

## **National Contexts Influencing Principals' Time Use: Economic Development, Societal Culture, and Educational System**

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### **Abstract**

This study, as a first of its kind, examines relationships between principals' time use and national contexts. Specifically, this paper explores cross-national variance in the amount of hours principals spend for their main duties and investigates how the amount of hours they spend is influenced by key national contexts—i.e. economic development, societal culture, and educational system. Furthermore, this paper seeks to illuminate how the three national-level contexts influence principals' time allocation for their major realms of responsibility such as curriculum/pedagogy development, administration, and relationships with parent/community when key organizational-level contexts are controlled for. For the current research, the Progress in International Reading Literacy Study (PIRLS) 2006 was used. The final analysis using a two-level hierarchical linear model (HLM) included 5,297 principals from 34 societies. There were four major findings. First, there was substantial cross-nation variance in the amount of hours principals spend for their schools. More importantly, a substantive portion of variance in the amount of hours principal spend was explained by the level of economic development; the more developed societies are, the more hours principals spend for their schools. Second, the level of national economy was, however, negatively associated with principals' time allocation for curriculum/pedagogy development. Third, national cultures influenced principals' time allocation for curriculum and pedagogy development, and relationships with parent/community. Specifically, the more hierarchical societies are, the less time principals spend for curriculum/pedagogy development and relationships with parent/community. Finally, principals in highly standardized schooling systems in terms of the presence of national exam, national textbooks, and national curriculum tended to spend less time for administrative duties than their counterparts in less standardized schooling systems. Implications for research are briefly discussed.

*Keywords:* National contexts, school principals, time use, leadership

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## Introduction

Principals' attention to major realms of responsibility has been reported in educational leadership literature as one key organizational resource for school improvement (Hallinger & Heck, 1996; Leithwood, Louis, Anderson, & Wahlstrom, 2004). A recent meta-analysis done by Robinson and her colleagues (2008) shows that principals have a considerable impact on school improvement in general and student achievement in particular. While principals are key resources for school improvement and student learning, organizational contexts in which they work often demand principals to allocate their time and effort to particular responsibilities in an efficient way. This is a fundamental challenge facing principals (Goldring et al., 2008). Previous studies have documented this issue by examining how principals use their time through surveys of principals, ethnographic studies, or daily logs (e.g., Eberts & Stone, 1988; Goldring et al., 2008; Horng, Klasik, & Loeb, 2009; Halland, 2008; Kieley, 2000; Kmetz & Willower, 1982; Martinko & Gardner, 1990; Martin & Willower, 1981; Peterson, 1981; Mead, Loftus, & Wilson, no date; Spillane, Camburn, & Pareja, 2007; Wolcott, 1973).

This paper adds additional knowledge to previous studies in two distinctive ways: First, while insightful, previous studies have focused on particular schools or districts within one country mostly with small sample groups of principals. Research examining principals' time use on an international scale is not found. Using an international database, this paper captures a larger picture of principals' time use across different societies. Second, this paper focuses on national-level contexts, which have been relatively neglected principals' work contexts that may contribute to conditioning principals' time use. As mentioned above, previous studies tended to focus particularly on school organizational contexts that influence principals' time use. Therefore, this paper explores the effects of national contexts on principals' time use when key organizational contexts are statistically controlled for. This paper addresses the following two key questions:

- Is there cross-national variance in principal time use?
- If so, what national-level contexts influence principals' time use for major realms of responsibilities?

Examining these research questions contributes to theorizing how leadership behaviors are formed or how leadership practices are exerted that has been a key question in leadership research. As Goldring et al. (2008) pointed out, there has been a long debate about how situational contexts and individual attributes shape leadership behaviors. In general, there are two research stances in theorizing leadership behaviors or practices: research camped in trait theories of leadership (e.g., Kirkpatrick & Locke, 1991; Stogdill, 1948, 1974) vs. research based on theories of situational (e.g. Hersey & Blanchard, 1969, 1977) and contingency (e.g. Fiedler, 1964, 1967). Those two different approaches are theoretically complementary in understanding leaders' behaviors or leadership practices. It is, however, not our purpose in this exploratory study to join such long debate (i.e. attributes vs. situations) by adding another finding. The theoretical approach employed in the paper concerns the nature of macro social contexts. We know that principals are sensitive to different dimensions of their organizational context. Empirical research has well documented that principals employ different leadership strategies, behaviors and styles in schools that differ by size, socio-economic status, and prior performance (Hallinger et al., 1996; Hallinger & Murphy, 1986; Heck, 1992, 1993; Heck & Hallinger, 2009;

Southworth, 2002). However, little is known about what national contexts or macro social contexts impact the behavior of school leaders in general and their time use in particular. Among many macro social contexts, we focus particularly on the following three national contexts: 1) economic development, 2) societal culture, and 3) educational system (specific reasons for employing these national contexts are discussed in the following section). We closely look at the relationships between these national contexts and 1) the amount of time principal spend for their schools and 2) their time allocation for three key responsibilities namely, curriculum/pedagogy development, administration, and relationships with parent/community.

## **National Contexts: Economic Development, Societal Culture, and Educational System**

### ***Economic Development***

To investigate the pattern of principals' time use, we paid a special attention to the level of nation economy. There are several important conceptual purposes in focusing the level of nation economy. First, our final data included 34 societies from 28 countries, which encompassed various geographical regions—i.e. Asia, Africa, Middle East, Northern Europe, Eastern Europe, Western Europe, and North America. (see Annex 1 for details of the 34 societies included in this study). This diverse composition reflected the different levels of economic development in selected societies in our data. Importantly, in comparative studies of education, national economic development status (or economic level of country) has been continuously regarded as a major national level factor that predicts school effectiveness. For example, Heyneman and Loxley's (1982, 1983) classic research indicated that greater school effects than family effects on educational achievement were found in developing countries, which was explained by greater variance in school quality in developing countries compared to developed countries. While showing contrast findings (i.e. school effects on educational achievement are not stronger than family effects in developing countries), the economic level of country was also used as a key dimension in Baker and his colleagues' study (2002). Reflecting the importance of the economic level of country associated with school effects, we included a variable representing national economic status—i.e. GDP per capita based on Purchasing Power Parities (PPPs) as a key macro social context. Previous studies tended to use GDP per capita, GDP per capita based on Purchasing Power Parities (PPPs), or GINI as indexes measuring the economic level of country. Although some comparative studies in education utilize the GINI index together with GDP per capita, we did not include the GINI index because 1) GDP per capita (PPPs) turned out to be a better predictor from our preliminary analysis, 2) there was a need to make our final model parsimonious, and 3) international organizations such as the World Bank and International Monetary Fund (IMF) only provided the index gathered from various years ranging from 1990 to 2008. The GDP per capita (PPPs) in this study was drawn from IMF. A further effort was made for obtaining more relevant information of GDP per capita (PPPs) at the sub-country level for countries such as Canada (since its five different provinces participated in PIRLS 2006 separately) by further gathering information from governmental organizations' websites.

### ***Societal Culture***

As Hallinger and Leithwood (1998) pointed out, theory and research exploring the impact of broader societal culture on leaders is scarce. While research in this area is less developed, there is also pioneering research identified in fields of management studies and there are a

growing number of educational leadership studies discussing cultural differences across countries (Bajunid, 1996; Cheng, 1995; Hallinger & Leithwood, 1996; Hallinger & Leithwood, 1998; Hallinger & Walker, 2005; Heck, 1996; Walker, Bridgeges, & Chan, 1996).

One of the pioneering studies conducted by Getzels, Lipham, and Campbell (1968) argued that a broader societal culture exerts a greater influence on leaders (or administrators). In this regard, “leadership is a cultural phenomenon” (Gerstner & O’Day, 1994, p. 123). More important is that societal culture has a more fundamental influence on leaders and administrators than individual organization’s culture does because organizational culture is only a part of a broader societal culture (Getzels, Lipham, & Campbell, 1968).

This is particularly true for educational leadership research. School leaders are concerned with the interpretation and enactment of cultural values embedded in the whole society (Hallinger & Walker, 2005). For example, Walker and his colleagues (1996) showed that how broader societal culture embedded in Hong Kong conditions interplay university administrators *vis-à-vis* subordinates. They reported that even under training conditions where trainees were encouraged to express their opinions about the use of problem-based learning at a university setting, they were hesitating to share their thoughts because the broader Chinese cultural values operate beyond the level of organizational culture. In a similar vein, the recent study of Kwan (2009) investigating linkages between job satisfaction and the career aspiration of vice-principals in Hong Kong secondary schools reported that there was a negative association between a sense of workplace harmony and the desire to become a principal. Kwan (2009) highlighted that vice principals who upheld the Chinese cultural value of workplace harmony had difficulties in taking a balance between maintaining a harmonious working relationship with colleagues and pursuing principalship and thus tended to remain in their vice-principal positions. Kwan’s study demonstrated how Chinese cultural values such as emphasis on workplace harmony than individual career development impinge persistently on school leaders’ behavior. These empirical studies remind that the influence of societal culture on leaders goes beyond the influence of a specific organization’s culture on leaders (Getzels, Lipham, & Campbell, 1968; Hofstede, 1976, 2001).

Not only has societal culture a more fundamental impact, but also it has more variance. That is, it is expected that cultural variation in educational goals across countries would be greater than cultural variation in educational goals within a country (Getzels, Lipham, & Campbell, 1968). In pursuit of measuring such variation in societal culture across countries, Hofstede’s (1976, 2001) work provided considerable theoretical and analytical leverage for this study. His research on cross-cultural management provided several key dimensions of national culture differences closely related to social relationships in an organizational setting. Among his four measures, we focus particularly on power distance index (PDI) that is defined as “[t]he extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstede, 2001, p. 98). Hofstede describes a society with a high PDI as possessing the following societal norms: leaders consider subordinates as being of a different status, and vice versa; power holders are entitled to privilege; there exist latent conflicts between leaders and subordinates, etc. (see Hofstede, 2001, pp. 97-98 for more details). Using PDI in this paper, we aimed to capture how societal culture plays a role in shaping principals’ time use across different societies.

### ***Standardization of Educational System***

Aside from cross-cultural management studies such as Hofstede’s work, recent

sociological studies focus particularly on institutional features of national educational systems as a predictor of school effects on educational outcomes (e.g. Buchmann & Dalton, 2002; Buchmann & Park, 2008; Shavit & Muller, 1998). While the primary purpose of these studies was to illuminate the process of social stratification formed by different institutional arrangements of educational systems, aside from student achievement, these studies also provoked new questions about the impact of institutional features of national education systems on principals' behavior. Specifically, less is known about how different institutional features of national education systems play a role in influencing principals' leadership practices. There could be different levels of standardizations in association with various institutional features of schooling such as curriculum differentiation, teacher training systems, national exam, nationally-mandated textbooks, national curriculum, etc. In this regard, we believe that there could be a relationship between standardization of education system and principals' leadership behavior. For example, the more standardized education system (i.e. the use of nationally-mandated textbooks, the presence of national curriculum, and the presence of national exam) may demand the different degree to which principals interact with parents and communities.

## **Methodology**

### ***Data***

For the current research, the Progress in International Reading Literacy Study (PIRLS) 2006 administered by International Association for the Evaluation of Educational Achievement (IEA) was used. The PIRLS 2006 encompasses countries from all the major geographic regions, meaning that it includes both developed and developing countries. This is a merit of PIRLS over the Program for International Student Assessment (PISA), which includes mostly economically-advanced countries.

There are 47 participants from the 39 countries in PIRLS 2006. This is because some countries provide more than one participant. For example, England and Scotland participated separately in PIRLS as did two Belgian regions. Five Canadian provinces participated in PIRLS separately. This separate participation reflects each region having different levels of curriculum standardization because each region is primarily responsible for its education system. Additionally, Norway and Iceland provided both 4<sup>th</sup> and 5<sup>th</sup> graders while the other countries provided 4<sup>th</sup> graders only.

Nationally representative samples of students in each country were selected using a two-stage sampling design. At the first stage, each country selected at least 150 schools using probability-proportional-to-size sampling (see IEA, 2008 for more details). At the second stage, one or two classes in each school were randomly selected for sampling students. As such, PIRLS secured a large sample size from amongst both students and principals from all participant countries—i.e. on average 4,864 students from 169 elementary schools per country.

The current research includes 34 societies from 28 countries. The reason for excluding several countries from this study is mainly because of inaccessibility of data regarding power distance, a key variable of interest in this study. Some countries (e.g. Luxembourg) were also excluded because they did not provide any information regarding principals' time allocation or other key school characteristics (e.g., school size, location, etc.). Additionally, because principals completing the School Questionnaires of Norway (5<sup>th</sup> graders) and Iceland (5<sup>th</sup> graders) are the same sample populations as principals responding to the School Questionnaire of Norway (4<sup>th</sup>

graders) and Iceland (4<sup>th</sup> graders), information from Norway (5<sup>th</sup> graders) and Iceland (5<sup>th</sup> graders) was excluded.

To reconstruct the dataset for this study, relevant data files (i.e. school questionnaires completed by principals) from 34 societies were merged using IEA's international database (i.e. IDB) software. As such, the final dataset included 5,297 principals from 34 societies.

## ***Measures***

### *School-level characteristics (level-1)*

- *School SES*: To indicate the overall socioeconomic status of each school, we used the proportion of students participating in free or reduced-price lunch programs reported by principals.
- *Immigrant student proportion*: We employed the percentage of immigrant students enrolled in the sample schools.
- *Lack of school resources*: PIRLS created an index of school resources based on principals' reports of the extent to which their schools' capacity to provide instruction were impacted by a lack of resources. High values (on a 3-point scale) indicate that the lack of school resources is a serious problem. This index is based on the following 14 items (Cronbach's alpha across countries of 0.85):<sup>2</sup> qualified teaching staff, teachers with a specialization in reading, second language teachers, instructional materials, supplies, school buildings and grounds, heating/cooling and lighting systems, instructional space, special equipment for physically disabled students, computers for instructional purposes, computer software for instructional purposes, computer support staff, library books, and audio-visual resources.
- *Negative school climate*: This index indicates principals' perceptions of the following: teachers' job satisfaction, teachers' expectations for student achievement, parental support for student achievement, students' regard for school property, students' desire to do well in school, and students' regard for each others' welfare (6 items, a median Cronbach's alpha across countries of 0.79.). High values (i.e. on a 3-point scale) indicate that school climate is seriously negative.
- *Lack of school safety*: This index based on principals' reports of 7 items (alpha across countries of 0.87) indicates the degree to which each of the following was a problem: classroom disturbances, cheating, profanity, vandalism, theft, intimidation or verbal abuse of other students, and physical conflicts among students. High values (on a 3-point scale) indicate that school safety is a serious problem.
- *Home-school involvement*: The index of home-school involvement is based on a combination of 1) principals' responses to questions regarding how often principals hold parent-teacher conferences and communicate with parents regarding students' progress, and 2) parents' responses to questions regarding how often parents attend meetings organized by the school. High values (on a 3-point scale) indicate a high level of home-school involvement.<sup>3</sup>
- *School size*: School size is based on the total enrolment of students in the school. This variable was converted into the natural logarithm form since it was positively skewed.

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<sup>2</sup> The Cronbach's alpha reliability coefficient is based on the average of the Cronbach's alpha for individual societies (see the IEA's technical report, 2008).

<sup>3</sup> Specifically, the highest value means that schools hold teacher-parent conferences and events at school four or more times per year that are attended by more than half of the parents (see IEA, 2008).

- *School location*: Using dummy codes, we grouped locales into three categories: urban, suburban, and rural (urban = ref. group).

*National-level characteristics (level-2)*: We employed three national-level characteristics as level-2 predictors as below. Since there were some significant correlations between some of the predictors (see Annex 2 for the correlation matrix for details), we checked the variance inflation factor (VIF) and the tolerance parameter of the predictors by regressing each predictor on all the other predictors, suggesting that there was no issue of multicollinearity.

- *GDP per capita based PPPs*: As explained earlier, we used GDP per capita (PPPs) which was drawn from IMF. The values were converted into the natural logarithm.
- *PDI*: The index was originally developed from Hofstede's (1976, 2001) study of a multinational corporation (i.e. IBM) focusing on cross-national cultural differences by gathering data from the same target groups from IBM companies located in different countries. As such, it initially encompassed 72,215 respondents from 40 countries and later included 10 countries and 3 regions representing another 14 countries (Hofstede, 2001). High PDI (on a 1-104 scale) indicates a high level of hierarchical power relations.
- *Standardization of Educational System*: PIRLS 2006 provided information about whether participant countries have national curriculum, nationally recommended or mandated textbooks, and national exams at the elementary school level. Because some countries like Morocco did not provide information about national education systems and curriculum policies, several sources were also utilized to supplement relevant information (e.g. Encyclopedia of World Education). Societies were categorized into four groups based on the level of standardization (0 = low, 3 = high), used as a continuous variable.

*Dependent variables*: We used four dependent variables for four separate analyses:

- The amount of hours per week principals spend for their schools,
- Principals' time allocation for curriculum/pedagogy development (i.e. percentage of their time allocation for this responsibility)
- Principals' time allocation for administration
- Principals' time allocation for relationships with parent/community

### ***Analytic Strategies***

Because the nature of the data represented a unit of analysis (i.e. 5,297) nested within a larger unit (34 societies), a two-level hierarchical linear model (HLM) was utilized (Raudenbush & Bryk, 2002). Prior to the HLM analysis, due to the original variables having missing cases ranging from 5.1% (e.g. home-school involvement) to 14.2% (e.g. proportion of immigrant students), a multiple imputation technique equipped with expectation maximization (EM) estimation was first conducted. To prevent imputed values from falling outside the reasonable range of values (e.g. negative values of principal time allocation), a custom imputation model with constraints on the dependent variable was also used.<sup>4</sup> As such, five datasets that are simulated versions of the sample were created. These five complete datasets (each of which

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<sup>4</sup> See Allison (2002) for more details regarding the imputation of dependent variables. For the imputations, PASW Statistics 18 (formerly SPSS) was used. Additionally, the imputation model is compatible with the model used in this study (Rubin, 1996).

contains imputed values for the missing values) were analyzed using HLM.

By first setting up a random-effects ANOVA model, we first identified an intra-class correlation coefficient (ICC) for each dependent variable. We then built explanatory models by adding level-1 (school characteristics) and level-2 variables (national-level characteristics) in order. The final HLM model was constructed using a random-intercept model (Raudenbush & Bryk, 2002). That is, any significant cross-level interaction was not identified and also the model allowed only the intercept parameter in the level-1 to vary across the countries because some level-1 slopes did not significantly vary across the societies. The deviance statistic also indicated the better model fit, which specified these slopes as fixed. While we used the same level-1 predictors as control variables in the final model for all the four dependent variables, the level-2 predictors were selectively employed in the final model, based on whether deviance statistics were significant.<sup>5</sup> That is, we regressed each of the dependent variables on particular level-2 predictors in the final model only if adding the particular level-2 predictors did contribute to a significantly better model fit. Another underlying reason for this was to make the final model parsimonious given the small number of level-units.

As there were five datasets created by the multiple imputations, we ran those five datasets through HLM 6.8 software, in which estimated parameters for variables in the model were averaged to yield a single estimate. Standard errors were also calculated by considering the within- and between-imputation variation in the parameter estimates. Additionally, we used a school weight variable originally generated from the IEA's international database software for taking into account any sample schools which did not participate and which were not replaced in the PIRLS 2006.

Finally, it should also be noted that the analytic focus is on revealing the overall patterns of principals' time use across the societies—i.e. describing the differential effects of national level factors on principals' time allocation in “each individual society” is beyond the scope of the study. The reason for this particular focus is because there are no studies on a larger scale that reveal how particular school and national characteristics contribute to the variance in principals' time use.

### **Limitations**

Before describing the results of our analysis, we acknowledge several limitations of this study, stemming from absence of relevant data. First, this study does not focus on how principals' personal characteristics (e.g. age, gender, year of administration/teaching) may influence their use of time. While this remains a limitation of this study, previous studies have continuously reported that school organizational contexts serve as more important antecedent factors affecting principals' priorities in determining responsibilities (see Goldring et al., 2008). In this regard, this limitation could be lessened. At the same time, however, we are aware of the possible interplay between principals' personal characteristics and organizational contexts in determining their time use, which is another limitation of the current study. Second, since there are some countries providing more than one participant (i.e. two participants from the U.K., two participants from Belgium, and five participants from Canada), using each participant's PDI is more appropriate than using country-level information of PDI. However, this study used the country-level information of PDI for those societies because information at the sub-country level is not currently available. This is a limitation facing not only this study but also other cross-

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<sup>5</sup> Since HLM 6 does not provide deviance statistics when multiply-imputed data were employed, we alternatively checked the deviance statistics by using a single-imputed data.



national studies using Hofstede’s data. Although Hofstede’s data did not provide PDI at the sub-country level, it should also be noted that his data covered data from across the sub-country regions (e.g. two Belgian regions). Third, while all of the variables were based in the year of 2006 while PDI was measured during the period between 1967 and 1973, it was extended in 1982 through additional data collection. This time gap remains a limitation. Nonetheless, prior studies also suggest that national cultures are extremely stable over time and change very slowly in the long-term (House et al., 2004). For example, several PDIs generated from relatively recent large scale studies—e.g. Hofstede, various years; Hoppe, 1993; Helmreich & Merritt, 1998; House et al., 2004—are highly correlated with each other, ranging from .57 to .83 ( $p < .01$ ) despite their different time points of data collection. Compared to economic-oriented national-level indicators such as international trade or economic growth rate, which fluctuate even year by year depending on ever-changing global political-economic situations, national-level indicators related to cultures and values are particularly stable over time despite changing outside forces.<sup>6</sup> In this sense, the limitation might be a minor issue. In addition, since we have examined only the large secondary data available, our analysis has a limitation in providing detailed explanations of why some particular factors are more significantly associated with principals’ time use for interaction with students. We also admit that the data might be influenced by self-reporting and memory biases, which is an issue most of survey data have. Despite these limitations, our analysis sheds some light on a series of theoretical issues explored in previous studies.

## Results

### *Descriptive Statistics*

Figure 1 presents the average amount of hours per week principals spend for their schools across the 34 societies. An obvious pattern was that principals from most of Western European and North American societies tended to spend more hours for their schools on average than their counterparts from African, Middle East, and South Asian societies. For example, principals from four Canadian provinces tended to spend approximately four times more hours (i.e. about 54 hours) than principals from Kuwait (13.7 hours) and Indonesia (22.2 hours) on average for their schools. This suggests that there may be not only cross-national variance in principals’ time use but also particular national contexts shaping their time use. The international average percentage of principals’ time use per week was 41.4 hours (see Annex 1 for details).

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 Figure 1 about here  
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### *Hierarchical Linear Modeling on Time Use*

Our analysis using HLM confirmed that there was substantial cross-nation variance in principals’ time use. A random-effects ANOVA model (null model or Model 1 in Table 1) showed that the average hours per week principal spend for their schools varied significantly across the 34 societies; the associated intra-class correlation coefficient of .350 [=  $113.5/(113.5+210.2)$ ]. This means that 35% of the variance in the mean hours per week

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<sup>6</sup> In this sense, Hofstede (2001) further argued that his PDI would serve as a valid measure for at least the next 100 years.

principals spend for schools lies between the 34 societies. Based on such dependency, we built explanatory models by adding level-1 (school characteristics, Model 2 in Table 1) and level-2 variables (society characteristics, Model 3 in Table 1).

Table 1 presents the HLM results from the null model to the final model (a random-intercept model) for the dependent variable of average hours per week. The final model shows that two school-level predictors had significant effects on the model: lack of school resources and lack of school safety. That is, principals' perceptions of a greater lack of school resources (-1.59\*\*) and safety (-2.11\*\*\*) were associated with a decrease in their time use for schools.

With regard to the two level-2 predictors of interest, GDP per capital turned out to be significantly associated with an increase in principals' time use; the other level-2 predictors were not included because the two predictors were not significant and adding the two predictors did not contribute to a better model fit. Principals from societies with higher GDPs were likely to spend more time for schools than their counterparts from societies with lower GDPs.

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Table 1 about here  
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Table 2 further illustrates how national contexts influence principals' time use for the three key responsibilities; curriculum/pedagogy development, administration, and relationships with parent/community. In Table 2, we presented the same final model (i.e. Model 3 as in Table 1), which was used for predicting the amount of hours per week principals spend.

With respect to curriculum/pedagogy, approximately 15% of principals' work time across the societies was allocated for the activity when we controlled for other predictors. At the same time, principals perceiving high levels of negative school climate tended to spend less time for curriculum/pedagogy development (-2.46\*\*). Larger school size indicated a positive association with an increase in principals' time allocation for curriculum/pedagogy development (2.19\*\*). In terms of national contexts, GDP per capita turned out to be significantly associated with a decrease in principals' time allocation for curriculum/pedagogy development (-6.5\*\*\*). Higher PDIs were also negatively associated with principals' time allocation (-.07) at the borderline level ( $p = 0.077$ ). While it was significant at the borderline level and the coefficient of PDI was small, its effect was not ignorable, considering the range of PDIs among different societies (i.e. from 11 to 104) and the small sample size of level-2 units. Notably, the final model explained about 80% of the variance between the societies.

The HLM results also showed that principals across the societies were likely to spend approximately 23% of their work time for administrative duties when other predictors were controlled for. There was only one level-1 predictor showing significant; principals in rural schools tended to less time for administration than their counterparts in urban or suburban schools (-2.07\*). A lack of school safety was negatively associated with principals' time allocation for administration at the borderline level. Interestingly enough, the largest effect on principals' time allocation for administration was made by the levels of standardization of education system (-4.95\*\*\*). Higher levels of the standardization of educational system in terms of curriculum were negatively associated with time allocation for administration. About 60% of the variance in principals' time allocation for administration between the societies was explained by standardization of education system alone.

Finally, the same final model was fit with principals' time allocation for relationships with parent-community. Two level-1 predictors had significant effects on the activity in an opposite way; principals in larger schools were likely to spend more time for relationships with parent-community (1.08\*) but principals in rural schools tended to spend less time for the same activity (-1.29\*\*). In terms of national contexts, only PDI indicated a significant association with time allocation for administration at the borderline level (-0.05,  $p = 0.056$ ). No other level-2 predictors were significant.

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Table 2 about here  
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## Discussion and Conclusion

Several organizational contexts turned out to be critically predictive of principals' time use and allocation. Principals in schools with disadvantaged conditions (e.g. lack of school resources and school safety) were likely to spend less time. One likely speculation of these findings is that such disadvantaged school conditions might discourage principals to be involved in school works in general although it is also possible that some principals may spend more time for coping with such difficulties.

In terms of time allocation, principals in schools with negative school climate were also likely to allocate less time particularly for curriculum/pedagogy development than their counterparts in schools with good school climate. On the assumption that principals are sensitive to organizational contexts or problems, principals in schools with negative school climate may be demanded to focus on addressing the issues related to school climate such as teachers' job satisfaction, students' regard for school property, students' desire to do well in school, and students' regard for each others' welfare. As such, they might spend relatively less time for other key responsibilities such as curriculum/pedagogy issues.

Principals in rural schools were likely to allocation less time for administration and relationships with parent-community. One likely explanation is that rural schools are, in general, expected to serve as more like community-based institutions where school staff and principals may already have some relationships with parents or community members and therefore principals may spend less time for building relationships with parents and community members, compared to principals in urban/suburban schools.

Conversely, principals in larger schools were likely to allocate more time for curriculum/pedagogy development. This suggests that more time and efforts were likely to be made for curriculum/pedagogy development in larger schools. It might be reasonable to assume that principals would intentionally try to spend more time on curriculum and pedagogy issues because students, in general, have more difficulties in obtaining individualized learning opportunities within a larger school setting where classrooms and buildings are often crowded.

Along with the discussion above, it should also be recalled that our main interest centered on the following key research question: Is there cross-national variance in principal time use? If so, what national-level contexts influence principals' time use for major realms of responsibilities? When we controlled for key organizational contexts, we identified five distinctive patterns in the effects of national contexts on principals' time use and allocation.

First, there existed substantial variance in principals' time use and allocation across the societies. Principals from societies with higher GDP (developed countries) than their counterparts (developing countries) tended to spend more time for school work. This suggests that the levels of economic development play a key role in determining the amount of time principals spend for schools.

Second, however, the negative relationship between GDP and principals' time allocation for curriculum/pedagogy development suggests that principals in developed societies are less likely than their counterparts in developing societies to spend time for the activity. Coupling this finding with the finding about hours spent by principals described above, it can be argued that principals in developed countries are likely to spend more hours for schools in general, whereas they are likely to allocate relatively less time for curriculum/pedagogy development than their counterparts in developing countries. This might be because principals in developed countries, in general, seem to benefit from well-developed curriculum systems and pedagogy theories that may not be already offered or readily accessible for principals in developing countries.

Third, the negative relationship between PDI and principals' time allocation for curriculum/pedagogy development suggests that principals from societies with relatively lower PDI indexes (e.g. Austria, Israel, Denmark, New Zealand, Norway, Sweden, etc.) are more likely to allocate their time for curriculum/pedagogy development than principals from societies with relatively higher PDI indexes (Slovak, Russia, Romania, Kuwait, Indonesia, Singapore, etc.) when other variables are controlled for. Given the nature of curriculum/pedagogy, which is often developed by staff collaboration and interaction through instructional leadership, it seems that principals from societies with relatively lower PDIs might be more actively involved in curriculum/pedagogy development. Indeed, previous research reported that in more hierarchical societies such as East Asian countries, principals' instructional leadership is often misleadingly understood as principals' intervention to individual teachers' pedagogical philosophy and teaching methods. Thus, in some societies highly valuing collective harmony (e.g. Hong Kong, South Korea), school leaders might allocate less time for curriculum and pedagogical issues in order to uphold harmony of their organizations (see Kwan, 2009) because principals' involvement in curriculum and pedagogical issues could be regarded as principals' intervention to individual teachers' teaching (i.e. breaking organizational harmony).

Fourth, the positive association between levels of standardization of education system and principals' time allocation for administration suggests that more standardized education systems particularly in terms of curriculum may lessen principals' administrative work in a sense that principals in highly standardized schooling systems in terms of having national exam, national textbooks, and national curriculum may be already equipped with clear directions, instructions, and resources to guide their work, which may reduce their time for addressing administrative duties.

Finally, the negative relationship between PDI and principals' time allocation for relationships with parent/community suggests that principals in less hierarchical societies are more likely than their counterparts in more hierarchical societies to spend time for actively building relationships with parent/community. This means that societal cultures influence the relational context between principals and parent/community. The more hierarchical societies are, the less time principals spend for parent/community. This also supports our conventional wisdom that education systems in general and schools in particular are mirrors or miniatures of the societies in which they operate.

In conclusion, we argue that national contexts are important as much as school

organizational contexts in determining principals' leadership behavior in general and time use in particular. Additionally, different national contexts influence principals' time use and allocation for their particular responsibilities in a distinctive way. In this regard, this study would contribute to shedding some light on capturing additional antecedent factors influencing principals' leadership behavior. This study, as a first of its kind, also contributes to expanding the scope of school leadership research by illuminating how to utilize a well-established international database. The next logical step in our on-going analyses is to explore how school- and national-level contexts moderate the effects of principals' time use on students' learning outcomes in that leadership for learning is a critical issue facing schools in across societies.

**References are available upon request.**

Table 1. Hours Per Week Principals Spend for Schools

<i>Fixed effects</i>	<b>Average Hours</b>								
	<i>Model 1</i>			<i>Model 2</i>			<i>Model 3</i>		
For adjusted grand mean $\beta_{0j}$	34.6 (4.5)			36.7 (3.6)***			42.1 (1.1)***		
GDP per capita (ppps) $\gamma_{00}$							8.84 (1.19)***		
Students in free or reduced-price lunch $\gamma_{10}$				1.07 (1.13)			1.07 (0.98)		
Immigrant students $\gamma_{20}$				0.28 (0.26)			0.31 (0.27)		
Lack of school resources $\gamma_{30}$				-1.69 (1.08)**			-1.59 (0.44)**		
Negative school climate $\gamma_{40}$				1.63 (1.12)			1.61 (1.12)		
Lack of school safety $\gamma_{50}$				-2.17 (0.52)***			-2.11 (0.51)***		
Home-school involvement $\gamma_{60}$				1.40 (0.85)			1.30 (0.82)		
School size $\gamma_{70}$				0.47 (1.05)			0.48 (1.05)		
Suburban $\gamma_{80}$ (urban as the reference)				-0.63 (0.61)			-0.65 (0.61)		
Rural $\gamma_{90}$				-1.15 (1.29)			-1.08 (1.29)		
<b><i>Random effects</i></b>	<i>v.p</i>	<i>df</i>	<i>p-value</i>	<i>v.p</i>	<i>df</i>	<i>p-value</i>	<i>v.p.</i>	<i>df</i>	<i>p-value</i>
Intercept $\tau_{00}$	113.5	33	0.000	83.6	33	0.000	22.5	32	0.000
Level-1 effect $\sigma^2$	210.2			205.5			205.5		
Variance between societies explained (%)				26.3			80.2		
Variance within societies explained (%)				2.2			2.2		
Total variance explained (%)							29.6		
<b><i>Intra-class correlation coefficient (ICC)</i></b>	<b>.350</b>								

Note. 5,297 principals from 34 societies, effect = coefficient; \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ , v.c. = variance component, d.f. = degree of freedom, p.v. = p-value

Table 2. Principals' Time Allocation for Key Responsibilities

	Curriculum & Pedagogy			Administration			Parent-Community		
<i>Fixed effects</i>	<i>Model 3</i>			<i>Model 3</i>			<i>Model 3</i>		
For adjusted grand mean $\beta_{0j}$	15.2 (0.67)***			22.7 (0.89)***			14.6 (0.49)***		
GDP per capita (ppps) $\gamma_{00}$	-6.56 (1.06)***								
PDI $\gamma_{01}$	-0.07 (0.04)†						-0.05 (0.02)†		
Standardization of education system $\gamma_{02}$				-4.95 (0.76)***			1.19 (0.80)		
Students in free or reduced-price lunch $\gamma_{10}$	0.95 (0.69)			-0.05 (0.33)			0.23 (0.51)		
Immigrant students $\gamma_{20}$	0.50 (0.31)			0.11 (0.23)			-0.04 (0.19)		
Lack of school resources $\gamma_{30}$	0.53 (0.38)			-0.38 (0.28)			-0.02 (0.54)		
Negative school climate $\gamma_{40}$	-2.46 (0.71)**			1.11 (0.89)			-0.30 (0.19)		
Lack of school safety $\gamma_{50}$	0.24 (0.38)			0.93 (0.55)†			-0.04 (0.22)		
Home-school involvement $\gamma_{60}$	-0.80 (0.90)			0.52 (0.32)			0.14 (0.27)		
School size $\gamma_{70}$	2.19 (0.74)**			0.48 (0.82)			1.08 (0.50)*		
Suburban $\gamma_{80}$ (urban as the reference)	0.66 (0.60)			-0.73 (0.98)			-1.14 (0.59)†		
Rural $\gamma_{90}$	0.27 (0.90)			-2.07 (0.96)*			-1.29 (0.35)**		
<i>Random effects</i>	<i>v.p</i>	<i>df</i>	<i>p-value</i>	<i>v.p</i>	<i>df</i>	<i>p-value</i>	<i>v.p.</i>	<i>df</i>	<i>p-value</i>
Intercept $\tau_{00}$	8.2	31	.000	9.1	32	.000	2.8	31	0.000
Level-1 effect $\sigma^2$	141.3			137.1			49.7		
Variance between societies explained (%)	80.3			60.3			38.5		
Variance within societies explained (%)	3.3			1.2			2.5		
Total variance explained (%)	20.4			9.6			5.4		
<i>Intra-class correlation coefficient (ICC)</i>	0.222			0.142			0.082		

Note. 5,297 principals from 34 societies, effect = coefficient; †  $p < .10$  \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ , *v.c.* = variance component, *d.f.* = degree of freedom, *p.v.* = *p*-value

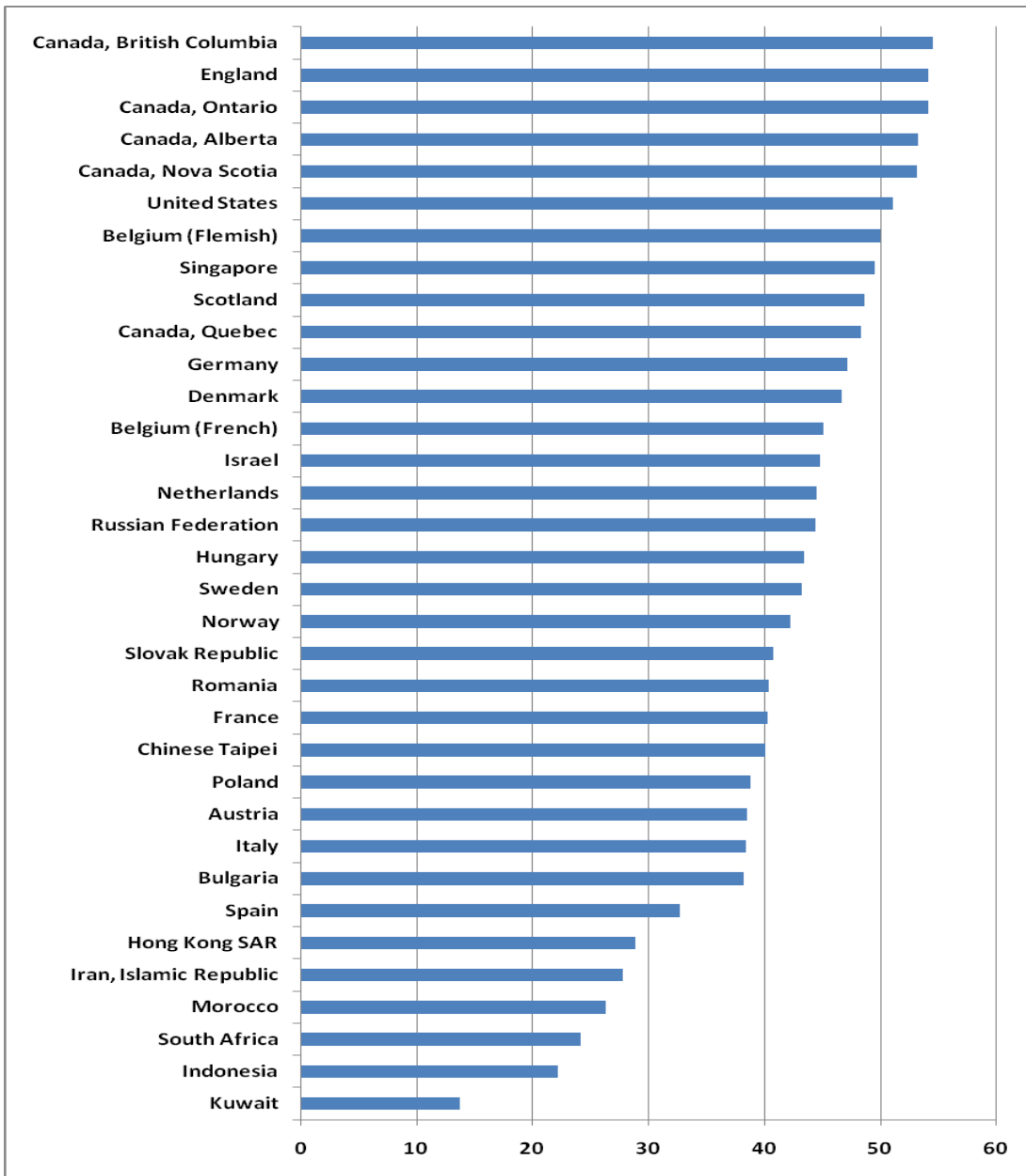


Figure 1. Average Hours Per Week Principals Spend for Schools by Societies



Annex 1. Average Hours Per Week Principals Spend for Schools by Societies

<b>Country (or Society)</b>	<b>N.of Schools</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Austria	155	38.5	4.0	60.0
Belgium (Flemish)	127	50.0	9.0	75.0
Belgium (French)	121	45.1	9.0	80.0
Bulgaria	132	38.2	5.0	60.0
Canada, Alberta	138	53.2	10.0	80.0
Canada, British Columbia	127	54.5	9.0	90.0
Canada, Nova Scotia	181	53.1	10.0	80.0
Canada, Ontario	154	54.1	20.0	90.0
Canada, Quebec	155	48.3	8.0	72.0
Chinese Taipei	144	40.1	1.0	97.0
Denmark	131	46.6	15.0	65.0
England	121	54.1	10.0	97.0
France	142	40.3	2.0	60.0
Germany	368	47.1	6.0	70.0
Hong Kong SAR	114	28.9	3.0	97.0
Hungary	130	43.4	7.0	60.0
Indonesia	167	22.2	0.0	90.0
Iran, Islamic Republic	228	27.8	2.0	96.0
Israel	122	44.8	2.0	90.0
Italy	137	38.4	1.0	80.0
Kuwait	121	13.7	1.0	60.0
Morocco	110	26.3	1.0	60.0
Netherlands	106	44.5	20.0	64.0
Norway	122	42.2	6.0	90.0
Poland	136	38.8	2.0	70.0
Romania	139	40.4	0.0	80.0
Russian Federation	220	44.4	7.0	72.0
Scotland	92	48.6	30.0	75.0
Singapore	172	49.5	3.0	90.0
Slovak Republic	160	40.7	2.0	70.0
South Africa	395	24.1	0.0	150.0
Spain	126	32.7	2.0	60.0
Sweden	127	43.2	2.0	60.0
United States	174	51.1	2.0	75.0
<b>Total or (Mean)</b>	<b>5,294</b>	<b>(41.4)</b>	<b>(6.2)</b>	<b>(78.4)</b>

Note. The results in this table are reconstructed from the School Almanac file in the PIRLS 2006 and thus this table indicates the results before the multiple imputations.

Annex 2. Correlation Matrix between National Contexts

	GDP (natural logarithm)	PDI	Standardization of Education System
GDP (natural logarithm)	1	-.585**	-.382*
PDI	-.585**	1	.244
Standardization of Education System	-.382*	.244	1

N = 34, \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$