

# Do High Schools in South Korea Need More Female Principals? The Relationship between Gender and Leadership Performance

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## Abstract

The gender imbalance among principals in South Korea is severe. The purpose of this study was to examine the performance gap between male and female principals and its impact on student achievement. The data came from the 2010 Seoul Education Longitudinal Study. The study mainly covered t-test and two-level hierarchical linear modelling (HLM). The results of the study revealed that female principals acted creatively in constructing a school environment, had better relationships with teachers, exerted more effort on classroom-related activities, had stronger commitment to the school and their profession, and spent more time in school board meetings than male principals did. The principal's performance was found to impact on student achievement and school satisfaction. The study suggests that increasing the number of female principals in high schools in South Korea would improve the performance of the high schools and that of the female teacher workforce. Female teachers need to be encouraged to apply for and be promoted to principal positions. Work-related opportunities should be open to both female and male teachers equally.

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## Key words

Female principals, student achievement, female teacher workforce

## Introduction

A well-educated and well-trained population is essential to South Korea's social and economic development. With respect to the quality of education, South Korea is one of top-ranked countries in the world. South Korean student achievement has ranked highly among OECD

countries for the past decade (OECD, 2011)<sup>1</sup>. Societal emphasis on education and the availability of highly qualified teachers are critical to students' high performance levels. In particular, principals play a vital role in the successful performance of the schools they lead (Friedman, 2002; Krüger et al., 2007; Leithwood et al., 2010; Louis et al., 2010; Nettles & Herrington, 2007; Marks & Printy, 2003; Valentine & Prater, 2011). Principals contribute to improvements in student performance by influencing the conditions and climate of the school. A number of researchers have investigated the impact of school principal gender on student performance. Female principals were found to have positive influences on student achievement and job satisfaction among teachers (Brooks & Jones, 2010; Eagly & Carli, 2003; Hallinger et al., 1996; Hallinger & Heck, 1996; Min, 2005; Pavan & Reid, 1994).

However, female principals and teachers have faced obstacles in the labor market in South Korea. Although the female teacher workforce has been increasing in elementary and secondary schools, the proportion of female teachers is still below the OECD average. Moreover, the proportion of female principals in the secondary school sector is the lowest among all OECD countries (OECD, 2010)<sup>2</sup>. It seems unusual that so few female teachers are promoted to principal positions. We investigated the performance of female principals in South Korea and its effects on student achievement in order to determine whether the lower proportion of female school principals in secondary schools was attributable to their performance, cultural gender stereotypes, or other causes.

Despite the strong association between female principals and school and/or student performance noted in previous research, there have been few empirical studies confirming the relationship between the various types of performance of female principals and student achievement in the context of South Korean education (Min, 2005). The purpose of the present study was to examine the different performance patterns of male and female high school principals and their impact on student

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1. The average student scored 541 in reading literacy, mathematics and science in the OECD's Programme for International Student Assessment (PISA). This score is higher than the OECD average of 497 and one of the highest in the OECD (OECD 2011).

2 According to the 2010 OECD report, South Korea is tied with Turkey for the lowest proportion of female principals in secondary education (see literature review for details).

achievement. In particular, we focused on general high schools in metropolitan areas in South Korea. This is because general high schools in other parts of South Korea have an even smaller proportion of female school principals. The study investigated how male and female principals perform differently. It also analysed the extent to which these differences influence student academic achievement. Based on the study results, the study discussed the benefits that would result from an increase in the number of female high school principals.

## **Literature Review**

### *Roles of Principals and Gender Differences in Principal Performance*

Principals play a wide variety of roles, and can determine the extent, nature and pattern of participation in their schools. Hence, the position of principal is highly important in the current school system (Duke et al., 1980). The success of a given school has much to do with the readiness of its principal to share power, and with his or her ability to acquire necessary information and resources (Chapman, 1988). Many studies have been conducted to investigate the influence of school principals on various measures of school effectiveness, such as student achievement and school satisfaction among students (Brooks & Jones, 2010; Cotton, 2003; Koh, Steers, & Terborg, 2006; Friedman, 2002; Leithwood, Patten, & Jantzi, 2010; Louis, Dretzke, & Wahlstrom, 2010; Nettles & Herrington, 2007; Marks & Printy, 2003; Valentine & Prater, 2011). Principals' demographic characteristics and behaviours were found to influence school outcomes both directly and indirectly.

The most important element of the principals' role that affects student achievement is leadership. Strong leadership of the principals is a key component of schools with high student achievement. Many leadership traits and behaviors are positively related to student achievement, attitudes, and social behavior (Cotton, 2003). Principals' managerial, instructional, and transformational leadership behaviors are significantly linked to student achievement (Valentine & Prater, 2011). Both instructional leadership and the sharing of leadership with teachers are significant, and are indirectly associated with student achievement (Louis, Dretzke, & Wahlstrom, 2010). As potential mediating factors, the goal

and mission of the school, the learning climate of the school, professional capacity, school organisational structure, parent–community–school ties, etc. are considered (Bryk et al., 2010; Hallinger & Heck, 1998; Sebastian & Allensworth, 2012). According to Hallinger, Bickman, and Davis (1996)’s study on principals’ effects on student learning, principals’ gender and leadership behaviours within the context of the school organization has a pronounced effect on student achievement through mediating variables such as teacher expectations, the school mission, and opportunities to learn.

Studies on gender differences in principals’ behaviors have suggested that female principals tend to be democratic, participative, caring, and interested in morale and social relationships, whereas male principals tend to be decisive, autocratic, and task-oriented (Coleman, 2005; Eagly & Johnson, 1990; Hallinger, Bickman, & Davis, 1996; Hallinger & Heck, 1996; Min, 2005; Pavan & Reid, 1994). The behaviors of female principals are advantageous in today’s schools, where transformative, participative, and relationship-oriented leadership is needed (Eagly & Carli, 2003). Female principals have more positive impacts on instructional leadership than do male principals, and thus have stronger influences than male principals on building the school community and emphasising student achievement (Hallinger et al., 1996). A study by Pavan and Reid (1994) produced similar findings. The female principals in their study were actively engaged with teachers and students and spent a large amount of time on improving student achievement. Hallinger and Heck (1996) also found that female principals played a more active role in the curriculum, teaching and learning than did male principals. According to Morris (1999), female principals paid attention to the centrality of relationships, attachment, and caring in their work. The caring-based relationships were found to impact on students’ ability. Eagly and Carli (2003) conducted a meta-analysis of 45 studies on gender differences in leadership. The study concluded that female principals have been shown to be effective in the use of transformational, transactional, and laissez-faire leadership. However, Eagly and Carli (2003) indicated that the prejudice against women performing transformational, transactional, and laissez-faire behaviors in masculine organisations is pronounced, and that such prejudice makes it difficult for female principals to play effective roles. Young (2003) stated that it is very difficult for a woman to get

an administrative position in school, “although the leadership characteristics commonly associated with the female gender appear to be becoming more (though not completely) accepted and valued” (p. 289). Even though gender discrimination in educational leadership is somewhat diminished, the uneven power balance in wider society still impacts on female principals through governors, parents, and teachers (Coleman, 2004).

### *Female Principal Workforce in South Korea*

The educational system of South Korea is strongly government-centralised (FNBE, 2012; Kim et al., 2006). Although the system consists of three levels – central, macro-regional, and local – the central government is basically in charge of school funding and staffing, including the careers and advancement opportunities of teachers and principals. Thus, a principal’s role is relatively narrow, focusing on the management and supervision of a school according to guidance from the central government (Ministry of Education, 2013).

Principals in South Korea are appointed either via promotion or invitation (Kim et al., 2006). The promotion process involves a procedure in which principals are selected through an intensive review of candidates, including vice principals, school inspectors, and research officers. The invitation procedure involves inviting suitable principal certificate holders to apply for the vacant principal post at a school. Through multiphase processes, principals are appointed by the President of South Korea (FNBE, 2012). The term for principals is four years; they can serve up to eight years through serving two consecutive terms (FNBE, 2012; Kim et al., 2006). Teachers must first hold a vice principal position for three years in order to become a principal. Vice principals are selected through a promotion process similar to the one for principals (Joo, 2004).

The number of female teachers in elementary and secondary schools in South Korea has increased over the past 22 years, as shown in Table 1. In 2012, the total number of female teachers in elementary and secondary schools was 275,922 and of male teachers 149,470. In elementary schools and middle schools, the number of female teachers was higher than that of male teachers. In high schools, the number of male

teachers was similar to that of female teachers.

However, as shown in Table 2, the gender ratio among principals remains highly unbalanced. Although the proportion of female principals has been increasing since 1990, the gender imbalance is still apparent. In 2012 the relative number of female principals in elementary schools, middle schools, and high schools was 28.2%, 22.7%, and 8.4% respectively. The proportion of female principals in high schools was especially low. In high schools, female teachers may have less access to leadership roles because there are more male teachers than female teachers. This may create masculine environments in high schools in South Korea and thus perpetuate prejudice and gender stereotypes that work against female teachers and principals.

**Table 1**  
*Changing Proportions of Female Teachers in Elementary and Secondary Schools*

Category	Elementary school		Middle school		High school	
	Female	%	Female	%	Female	%
2012	138,295	76.2	74,737	67.3	62,890	47.3
2011	136,829	75.7	73,934	66.8	60,524	46.1
2010	132,728	75.0	71,466	65.6	56,055	44.3
2009	130,552	74.5	71,091	65.1	54,240	43.3
2008	127,479	74.0	70,141	64.5	51,728	42.0
2007	121,963	72.9	68,673	63.5	48,534	40.3
2006	117,780	71.9	67,344	62.9	46,097	39.0
2005	113,751	71.0	64,659	62.2	44,387	38.1
1997	81,389	58.6	50,688	51.7	26,592	25.4
1990	68,604	50.1	41,718	46.4	21,229	22.9

Source: Ministry of Education and Science Technology of South Korea, 2012

**Table 2**  
*Changing Proportions of Female Principals in Elementary and Secondary Schools*

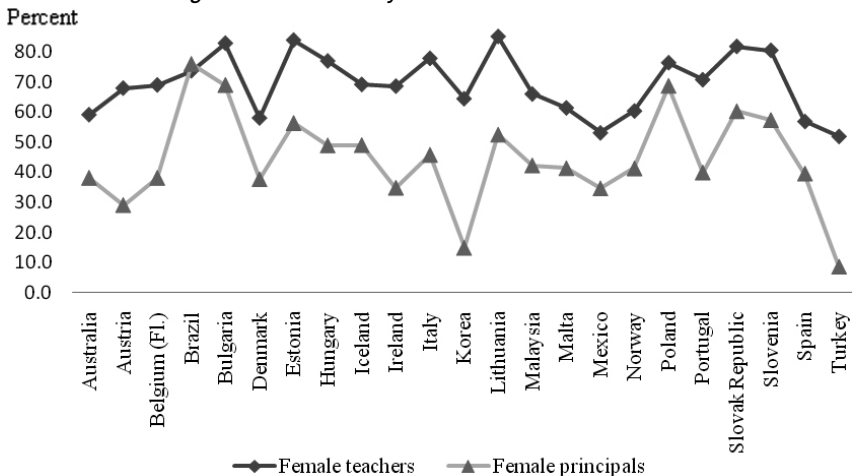
Category	Elementary school		Middle school		High school	
	Female	%	Female	%	Female	%
2012	3,360	28.2	1,269	22.7	381	8.4
2011	2,859	24.1	1,220	22.0	352	7.8

Category	Elementary school		Middle school		High school	
	Female	%	Female	%	Female	%
2010	2,455	20.7	1,180	21.5	313	7.0
2009	2,121	17.9	1,099	20.1	261	6.0
2008	1,860	15.7	988	18.2	242	5.6
2007	1,705	14.4	907	16.8	253	5.9
2006	1,527	12.8	817	15.2	239	5.6
2005	1,382	11.8	729	13.8	232	5.6
2000	856	8.0	419	8.8	136	3.6
1990	470	3.5	275	5.9	91	2.7

Source: Ministry of Education and Science Technology of South Korea, 2012

The gender imbalance among principals in South Korea becomes more obvious when the situation is compared to that in other countries. As shown in Figure 1, the relative number of female teachers in South Korea during 2007 and 2008 was 64.4%, ranking South Korea 16th out of 23 countries. The relative number of female principals in South Korea during 2007 and 2008 was 15.0%, placing South Korea second to last out of 23 countries.

Figure 1 *Relative Number of Female Teachers and Principals in Schools Providing Lower Secondary Education*



Source: OECD, 2010

Despite the increase in the female teacher workforce, studies from various countries have recognised problems relating to the underrepresentation of female principals (Arar & Oplatka, 2013; Brinia, 2011; Coleman, 2007; Shapira et al., 2011; Shakeshaft et al., 2007). For instance, in the case of the Arab education system in Israel, it is not as easy for female teachers to obtain a principal's position as it is for male teachers (Arar & Abu-Rabia-Queder, 2011, cited as Arar & Oplatka, 2013). Arar and Oplatka (2013) indicated that cultural backgrounds affect the perceptions and attitudes of principals and teachers within schools. There are various cultural barriers, such as sex-discriminatory working conditions and sex-role stereotyping, for women entering school leadership positions. South Korea is no exception in this regard. Cultural background is a critical issue of female workforce in South Korea.

Traditional and new gender roles of women seem to coexist in South Korea (Kim & Han, 1996; Kong, 1997; Eun, 2007). Women with traditional gender roles based on Confucianism were required to obey to men, and they were supposed to stay at home, not dealing with public affairs (Kong, 1997). However, with a rapid increase of women's education and labor participation over the past three decades, women in South Korea became enlightened with the notion of equal rights between women and men in roles, educational opportunity, social participation, and family values. Although South Korea seems to be moving towards a gender equal society, distorted thinking about gender roles and prejudices against women still remain. These residual attitudes consistently place Korean women in lower positions, lead them to be treated as less important than men, exclude them from prestigious occupations, and alienate them from politics (Kim & Han, 1996; Kong, 1997).

### *Theoretical Framework*

Our investigation is grounded in feminist social constructivism. Feminist social constructivism considers gender to be the psychological, social, and political significance that the biological differences between men and women have come to have in society (Diquinzio, 1993; Locher & Prügl, 2001). Sociological concepts of roles and socialization have been employed to examine how gender identities are socially constructed



(Diquinzio, 1993; Howell et al., 2002; Locher & Prügl, 2001; Strachan, 2002). From the perspective of social constructivist feminists, the social construction of gender has resulted in inequality, because women are marginalized in a patriarchal and male-dominant society where masculinity functions as a norm (Diquinzio, 1993). According to Diquinzio (p. 3), “[t]he social construction of gender is a factor in the oppression of women.” Therefore, social constructivist feminists are interested in changing social institutions and practices that are oppressive toward women.

Many studies have found that men are decisive and dominant, while women are considered caring, thoughtful, and collaborative (Coleman, 2005; Eagly & Johnson, 1990; Hallinger, Bickman, & Davis, 1996; Hallinger & Heck, 1996; Min, 2005; Pavan & Reid, 1994). The potential of women to be caring, thoughtful, and collaborative human beings needs to be valued (Gilligan, 1982). Beck (1992) insisted that caring should be a centred value in educational administration. Held (2006)’s study revealed that such characteristics of female leaders are likely to work well in areas of education, healthcare, and childcare. This supports the claim that female principals perform in a different, and inherently better, way from male principals (Coleman, 2005). The differences in leadership styles between male and female principals are socially constructed. Socially constructed leadership styles of female principals are not universal to all female principals. Various ways of being a female principal exist (Coleman, 2005). From the social constructivist feminist point of view, women face difficulties that are largely hidden or ignored in terms of accessing and carrying out a leadership role. In a culture that tends to expect leaders to be men, female and male teachers feel the social experience of being a principal differently (Coleman, 2005). Female teachers find it more difficult than male teachers to access leadership, and they experience gender-related barriers.

## Research Methods

### *Data and Sampling*

The data used is from *Seoul Education Longitudinal Study of 2010* (SELS 2010). The Seoul Education Research and Information Institute (SERII)

has been collecting longitudinal data since 2010 to facilitate the understanding of the structure and characteristics of all public and private schools, from elementary to high schools, in Seoul, South Korea. SELS 2010 used two-stage stratified cluster random sampling. The process involved first sampling schools and then sampling students. The data collected covered education-related information from students, teachers, principals and parents, and concrete information about the schools, such as numbers of students, teachers, and classrooms.

The present study focused on high school data. The analysis covered a total of 5,235 students and 78 general high schools. Most of the principals in the data sample were male (85.9%) and there were only 11 female principals (14.1%) in the data sample (Table 3). Every school principal and a total of 4,408 students completed response forms. Schools with female principals were more likely to have more female students than male students (Table 4).

**Table 3**  
*Number of Principals by Gender*

Gender of School Principal		
Female	Male	Total
11 (14.1%)	67 (85.9%)	78 (100.0%)

**Table 4**  
*Number of Students by Gender of School Principal*

		Gender of school principal	
		Female	Male
Students	Female	566 (68.4%)	1,810 (41.1%)
	Male	261 (31.6%)	2,598 (58.9%)
Total		827 (100.0%)	4,408 (100.0%)

*Measures*

There were two sets of variables at the student level: academic achievement and school satisfaction. Academic achievement was the schooling

outcome, with three items describing the average scores of national-level achievement test for general high school students in three subject areas (Korean, English, and mathematics). Every student in general high school must take the national-level achievement test each year. The present study used the mean value of three subjects as an indicator of academic achievement. The mean score of academic achievement in the present study was 54.46. Student school satisfaction is another schooling outcome variable, with eight items, each scored on a five-point Likert scale. The scale has an acceptable interitem reliability coefficient of 0.80.

There were five variables at the school level, namely the relationship between principal and teachers, the relationship between principal and other stakeholders, class-related activities, job satisfaction, and teacher-student ratio. Table 5 presents these variables in detail, with coding information. Cronbach's alpha value of job satisfaction of the principal was 0.71, the relationship between the principal and teachers was 0.79, and the relationship between the principal and other stakeholders 0.87.

Table 5 shows the means and standard deviations of student academic achievement, dependent variables, explanatory variables, and coding information.

**Table 5**  
*Student- and School-Level Variables*

Variables	Measure	M	SD
Student-level variables (n=4,316)			
Students' academic achievement	Average scores in Korean, English, Maths	54.46	21.73
Students' school satisfaction	Average of 8 items (5 point Likert scale) 1= very strongly disagree, 5=very strongly agree	3.24	.67
School-level variables (n=77)			
Relationship between principal and teachers	Average of 8 items (5 point Likert scale) 1= very strongly disagree, 5=very strongly agree	4.26	.41
Relationship between principal and other stakeholders (community, Seoul Metropolitan Office of Education, etc.)	Average of 8 items (5 point Likert scale) 1= very strongly disagree, 5=very strongly agree	4.10	.41
Number of hours worked by principal	Average hours per week spent on five work 1= under 2 hours, 2= 2-4 hours, 3=4-6 hours, 4=6-8 hours, 5=over 8 hours	2.99	.91
Class related activities	Average degree of effort allocated to six curriculum related activities 1= very strongly disagree, 5=very strongly agree (6 items/5 point Likert scale)	4.06	.49

Variables	Measure	M	SD
Job satisfaction of principal	Average job satisfaction of principal 1= very strongly disagree, 5=very strongly agree (5 items/5 point Likert scale)	3.87	.56
Teacher-student ratio	Teacher-student ratio= Total number of teachers in the school/Number of fist-year students	17.14	4.16

*Methodology*

The study firstly explored the tendency of each variable using descriptive statistics. The *t* test was also used to address gender differences in the performance of high school principals, and the testing was carried out using SPSS Statistics 19. The study then covered two-level hierarchical linear modelling (HLM) to examine the effects of student variables, school variables, and school principal performance on the academic achievement of students at the student and school (students nested within schools) levels. As Frank (1999) indicated, HLM has become an important educational research tool when data are naturally nested, for example, when students are nested within schools. Level 1 represents students and level 2 represents schools. HLM 6.0 statistical software was used for the two-level HLM analysis. The two-level HLM analysis was performed in three steps (Bryk & Raudenbush, 1992). The first step is to produce the unconditional model with no predictors at the student levels (see Equation for HLM). In the present study, the unconditional model took the form of the following regression-based equation:

*Unconditional model (model 1):*

$$(studentach)_{ij} = \beta_{0j} + r_{ij}$$

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

where *(studentach)<sub>ij</sub>* is the students’ achievement for student *i* in school *j*,  $\beta_{0j}$  is the average score of students’ Korean, English and mathematics in school *j*, *r<sub>ij</sub>* is the student-level random effect, and in the corresponding school-level model  $\gamma_{00}$  is the grand mean (or intercept), and *u<sub>0j</sub>* is the school-level random effect across the schools.

In the second step, student level variables—students’ school satisfaction were included in the null model, to determine whether each variable had any significant absolute effect on academic achievement measures independently of other variables, and whether its relationship with ach-

ievement varied significantly across schools. The equation of student-level model for the control model (model 2) is as follows:

$$\begin{aligned}(studentach)_{ij} &= \beta_{0j} + \beta_{1j} \text{ (school satisfaction)} + r_{ij} \\ \beta_{0j} &= \gamma_{00} + u_{0j} \\ \beta_{1j} &= \gamma_{10} + u_{1j}\end{aligned}$$

Where  $\beta_{1j} - \beta_{0j}$  are the coefficients effects of the covariances on *studentach*, with other parameters remaining the same as in the unconditional model, model 1.

During the third step of the HLM analysis, school variables were included to the student-level model to examine their absolute effects, then in combination, to examine their relative effects, that is, to model average school academic achievement measures and school variables, and the relationships between academic achievement measures and student variables in relation to school variables. The equation of the full model (model 3) is as follows:

$$\begin{aligned}(studentach)_{jj} &= \beta_{0j} + \beta_{1j} \text{ (group-mean centred school satisfaction)} + r_{ij} \\ \beta_{0j} &= \gamma_{00} + \gamma_{01} \text{ (relationship with teachers)} + \gamma_{02} \text{ (relationship} \\ &\quad \text{between principal and other stakeholders)} + \gamma_{03} \text{ (working} \\ &\quad \text{hours)} + \gamma_{04} \text{ (class-related activities)} + \gamma_{05} \text{ (job satisfaction)} \\ &\quad + \gamma_{06} \text{ (teacher-student ratio)} + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11} \text{ (relationship with teachers)} + \gamma_{12} \text{ (relationship} \\ &\quad \text{between principal and other stakeholders)} + \gamma_{13} \text{ (working} \\ &\quad \text{hours)} + \gamma_{14} \text{ (class-related activities)} + \gamma_{15} \text{ (job satisfaction)} \\ &\quad + \gamma_{16} \text{ (teacher-student ratio)} + u_{1j}\end{aligned}$$

The full model builds on the principal-related variables at the school level.

## Results

In this following section, the present study provides t-test analyses to examine gender differences in the performance of high school principals, and two-level HLM analyses to assess the relationship between school performance of principals and their student academic achievement.

Table 6 shows that there was a significant difference in student academic achievement between schools with female principals and those with male principals,  $t(5,168) = -9.18$ ,  $p < 0.001$ . The gender of the

principal also showed an association with school satisfaction among high school students,  $t(5,147) = -2.71$ ,  $p < 0.01$ . These results showed that schools with female principals had better student academic outcomes and higher rates of school satisfaction.

**Table 6**  
*Student Achievement and School Satisfaction among Students*

	Gender of school principal		t	df
	Male	Female		
Student achievement	53.53 (21.57)	60.96 (21.04)	-9.18***	5168
School satisfaction of students	3.22 (.679)	3.29 (.680)	-2.71**	5147

Note: \*\* =  $p < .01$ , \*\*\* =  $p < .001$ . Standard deviations appear in parentheses below means.

Table 7 shows the mean differences between the genders in their school performance. Female principals had better relationships with their teachers than male principals,  $t(77) = -2.04$ ,  $p < 0.05$ , and reported higher levels of job satisfaction than male principals,  $t(77) = -2.47$ ,  $p < 0.05$ , that is to say that male principals spent average below 2-4 hours per week, and female principals did average above 4-6 hours. Female principals tended to spend more time participating in school board meetings than male principals,  $t(77) = -2.09$ ,  $p < 0.05$ , and paid more attention to their professional development than male principals  $t(77) = -2.13$ ,  $p < 0.05$ . These gender gaps were still evident in class-related activities such as curriculum-related activities and encouraging teacher training (Table 7). Female principals expended more effort on curriculum-related activities than did male principals,  $t(77) = -1.96$ ,  $p < 0.05$ . They also made greater efforts to arrange teachers' training and re-training,  $t(77) = -2.49$ ,  $p < 0.05$ . Based on the  $t$ -test results shown in Table 6 and 7, the study found that gender differences in school performance of principals and the impact of gender on their students' academic achievement. Female principals did perform better for their schools and their students had higher academic achievement than male principals' students.

**Table 7**  
***School Principals' Performance by Gender***

	Gender of school principal		t	df
	Male	Female		
Relationship between principal and teachers	4.22 (.39)	4.49 (.49)	-2.04*	77
Relationship between principal and other educators	4.11 (.427)	4.10 (.34)	.033	77
Job satisfaction of principals	3.81 (.54)	4.23 (.54)	-2.47*	77
Teacher-student ratio	5.77 (1.43)	5.33 (1.04)	.878	68
<i>Work performed by principal (hours)</i>				
Student guidance	2.63 (1.29)	2.67 (1.23)	-.10	77
Meetings with parents	2.21 (1.19)	2.83 (1.34)	-1.65	78
School administration	2.84 (1.19)	3.17 (1.40)	-.857	78
Participation in school board meetings	2.37 (1.22)	3.17 (1.20)	-2.09*	77
Professional development	2.91 (2.37)	3.75 (1.138)	-2.13*	77
<i>Class-related activities (hours)</i>				
Curriculum-related activities	3.99 (.73)	4.42 (.52)	-1.96*	77
Encouragement of teacher (re)training	4.21 (.67)	4.87 (.492)	-2.49*	77
Financial and physical school resource security	4.28 (.67)	4.58 (.52)	-1.47	77
Strengthening supplementary classes	4.58 (.53)	4.58 (.52)	-.01	77
Strengthening teacher evaluation	3.67 (.82)	3.92 (.62)	.99	77
Strengthening student formative evaluation	3.79 (.73)	3.75 (.62)	.18	77

Note: \* =  $p < .05$ . Standard deviations are given in parentheses below means.

To examine the relationship between school performance of principals and their students' academic achievement, the study utilized a two-level HLM. For the unconditional model of HLM, Table 8 shows that the overall mean of student achievement was 54.56, and this differed significantly in inter- and intra-school analyses. The null hypothesis of no variance in the average student achievement between the schools was rejected,  $\chi^2(1, N=4225)=3121.05, p < 0.001$  (Table 8). This means that 43% (210.63/486.07) of the variance was between the schools and there

was significant interschool variance that could be modelled. The remaining 47% was at the student level.

**Table 8**  
*Unconditional Model Results of Student and School Variables on Student Achievement*

Fixed effect	Model 1: Unconditional		
	<i>B</i>	<i>SE</i>	<i>T</i>
$\gamma_{00}$ : Intercept,	54.56	1.75	31.10***
Random effects			
Between schools ( $\tau_{00}$ )		210.63	
Within schools ( $\gamma$ )		275.44	
Total		486.07	
$x^2$		3,121.05***	

Note:  $N = 4225$  students;  $N = 70$  schools

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

For level 1, intra-school analysis, the second step in the multilevel analysis was to build a level 1 regression model using student-level variables as predictors of student achievement. The level 1 model included student satisfaction as the student-level predictor. As shown in Table 9, school satisfaction among high school students was found to be positively related to their academic achievement ( $b = 7.75$ ,  $p < 0.01$ ). The proportion variance is explained at level 1 by  $(275.44 - 267.49)/275.44 = 0.03$  (Table 8). This means that using student-level school satisfaction as a predictor of student achievement reduced the intra-school variance by 3%.

**Table 9**  
*Conditional Model Results of Student-Level Variables on Student Achievement*

	Model 2: Individual		
	<i>B</i>	<i>SE</i>	<i>T</i>
$\gamma_{00}$ : Intercept,	54.59	1.63	33.46***
School satisfaction	4.25	.55	7.68***
Random effects			
Between schools ( $\tau_{00}$ )		183.80	
Within schools ( $\gamma$ )		267.49	
Total		451.29	
$x^2$		2,095.30***	

Note:  $N = 4225$  students;  $N = 70$  schools

\*\*\* $p < .001$



At level 2, school-level analysis, the extent to which the adjusted variations in the average of student achievement (the intercept) could be explained by the combined effects of the level 2 and level 1 predictors was examined. Six inter-school (level 2) predictors of student achievement were examined: relationship between principal and teachers, relationship between principal and other educators, number and allocation of hours worked by the principal, job satisfaction, teacher-student ratio, and class-related activities performed by the principal. As in the intra-school model, each effect was adjusted for all other effects. In this way, the school satisfaction of high school students, which is a level 1 variable shown in Table 10, is controlled in this analysis.

Model 3 in Table 10 shows that, after controlling for student-level variables, two of the six school structural variables had a significant effect on student performance: teacher-student ratio and class-related activities performed by the principal. The cross-level interaction between students' school satisfaction and the teacher-student ratio was significant ( $b = -3.06$ ,  $p < 0.01$ ) and the interaction between students' school satisfaction and class-related activities performed by the principal was also statistically significant ( $b = 12.62$ ,  $p < 0.05$ ). It means that the more class-related activities of principals, the higher academic achievement of their students. The regression coefficient connecting principals' performance to student academic achievement continued to be statistically significant. In the model 3, the regression coefficient connecting students' school satisfaction to their academic achievement was not significant even though student satisfaction is positively associated with academic achievement at the student level in the model 2. It means that the school performance is strong relationship with students' academic achievement than their school satisfaction. The two-level HLM results provide that the performance of school principals was found to have a significant effect on student achievement. The proportion variance could be explained at level 1 by  $(275.44 - 191.97)/275.44 = 0.30$ . Thus, using student-level school satisfaction as a predictor of student achievement reduced the intra-school variance by 30%.

**Table 10**  
**Conditional Model Results: School-Level Variables and Student Achievement**

	Fixed effect	Model 3: School level		
		<i>b</i>	<i>SE</i>	<i>t</i>
Intercept, $B_0$		72.91	20.32	3.59**
Student level				
School satisfaction		6.28	6.71	.94
School level				
Relationship with principal and teachers		8.06	5.75	1.40
Relationship with principal and other educators		-1.34	5.11	-.26
Number and allocation of hours worked by principal		406.76	629.94	.65
Job satisfaction of principals		3.65	2.99	1.22
Teacher-students ratio		-3.06	.87	-3.53**
Class-related activities performed by principals		12.62	5.24	2.41*
Random effects				
Between schools			191.97	
Within students			269.32	
Total			461.29	
$x^2$			2,095.30***	

Note:  $N = 4225$  students;  $N = 70$  schools

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

## Discussion and Conclusion

The present study was performed on a sample of high schools and first-year students in South Korea. It was based on secondary data collected using SELS 2010. The study investigated the relationships between academic achievement at the student level and school principals' performance as school-level predictors. Overall, the conclusion was that there are significant associations between the school-level predictors and students' academic achievement. The performance of school principals was found to have a significant effect on student achievement. There were also significant gender differences in principals' performance in five respects. First, female principals acted creatively in constructing a school environment. Female principals are more likely than male principals to introduce and support strong programs for staff development, to encourage innovation, and to experiment with instructional approaches. Second, female principals were found to have better relationships with teachers. As several studies (Blackmore, 1993; Eagly et

al., 1995; Grogan, 2005) have indicated, female principals tend to have a greater focus on social relationships, and they have an influence on more equitable and inclusive school surroundings. Third, female principals were found to expend more effort than male principals on class-related activities, such as curriculum development and teacher training. These school principal leadership activities impacted on student achievement. It may be that female principals are likely to stress the importance of instructional competence in teachers and to be attentive to task completion within instructional programs, as suggested by Grogan and Brunner (2005b). At the same time, more female than male principals build school-wide communities that can help foster the academic and social growth of the student (Grogan & Brunner, 2005a). Grogan and Brunner (2005a) explain why female principals produce better performance in school: women have a strong interest in the education of the whole child and in looking out for those who are most at risk, and also view the position of leader in the school as an attractive opportunity to make a difference for children and their families. Fourth, female principals have a stronger commitment than male principals to the school and to their own profession. The results of the study show that they more likely to undergo more hours of professional development and to participate in more school board meetings than their male counterparts. According to Brunner and Grogan (2007), female principals have spent more time in the school than men before they take formal leadership positions such as principal or superintendent. It is much harder for women to attain these higher positions, so they work twice as hard as men (Kim, 2013; Lee et al., 2005). Lastly, female principals spend on average two more hours per week than male principals participating in school board meetings. There are two main views on this. According to Grogan (2005), female principals value these meetings more highly than male principals, and are much more likely to include teachers in the groups providing input. Thus, female principals appear to be situating their leadership efforts within the larger community. Strachan (1999) indicated female principals are active and creative in constructing their own leadership practice to effectively fit the needs of their students. Coleman (2005) presented another perspective, suggesting that female principals in secondary schools often have psychological problems, such as feelings of isolation or marginalization in meetings,

because they are working with a majority of male head teachers in their region. For instance, a female principal stated, “I was surprised at the first meeting because I am not ‘just a school teacher’” (p. 12). Female principals might need more time to cope with such a male-centric atmosphere.

These significant gender differences in principal performance in high schools come not from biological differences, but from principals’ perception of gender, which is socially constructed, and from the patriarchal society and school culture. Many scholars (Coleman, 2005; Grogan, 2005; Skrla, 2003; Young, 2003, 2005) have indicated that imbalance and discrimination exist in organizational settings, in areas such as recruitment, hiring, promoting, salary, and benefits. These difficulties merely scratch the surface of the inequities that have an impact on women in educational leadership, yet the perception persists that women have achieved equity (Skrla, 2003). According to Grogan (2005), very few female educators serve in the head position in school, which means that there are few role models and few opportunities to even discuss the possibility. The fact is that we still have a long way to go before equity for South Korean female principals is truly achieved.

Although female high school principals were found to perform better than male high school principals, the labor market for female educators is still very weak compared with the market for male educators. There are various factors that are relevant in gender leadership issues, such as national culture, society, workplace culture, nature of the organization, and organizational demographics (Pounder & Coleman, 2002). In particular, Confucianism, a key feature of South Korea’s national culture, has created a stronger culture than exists in Western society. South Korea is a highly conservative and male-oriented society, and the public school system reflects this situation (Sohn & Kenney, 2007). This hierarchical and conservative education system has created significant obstacles for female teachers. The glass ceiling effect is driven by prejudice and stereotypes that work against female principals, and it may hinder their promotion and entry into leadership positions. Confucianism, a representative ethical system followed in much of East Asia, focuses on the subordination of a woman to a man, and favors a strong cultural preference for a son (Collins & Bosworth, 1996; Wang & Yao, 2003). These attitudes may contribute to the imbalance in the pool of potential

principals. These patriarchal cultural values subject women to expectations of submissiveness and may create inequalities between women and men (Mestry & Schmidt, 2012). This also creates barriers for career women who aspire to managerial positions, as well as barriers to entry into the labor market.

Significant decreases in school effectiveness in South Korea will continue unless the performance of female principals is recognized and valued. Female teachers need to be encouraged and promoted to principal positions. Leadership opportunities need to be open to both female and male teachers equally. It is necessary to create the conditions and climate in high schools in which female teachers may aspire to be principals, and in which principals are encouraged to play effective roles. By increasing the number of women who enter leadership roles in South Korean high schools, workforce diversity and school effectiveness may be enhanced, and such changes may help to improve the public school system in South Korea.

Ideally schools should be prepared to improve equality in their work environments, including hiring, promotion, and other work-related opportunities. Schools should also be ready to implement active policies to reflect female professionalism and experiences, or systems for the advancement of principals, not only for women, but also for men. A more balanced and equitable school environment may have a positive influence on students as well as on future principals.

This quantitative approach has limitations in terms of capturing the gender differences between school principals in depth. For future research, it will be very important to employ qualitative research methods to reveal the perceptions and experiences of both women and men about how they form their professional identity, what gender behaviors are rewarded in each case, how divisions of labor are organized in schools and in wider society, and how gender behaviors are performed in rural and suburban school surroundings.

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