.186^*$), Czech ($\beta = -0.158^*$) and the US ($\beta = -0.270^{**}$).

In addition, principals in public schools were more committed to their schools in Japan ($\beta = 0.325^{**}$) and Mexico ($\beta = 0.432^*$), but less committed in Bulgaria ($\beta = -0.176^{***}$) and Sweden ($\beta = -0.200^*$). Publicly-funded schools had more committed principals in Singapore ($\beta = 0.092^{***}$) but less committed principals in Mexico ($\beta = -0.169^*$) and Poland ($\beta = -0.106^*$). Organizational development opportunity was a positive indicator for principal OC in Japan ($\beta = 0.143^*$) and Sweden ($\beta = 0.277^*$).

When it came to student demographics, the proportion of minority students was a positive factor in Norway ($\beta = 0.355^{**}$), but negatively related to principal OC in Belgium (Flanders) ($\beta = -.306^{**}$), Spain ($\beta = -0.256^{**}$) and Portugal ($\beta = -0.228^*$). The percentage of special-need students was positively related to principal OC in Czech ($\beta = 0.195^{**}$) and Italy ($\beta = 0.217^*$). Lastly, the composition of low social-economic students was positively associated with principals' OC in Belgium (Flanders) ($\beta = 0.355^{***}$); Canada (Alberta) ($\beta = 0.263^{**}$), Chili ($\beta = 0.229^*$), and Serbia ($\beta = 0.209^{**}$). Two countries exhibited a negative relationship: Italy ($\beta = -0.189^*$) and Norway ($\beta = -0.319^{**}$).

6. Discussion

The present research has the interest in comparing principal JS and OC across countries and continents, and investigating how school factors impact principal JS and OC globally and in each country. School improvement research has indicated that leadership is the second most important school-related factor influencing school success, after teachers (Leithwood, Louis, Anderson, & Wahlstrom, 2004). The recruitment and retention of effective school principals depend substantially on the extent to which they are satisfied with and committed to their job and schools (Fraser & Brock, 2013).

The findings of the study indicated that compared to their peers in Oceania, South American, North American, European, and Asian principals (especially principals in Japan, Latvia, Italy, France and Estonia) exhibited the lowest JS and/or OC, which is compatible with existing research (Karin Andreassi et al., 2014) finding that Asian employees were the least satisfied.

The results revealed that the most important factor accounting for variation in principal JS and OC is staff mutual respect. The effect is positive and significant in all participant countries for JS and 30/32 countries for OC. Therefore, a principal's JS and OC is associated significantly with the social interactions and the relationship among staff. This suggests the importance of a positive school climate, especially a respectful and collaborative relationship among staff and students, which is consistent with prior research that revealed the same importance of positive social relationships for teachers (De Nobile et al., 2013; Desai et al., 2014).

In several countries or regions, including Abu Dhabi, Brazil, Denmark, Finland, Japan, Slovakia, and the United States, the level of school safety also appeared to be relevant to principals' OC and JS. More specifically, while principals in all countries are more likely to be committed to and satisfied with their job when positive social relationship among staff is evident, principals in these countries are also more likely to be committed to and satisfied with their job when their school is a safe place. This finding emphasizes the importance of what Bryk et al. (2010) addressed in their Chicago Study-that a school has to possess a safe and orderly structure to help build organizational capacity.

As to the other factors investigated in this research, school human resource is a determining factor as the lack of human resource was negatively associated with principals' JS and OC. Such finding is not surprising as human capital is the most important element in building organizational capacity (Dimmock, 2013; Tutt & Williams, 2012) and student achievement (DuFour & Mattos, 2013). In addition, this finding is extended to the positive effect of school autonomy in staffing on JS and OC. The previous evidence (Markow et al., 2013) supported that principals rate a lack of control over school staffing as the main reason for job dissatisfaction. The autonomy for staffing has been viewed by principals as the essential pathway for building strong school human capital (Dimmock, 2012). On the other hand, autonomy in budgeting and instructional policies are less likely to be the positive influences on JS and OC. This indicates that dealing with budgeting, fundraising, and instructional management is challenging for principals.

As to school management type and funding resources, the results are mixed. Principals have higher JS and OC in public and publicly-funded schools in some countries while opposite results were found in other countries. This finding is partially reflected by the challenges and difficulties public school principals might face in different contexts. When linked with the finding of the negative effect of budgeting autonomy, this discussion could be extended to whether sufficient school funding and resources is a key variable for principal attitudes, partially due to the fact that public schools tend to face more funding challenges (Harding & Kershner, 2015; Mestry & Ndhlovu, 2014).

School composition appeared as an important factor predicting principal JS and OC. That is, principals working in schools with a higher proportion of minority students are less likely to be satisfied and committed. Diverse schools are more likely to struggle with underachievement, high teacher turnover (Simon & Johnson, 2015), and disciplinary issues (Gregory, Skiba, & Noguera, 2010). However, it is interesting to note that the proportion of low socioeconomic students is positively related to principals' JS and OC, which suggests further research is needed to explore the emotional status of the principal serving low-income kids. A connection with students and schools, and a high level of normative commitment, might be reasons for them to remain in a disadvantaged school.

7. Conclusion

The principal is an indispensable ingredient for school success. Therefore, principal JS and OC are extremely important in assuring school achievement (Leithwood & Seashore-Louis, 2011; Yousef, 2017). However, there is very limited research evidence regarding the topic. This current study is therefore valuable in that it addresses the gaps by drawing on comparative cross-national data, situating each country in an international context to explore variations in principal JS and OC, and developing a framework of a

comprehensive set of school factors that impact JS and OC.

The present study suggests the existence of significant variations among individual countries and regions. Such evidence is important for the countries struggling with high principal turnover and burnout. More importantly, this research provides evidence about what school factors are related to the low level of satisfaction and commitment. Moving forward from previous research that focuses on working conditions and student populations (Ni, Sun, & Rorrer, 2015; Sun & Ni, 2016), this study added essential components to the analysis and found that social interaction among the staff, school safety, school human resources, and autonomy for staffing are all important factors influencing principal satisfaction and commitment. Among all factors, however, mutual respect appeared to be the most important.

Although researchers (Bellibas & Liu, 2016) generally believe it is imperative for principals to create a school climate in which safety and respect are evident for teachers to be successful, it is evident in the current research that principals themselves benefit from such a positive environment. Considering the current pressure on principals for accountability and achievement, which might cause dissatisfaction and less commitment, it is imperative now that the positive staff interaction, collaboration, school safety and developing strong human capital are crucial for retaining principals.

7.1. Limitations and future research

Though this research takes advantage of large-scale international data and rigorous data analysis, it still carries limitations. First of all, this study adopted a comprehensive model to investigate how wide-ranging school factors impact school principal JS and OC. However, caution needs to be applied when interpreting the results of this study. First of all, the research used self-reported data that could be skewed because respondents may be too embarrassed or concerned to reveal certain details. In addition, the individual biases or feelings of the respondents may affect the results as well (Northrup, 1996). Though the consistency of a positive correlation between JS and OC within each country is a good sign of validity of the data, the limitation of self-reported data should be acknowledged.

Second, TALIS is a large-scale international study that collects data from different contexts. This study has indicated that factors influencing principal JS and OC are generally not consistent across contexts. Though the provision of comparative evidence is a pioneering feature of this study, this study cannot answer why some factors are particularly critical in certain countries and not in others. It will be up to future research to explore why certain factors impact JS and OC differentially in the particular context.

Third, although we have tried to include a wide range of school factors in this analysis, our model still has approximately 50% of the variance in both JS and OC left unexplained, which indicates that principals' attitudes still depend on other factors that are not included in our model.

Furthermore, the correlations described here have an obvious recursive nature. Where the school's physical, social, and managerial environment impacts the principal's JS and OC, the principal's attitude would simultaneously impact how he/she works to build school climate, which is a very important dynamic that we would like to investigate in further research. However, the TALIS survey collects cross-sectional data from principals and teachers every five years, and there have been only two rounds of studies done so far (2008 and 2013). These two surveys have different measures and items investigating the primary interests of this study. Therefore, it is fundamentally difficult to conduct a recursive analysis using a set of longitudinal data to track the trajectory of the mutual effects between principal attitudes and school factors for now, therefore, is recommended for the future study.

Appendix A. Items used for latent variable construction

Latent Variable	Variables Used from TALIS 2013	Item Wording
How strongly do you agree or disagree with these statements as applied to this school? 1 as strongly disagree, 2 as disagree, 3 as agree, and 4 as strongly agree		
Mutual Respect and Collaboration	TC2G30C TC2G30D TC2G30E TC2G30F	School staff have an open discussion about difficulties There is mutual respect for colleagues' ideas There is a culture of sharing success The relationships between teachers and students are good
In this school, how often do the following occur? 1 as "never", 2 as "rarely", 3 as "monthly", 4 as "weekly" and 5 as "daily" (These variables have been reversely coded)		
School Safety	TC2G32D TC2G32E TC2G32F TC2G32G	Vandalism and theft Intimidation or verbal abuse among students (or other forms of non-physical bullying) Physical injury caused by violence among students Intimidation or verbal abuse of teachers or staff
In this school's capacity to provide quality instruction currently hindered by any of the following issues 1 for "not at all", 2 for "very little", 3 for "to some extent" and 4 for "a lot"		

Lack of human resource	TC2G31A	Shortage of qualified and /or well performing teachers
	TC2G31B	Shortage of teachers with competences in teaching students with special needs
Lack of materials	TC2G31C	Shortage of vocational teachers
	TC2G31D	Shortage of inadequacy of instructional materials
	TC2G31E	Shortage of inadequacy of computer instruction
	TC2G31F	Insufficient internet access
	TC2G31G	Shortage of inadequacy of computer software for instruction
	TC2G31H	Shortage of inadequacy of library materials
Regarding this school, who has a significant responsibility for the following tasks?(As Principals and Teacher were coded as autonomous (1), as external authority was coded as No Autonomy = 0		
School autonomy for staffing	TC2G18A 1 -	Appointing or hiring teachers
	TC2G18A 5	
School autonomy for budgeting	TC2G18B 1-	Dismissing or suspending teachers from employment
	TC2G18B 5	
	TC2G18C 1 -	Establishing teachers' starting salaries, including setting pay scales
	TC2G18C 5	
School autonomy for instructional policies	TC2G18D 1 -	Determining teachers' salary increase
	TC2G18D 5	
	TC2G18E 1 -	Deciding on budget allocations within the school
	TC2G18E 5	
	TC2G18F 1 -	Establishing student disciplinary policies and procedures
	TC2G18F 5	
TC2G18G 1 -	Establishing student assessment policies, including < nationals/ regional > assessments	
TC2G18G 5		
TC2G18J 1 -	Determining course content, including < nationals/ regional > curricula	
TC2G18J 5		
TC2G18K 1 -	Deciding which courses are offered	
TC2G18K 5		

Appendix B. Descriptive statistics for all variables

	N	mean	sd	se(mean)	max	min
Depend Variables						
Principal Jobs satisfaction	6078	-0.020	0.859	0.011	1.592	-3.292
Principal Organizational commitment	6078	-0.019	0.819	0.011	1.433	-2.998
Independent Variables						
Mutual respect and Collaboration	6065	0.004	0.495	0.006	1.268	-0.813
Safety	6052	0.000	1.803	0.023	3.968	-6.140
Lack_humanresource	6063	0.000	1.816	0.023	4.681	-3.208
Lack_material	6064	0.006	1.184	0.015	2.871	-1.967
Autonomy_staff	5996	0.335	0.472	0.006	1	0
Autonomy_budget	5881	0.206	0.404	0.005	1	0
Autonomy_instruction	5888	0.289	0.453	0.006	1	0
Public	6114	0.858	0.350	0.004	1	0
Public fund	6095	0.869	0.337	0.004	1	0
PD	5684	3.546	.770	.010	5	1
Minority	6001	1.873	1.046	0.014	5	1
SPED	6037	2.154	0.666	0.009	5	1
LowSES	6030	2.838	1.085	0.014	5	1
Control Variables						
Location	6092	3.762	1.431	0.018	6	1
Size	6023	658.524	493.737	6.362	4335	6
Female	6120	0.519	0.500	0.006	1	0

Age	6101	50.582	8.218	0.105	73	23
Degree	6089	2.991	0.301	0.004	4	1
Experiences	5733	8.673	7.186	0.095	45	0
Tenured	6061	0.952	0.214	0.003	1	0

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