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Leadership in Brazilian, Singaporean and Spanish Secondary Schools: an in-depth analysis based on TALIS 2013

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Abstract

This chapter provides an overview of leadership through an international lens that focuses on gender, leadership style, school climate, and job satisfaction. We considered a secondary data source collected through the Teaching and Learning International Survey (TALIS), administered in 2013; obtaining 1,531 responses. Descriptive, inferential and correlational analyses were performed according to items analysed and the research goals.

Results show that: (i) distributed leadership is used more in Brazil and instructional leadership is used Singapore; (ii) distributed leadership is significantly higher in women than men; and (iii) both distributed and instructional leadership have a positive effect on school climate and on principals' job satisfaction. Implications and directions for future research are discussed.

Keywords: gender; leadership style; principals; Secondary Education; cross-country analysis; school climate; job satisfaction

Introduction

Principal leadership has been reviewed by countless authors and from multiple perspectives (Arias and Cantón, 2006; Beycioglu and Pashiardis, 2014; OCDE, 2014c), such as gender (Antonakis et al., 2003; Cáceres et al., 2012; Cuevas et al., 2014), students' academic achievement (Heck and Hallinguer, 2010; Marks and Printy, 2003) or work climate (Martín, 2000; Martín et al., 2014). However, there are very few studies aimed at helping our understanding of school leadership at a multiple country level.

This chapter provides an overview of leadership through an international lens by exploring: (a) the leadership style of principals in Brazilian, Singaporean and Spanish Secondary Schools, according to the results of the Programme for International Student Assessment (PISA) 2012; (b) the gender's role on principal's leadership style; and (c) the impact of principal's leadership style and other profile variables on school's climate and principal's job satisfaction.

Leadership styles in TALIS report

In TALIS (2013) report two leadership styles of school principals are analysed: distributed and instructional. Here, we offer a theoretical framework and some research outcomes for understanding their main characteristics.

Understanding distributed leadership

Distributed leadership is often identified with the improvement of learning outcomes (Harris, 2009) and school (Hallinger and Heck, 2010). Harris (2004) defines it as "a form of collective agency incorporating the activities of many individuals in a school who work at mobilising and guiding other teachers in the process of instructional change" (p.14). That is, distributed leadership focuses its attention on specific ways of action and provides a new conceptual framework for reconceptualising and reconfiguring the practice of leadership in schools (Harris, 2004; Murillo, 2006). It considers decision, information sharing, and

participative control of the process (Hallinger and Heck, 2010; OECD, 2013b; Spillane, 2006) because it is based on interactions among teachers, principals, families and students. In fact, a distributed perspective on leadership goes beyond and gathers informal leaders among the community members (Spillane, 2006; Spillane and Diamond, 2007). For instance, some principals have tried to involve teachers in the sustained dialogue and the decision-making process (Darling-Hammond et al., 2010; Marks and Printy, 2003), being associated with the 'teacher leadership' (Lieberman and Miller, 2004).

Understanding instructional leadership

Instructional leadership encompasses those actions that promote student growth in the learning process (Flath, 1989; OECD, 2013b). It carries a 'transformative' task by altering school and classroom conditions in order to improve the education offered and the teaching practices (Murillo, 2006; Printy, Marks and Bowers, 2009). Instructional leadership tries to distribute the authority and supports teachers in the decision-making process (Leithwood, 1994; Marks and Printy, 2003) to improve the organisation. Thus, it provides an intellectual direction: innovation within the organisation (Sans et al., 2014).

Research conducted by Elmore (2000), King (2002), and Spillane et al. (2000) confirms that instructional leadership extends beyond the scope of the school principal to involve other leaders as well. Volante (2008) underlines that principals' instructional leadership positively influences the outstanding academic achievement and the expected learning outcomes.

According to Firas et al. (2011), most studies that examine policy prescriptions for distributed leadership against empirical evidence, have been descriptive rather than analytical (Heck and Hallinger, 2005; Leithwood et al., 2009). In TALIS (2013), distributed and instructional leadership appear as two different approaches even though they constitute the two extremes of a continuum of leadership. Therefore, successful school leaders must master both leading

and learning environments and they must navigate and shape the school-level context in order to reform the teaching and learning context (Halverson and Clifford, 2013).

This chapter analyses the liaison between distributed and instructional leadership in principals of secondary schools through a comparative and an international approach. We formulate the following hypothesis: (H_{a1}) principals with statistically significantly higher levels of both leadership styles will represent successful secondary schools.

Leadership styles and gender

Literature shows that there is never one way to approach gender in leadership roles. Kanter (1977) and Nieva and Gutek (1981) state that there are no gender differences in leadership aptitude or style; that is, women and male leaders behave similarly. On the contrary, many researchers who explored links between leadership styles and women and men's performance found few differences (Bartol and Martin, 1986). Eagly and Johnson (1990) highlight that female leaders adopt democratic and/or participative styles, whereas male leaders adopt autocratic or directive styles. According to Loden (1985), female leaders opt for cooperativeness, collaboration, lower control, problem solving, empathy, and rationality, which means that women, compared to men, adopt models characterized by friendship, agreeable feelings, interest in people, expression, and sensitivity (Eagly, 1987; Hall, 1984).

Since the 70s (Kanter, 1977), the number of women who assume leadership roles has grown but they usually hold positions of little power or they are offered fewer opportunities for advancement. There are persons who do not want to be supervised by women on the assumption that: (a) they are less qualified to be leaders; and (b) female leadership seems to have a negative impact on morale (Riger and Galligan, 1980; Terborg, 1977).

Cáceres et al. (2012) and Fansher and Buxton (1984) prove that the presence of women decreases during the transition from primary education to secondary education. This imbalance in schools can be linked to the glass ceiling: the barriers that women found to

advance and to be leaders (Rose et al., 1998). In this sense, educational researchers focus their attention on different themes (Reynolds, 2002), such as: (i) invisibility of women as school leaders; (ii) strategies for improving the participation of women leaders; (iii) characterization of roles held by women leaders; and (iv) links between gender and power in school organisations.

Given that the vast majority of researchers demonstrate how women's practices in educational leadership differ from those of male's practices (Shakeshaft, 1989), we formulate the following hypothesis: (H_{a2}) principals' leadership style is statistically significantly different according to their gender.

The impact of leadership styles on climate and job satisfaction

The impact of leadership styles on climate

Aron and Milicic (1999), Martín et al. (2014), and Milicic (2001) indicate that school climate, if positive, facilitates: (i) human learning; (ii) a sense of well-being, (iii) confidence in their own abilities; (iv) belief in the relevance of what is learned or how it is taught; (v) identification with the institution; and (vi) positive peer interaction. Nevertheless, some factors, such as the decisive role of principal's leadership, affect school climate, its effectiveness and its improvement. On the one hand, Tajasom and Ahmad (2011) show that instructional leadership has a positive effect on school climate's affiliation -also indicated by Oyetunji's (2006)-, innovation, professional interest, and resource adequacy. Grizzard (2007) states that effective schools have leaders who maintain and support an academic emphasis with a focus on instruction.

On the other hand, Grant (2011) underlines that distributive leadership components are related to leadership effectiveness in schools, which is 'setting direction' the strongest predictor of leadership effectiveness.

According to the literature, we formulate the following hypothesis: (H$_{a3}$) both instructional and distributed leadership will have a positive effect on school climate.

The impact of leadership styles on job satisfaction

The vast majority of studies are performed in worldwide financial organisations (Silverthorne, 2004; Walumbwa et al., 2005); but their findings help to illustrate how important organisational culture is on job satisfaction and commitment. In fact, all those studies confirm that: (i) bureaucratic cultures have lowest levels of job satisfaction and commitment; (ii) the best organisational environment opts for an innovative culture; (iii) innovative and supportive cultures, together with leadership style, have positive effects on managers' job satisfaction and commitment; and (iv) instructional leaderships have positive and strongest effects on organisational commitment and job satisfaction.

In school settings, even though it has not been explored extensively, Bogler (2001) finds that those principals who are more focused on instructional leadership have an impact on teachers' satisfaction. In the same vein, Nguni et al. (2007) provide evidence that transformational leadership strongly affects not only job satisfaction and organisational commitment, but also organisational citizenship behaviour.

Thus, we formulate the last hypothesis: (H$_{a4}$) both instructional and distributed leadership will have a positive effect on principals' job satisfaction.

Methodology

The literature review has shown a lack of experiences centred on school principals from an international comparative; for this reason, this chapter presents: (a) the analysis conducted from a cross-country perspective in Brazilian, Singaporean and Spanish Secondary Schools, via principals' leadership (distributed and instructional) and its impact on school climate and job satisfaction; and (b) the extent to which gender has an impact on principal's leadership style.

We follow a Secondary Data Analysis which uses major data resources for a deeper exploitation in order to deliver high-quality and high-impact research (Vartanian, 2011). In this section, we provide the specific information regarding the methodology followed in this study.

Empirical setting

Many countries participated both in TALIS and PISA, allowing a general comparison of their academic performance results and their leadership styles. The reason for selecting Singapore, Brazil, and Spain was their TALIS profile according to their results in PISA 2012: Singapore performed above the PISA average; Brazil performed below the PISA average; and Spain remains anchored below the PISA average (OCDE, 2014c).

Under the assumption that a best performance in PISA comprises school autonomy, collaboration, assessment, and appraisal mechanisms (OECD, 2012), in Table 1 we characterize Singaporean, Brazilian and Spanish educational systems according to these variables.

	Brazil	**Singapore**	**Spain**
Results from PISA 2012	-Brazil performs below the OECD average (OECD, 2014a) although there was an improvement, compared to results from PISA 2003. -This improvement in PISA performance is seen in students from lowest to upper-middle socio-economic status (OECD, 2014a).	-Singapore has the highest number of top-performing students in problem solving (OECD, 2014b). -There is a strong bond between education, economy, and national development (OECD, 2011; UNESCO, 2011b).	-The public spending on education increased 35% -a third more than in 2003; a similar increase to the other OCDE countries. Nevertheless its performance in PISA remains anchored just below the OECD average (OECD, 2012).
School autonomy	-Federal Government through the Ministry of Education (MoE). -The individual states are responsible for the administration of elementary and secondary education. -The Federal Constitution recognizes three educational systems: the federal system, the state systems and the federal	-The government, under the supervision of the MoE, aids public and private educational institutions (UNESCO, 2011b). -The MoE, the National Institute of Education (NIE) and the schools are responsible for policy coherence and implementation consistency (OECD,	-The MoE is responsible for the administration of public education. -The current schools structure shows little autonomy on curricula, regarding the content that must be taught and assessed, in comparison to other OECD countries (OECD, 2012).

	district system, and the municipal systems (UNESCO, 2011a).	2011).	
Principals, climate and appraisals	-Disciplinary climate improved in 2012 compared to 2003 (OECD, 2014a). -Schools have been able to attract and retain qualified teachers (OECD, 2014a). -Learning environment improved due to disciplinary climate (OECD, 2014a). -Dropout rates are still large because the curriculum is not engaging students or they have the need or desire of working (OECD, 2014a).	-The high performing education system includes high-quality and strong principals, who have long-term visions, and quality teachers (UNESCO, 2011b). -Students will be provided with a Holistic Development Profile which will keep parents updated on their children's progress (UNESCO, 2011b).	-School principals' views of how student behaviour affects learning are generally more positive than across OECD countries (OECD, 2012). -Schools rarely reward teachers for their work. -Most of schools are using those student assessments for comparing school performance against regional or national benchmarks (OECD, 2012).
Teachers collaboration	-The MoE has written the National Curriculum Parameters for Secondary Education to support the work of classroom teachers (UNESCO, 2011a).	-Teachers share and discuss students' development and needs (UNESCO, 2011b). -Parents act as partners to prepare young people for the future (UNESCO, 2011b).	-Collaboration among teachers is less frequent compared to other OECD countries (OECD, 2012).

Table 1. Main features of Singaporean, Brazilian and Spanish educational systems.

Sample

TALIS (2013) was the second round of the survey applied in 2008. The TALIS (2013) international population targeted principals and teachers from lower secondary schools (ISCED level 2), restricted to ordinary schools. Participating countries could also include primary and upper secondary teachers (OECD, 2014d) even though they could make some changes to the TALIS population criteria "choosing to restrict the coverage of their national implementation to parts of the country" (ibid, p.74). Nonetheless, the minimum sample size was established at 200 schools per country.

The national sampling method of TALIS 2013 was systematic random sampling with probability proportional to size within explicit strata, according to the national sampling plans (OECD, 2014d). Considering the three countries selected, its specific school sample size was: Brazil (n=1,142), Singapore (n=197) and Spain (n=200); thus, we managed a final sample of 1,531 respondents from Secondary Schools, with a greater presence of Brazil (68.8%).

Data collection

The survey collected data in 2013 on the role performed by principals: responsibilities, leadership, socio-demographic characteristics –including gender-, formal education, previous experience, school climate, and job satisfaction. All factors detailed below were measured using a 4-point Likert scale (strongly disagree; strongly agree); in these cases, the fourth factor indexes -both leadership styles, school climate and job satisfaction- were "calculated to have a standard deviation of 2.0, and the mid-point of 10 to coincide with the mid-point of the scale" (OECD, 2014d, p.174) –Appendix 1 provides its specific items-. The rest of the variables were measured by different types of questions (dichotomous and multiple choice answers).

Leadership was measured by two factors. The first one was 'instructional leadership' composed by three items about teachers' active role in school's development and

management. The internal consistency and validation tests show a high consistent factor in each of the three countries ($\alpha > .74$). The second factor was 'distributed leadership' formed by three items regarding the opportunities offered by the school to the various stakeholders who actively participate in school decisions. Its reliability was above .67, providing also a validated scale in each of the countries.

The school climate factor was formed by four items about a culture of mutual respect among staff. The scale had a high internal consistency ($\alpha > .70$) and was validated in each of the three countries.

The principal's job satisfaction factor was composed of two scales formed separately: satisfaction with current work environment –four items pertaining to the suitability of the school to work- and satisfaction with the profession –three items regarding the current job position as principal-. Both scales had a medium-high internal consistency ($\alpha > .60$) and were validated.

Data analysis

Data was analysed using SPSS v22 Inc. performing various statistics. First of all, descriptive and exploratory tests were conducted to check the normality of the scales. Results suggested that there were no normality so non-parametric inferential tests were performed. In this case, Mann-Whitney and Kruskall-Wallis tests and their effect size were calculated. Finally, multiple linear regression models by stepwise method were ran transforming categorical variables into dummy variables (gender, educational level, employment status as principal, school administration training, instructional leadership training, school's location, school's country, school's management type) besides ordinal variables (age, years of experience as principal in total, years of experience as principal in the surveyed school, years of experience in other managerial roles, distributed leadership degree, instructional leadership degree,

school's climate of mutual respect and principal's job satisfaction level). Data results informed that none of the linear regression model assumptions were violated.

Findings

Principals' overview

Gathering the countries together, we analysed 1,531 principals, 54% of them were women; however, gender distribution was different depending on the country: 70% were Brazilian women, 62% were Spanish men and 54% were Singaporean women. Given that TALIS 2013 did not stratify the sample using gender as a criterion, we cannot ensure that gender distribution in each country actually represents principals' gender distribution in secondary schools. Table 2 provides a description of the schools, observing that most of the schools are lower secondary schools (89.9%), which include students with ages from 12 to 15 years old; schools are mostly located in large cities (28.9%) and towns (21%); and schools are predominately publicly-managed (93.7%). The table also shows schools profile by country.

		Brazil	Singapore	Spain	Total
Type of secondary school	Lower secondary school	100%	50%	100%	89.9%
	Upper secondary school	0%	50%	0%	10.1%
	Total (n)	1,070	318	192	1,050
School's location	Rural area (≤1,000 people)	15.3%	0%	1.6%	10.7%
	Village (1,001 to 3,000 people)	5.7%	0%	9.4%	5.1%
	Small town (3,001 to 15,000 people)	22.6%	0%	22.5%	18.3%
	Town (15,001 to 100,000 people)	25.2%	0%	29.8%	21%
	City (100,001 to 1,000,000)	18.1%	0%	29.3%	16.1%
	Large city (>1,000,000 people)	13.2%	100%	7.3%	28.9%
	Total (n)	1,040	289	191	1,520

School's	Publicly-managed	95.3%	100%	75.3%	93.7%
management	Privately-managed	4.7%	0%	24.7%	6.3%
	Total (n)	1,053	287	190	1,530

Table 2. School description according to its country.

Analysing other profile variables, we note that principals' average age was 48 years old, the Spanish principals were the oldest (51 years old). More than 93% of the principals have a master's degree which indicates a high educational level. In general, principals have 7.30 years of experience in their actual occupation, i.e. being principal in the actual school; principals also have 5.87 years of experience in other managerial roles. However, Brazilian and Singaporean principals have more experience in this role in other schools than their Spanish counterparts, which suggests that Spanish principals do no tend to gain this type of experience in other schools.

When principals' roles are examined in detail, we observe that Singaporean principals focus more on managerial instead of teaching tasks. Table 3 shows that Spanish principals are less educated in school administration and instructional leadership while more than 90% of Singaporean has attended at least one course of each, mostly before they became school principals.

		Brazil	Singapore	Spain
Formal education on school	Before	28%	66%	23%
administration or principal	After	38%	5%	38%
	Before and After	22%	22%	24%
	Never	13%	7%	15%
Formal education on	Before	25%	49%	13%
instructional leadership	After	27%	5%	35%
	Before and After	26%	37%	12%

		Never	22%	9%	41%

Table 3. Formal education on school administration and instructional leadership.

Leadership styles and gender

Analyses regarding both leadership styles were performed for the complete sample and for the three sub-samples (by country). Brazilian and Spanish principals predominantly used a distributed leadership style as opposed to their Singaporeans counterparts who employed more instructional style (see Table 4).

		Distributed Leadership		Instructional Leadership		School Climate		Job Satisfaction	
		M	SD	M	SD	M	SD	M	SD
Brazil	Female	13.57	2.03	11.51	1.93	13.53	2.01	12.75	1.75
	Male	13.49	2.25	11.56	1.79	13.30	1.91	12.62	1.94
	Both	13.55	2.10	11.52	1.89	13.46	1.98	12.71	1.80
Singapore	Female	12.07	1.56	12.05	1.89	13.99	1.92	13.68	1.72
	Male	11.83	1.36	12.13	1.88	14.20	1.79	13.98	1.80
	Both	11.95	1.47	12.06	1.89	14.05	1.91	13.81	1.77
Spain	Female	13.04	2.37	10.32	1.98	13.12	1.90	13.23	1.74
	Male	13.37	2.39	10.40	2.20	13.33	1.98	13.49	1.74
	Both	13.24	2.37	10.37	2.11	13.25	1.94	13.39	1.73
Total	Female	13.29	2.06	11.50	1.96	13.57	2.00	12.93	1.77
	Male	13.07	2.22	11.45	1.99	13.52	1.93	13.12	1.95
	Both	13.21	2.13	11.47	1.97	13.54	1.98	13.00	1.84

Note: M = Mean; SD = Standard deviation.

Table 4. Descriptive statistics of leadership styles, school climate, job satisfaction and gender among countries.

Inferential tests confirm previous results; Kruskall-Wallis test informs that both principals' leadership styles are significantly different in each country: distributed leadership [H(2)=212.02, p<.05, r=.14] and instructional leadership [H(2)=103.20, p<.05, r=.07].

		Brazil – Singapore	Brazil - Spain	Singapore – Spain
Distributed	U	420.604	148.531	272.072
Leadership	z	14.457	4.336	6.683
	p	.000	.000	.000
Instructional	U	-150.803	263.491	-414.295
Leadership	z	-5.156	7.672	-10.137
	p	.000	.000	.000
School Climate	U	-224.038	111.117	-335.154
	z	-7.690	3.240	-8.217
	p	.000	.001	.000
Job Satisfaction	U	-286.829	-170.484	-116.345
	z	-9.769	-4.931	-2.831
	p	.000	.000	.005

Table 5. Inferential tests for leadership styles, school climate, job satisfaction depending on country.

From a gender perspective (see Table 4), we observe that females have a higher level of both distributed and instructional leadership than males; however, non-parametric tests (see table 6) inform that only the distributed leadership is significantly higher in females than males (p=.004) with a small size of the effect (r=-.074).

After a more in-depth analysis between gender and country, findings suggest different patterns in both leadership styles; however, these patterns are not statistically significant[1].

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[1] Mann-Whitney test was applied but on significant differences were found; therefore, no data is provided.

	Distributed Leadership	Instructional Leadership	School Climate	Job Satisfaction
U	238,585.500	257,921	260,932.500	281,765
z	-2.882	-.468	-.094	2.484
p	.004	.640	.925	.013
r	-.074	-	-	.064

Table 6. Whitney Mann U tests for leadership styles, school climate, and job satisfaction depending on gender.

School climate, job satisfaction and gender

When considering school climate and job satisfaction variables (see table 4), principals think that their secondary school has a good climate of mutual respect (13.54) even though their job satisfaction is slightly lower (13.00).

Kruskall-Wallis test confirms that school climate and job satisfaction are significantly different in each country: school climate [$H(2)=81.29$, $p<.05$, $r=.05$] and job satisfaction [$H(2)=105.72$, $p<.05$, $r=.07$] (see Table 5). Then, Singaporean principals perceive a higher job satisfaction and a better school climate in comparison with Brazilian and Spanish.

On the contrary of leadership styles, females tend to assess school climate more positively and job satisfaction more negatively; however, only job satisfaction is significantly different (see Table 6) which means that males are actually more satisfied with their role as principal than females ($p=.013$), with a small size effect ($r=.064$).

Looking for gender trends, we observe that Brazilian females are generally more positive about the school climate and principal's job satisfaction (see Table 4). This situation reverses when Spanish and Singaporean principals are males; a deeper analysis indicates that these

country differences are not supported by further analyses, i.e. no significant differences were found among males and females within the countries[2].

The connection among school climate, job satisfaction, leadership styles and other profile variables

Once the different variables have been analysed, the question about what factors determine each leadership style as well as school's climate and principal's job satisfaction arise. Four multiple linear regression models were conducted using the stepwise method to give clarity on the results[3].

The first model used the variable distributed leadership as the outcome or dependent variable whereas the other variables were used as factors or independent variables. After three steps, the model emerged was formed by three factors (Schools located in Singapore, Schools being publicly-managed and the Attendance of instructional leadership courses) which explain the 11.8% of the distributed leadership degree. Given its goodness of fit (adjusted R^2=0.118), the model does not explain what factors determine the most of the distributed leadership in school because the 88.2% of the model is explained by other factors not considered in it.

The second model was based on the variable instructional leadership degree as the dependent variable. Six steps were needed to obtain a model formed by six factors that explain the 9.6% of the dependent variable (i.e., attendance of instructional leadership courses, schools located in Spain, principals' dedicated to full-time without teaching obligations, schools located in rural areas, Schools located in small towns and principals' years of experience as principal in total). The low goodness of fit of the model suggests that 90.4% of the instructional leadership is explained by other factors not included in the model.

The next two models are more complex than the previous two; indeed, a second layer was added including both leadership styles as factors, and a third layer was added swapping the

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[2] Mann-Whitney test was applied but on significant differences were found; therefore, no data is provided.
[3] To review the regression model procedure applied, go to the data analysis subsection within the methodology section.

factor that formed it between the principal's job satisfaction and school's climate of mutual respect. Thus, a third model was tested using school's climate of mutual respect as the outcome and principal's job satisfaction as the third layer (as independent variable or factor). The model emerged after six steps and factors explaining the 25.4% of the school's climate (Appendix 2); the final model is formulated as follows:

School's climate of mutual respect = 4.613 + (0.366 x Job satisfaction) + (0.270 x School located in a large city) – (0.267 x Not attendance to instructional leadership courses) + (0.172 x Distributed leadership) + (0.146 x Instructional leadership) + (0.027 x Years working as principal)

The fourth and final model was based on principal's job satisfaction as the outcome and school's climate of mutual respect as the factor of the third layer. The model emerged with nine factors -after nine steps- that explain the 25.2% of principal's job satisfaction (Appendix 3); the model is formulated as:

Principal's job satisfaction level = 7.249 – (0.722 x School located in Brazil) + (0.321 x Climate of mutual respect) + (0.067 x Distributed leadership) + (0.036 x Years working as principal at the analysed school)

Discussion

This chapter reports a secondary analysis of data from OECD's TALIS 2013 that widens the outcomes found by Sans-Martín et al. (2015) in European countries. What makes the difference between both studies, even though they used the same data, is the selection of the sample. In our study, we considered the country results in PISA 2012 to three countries (OCDE, 2014c): one developing country (Brazil) which performed below the PISA average; and two countries from two different continents (Singapore, which performed best in PISA; and Spain, which remained anchored the PISA average).

This study has covered all the hypotheses providing analysis on 1,531 principals involved in this study. A surprising result on principals' background is that Singaporean principals fully dedicate their workload to managerial tasks, which allow them to be focused on leadership underpinned in specific training in school management. So, is there any connection between the focus on leadership and better academic performance in Singapore?

Examining our hypotheses, results inform that H_{a1} is partially refuted. As previously noted (see Gronn, 2009; Halverson and Clifford, 2013; Marks and Printy, 2003) distributed and instructional leadership must work together. Nevertheless, our study finds that in Brazilian, Singaporean and Spanish Secondary Schools both leadership styles are not the two extremes of a continuum. According to inferential data, Brazil is the country with the highest distributed leadership degree whereas Singapore –the country with the most successful students' academic achievement- shows the highest instructional leadership degree.

School principals play an important role in the design and identification of school leadership (Mulford, 2003). Successful school leaders must master the leading and the learning environments and they must navigate and shape the school-level context in order to reform the teaching and learning context. For that reason, principals should be trained in distributed and instructional leadership before they hold this post. Considering that Singaporean principals are more trained in school administration and instructional leadership, their involvement in student growth (Flath, 1989; OECD, 2013b), pedagogical issues, and teachers' autonomy is more probable.

On the other hand, we come across that Brazil and Spain, countries with lower outcomes in PISA 2012, show higher levels in distributed leadership. The OECD (2014a) suggests that Brazilian principals may opt for this leadership due to the high dropout rates, the socioeconomic context, and the students who repeat a year, which implies a higher dedication to work with low-performing students.

The H_{a2} is also partially confirmed. Specifically, inferential data indicates that distributed leadership is significantly higher in females than males. It is surprising that even though women adopt a style characterised by decision, information sharing, appraisal mechanisms, and participative control of the process (Eagly et al. 2003; Hallinger and Heck, 2010; OECD, 2013b; Spillane, 2006), which has a strong and positive effect on individual, group and organisational level (Bass and Avolio, 2006), there are still barriers that hinder their efforts to hold leader positions. In fact, less than 5% of directorships are held by women (ibid). Furthermore, the fact that distributed leadership is the most widespread leadership approach used among women confirms the idea that female leaders opt for cooperativeness and collaboration, and adopt models that show friendship and interest in people (Cuevas et al., 2014; Eagly, 1987).

The H_{a3} is confirmed. The regression model emerged with six factors explaining the 25.4% of its variance; among these factors, coefficients show that both leadership styles have a positive effect on school climate: in order to have a good school climate, both distributed and instructional leadership styles must be present in principals in order that they lead effectively. In this sense, research shows that a positive school climate is one of the factor determining the school effectiveness (Raczynski and Muñoz, 2005) and it results in very good conditions for positive outcomes (Revees, 2010).

Furthermore, principals in TALIS (2013) value their secondary school with a good climate of mutual respect, but again Singapore scores higher in that aspect. In this line, the high performing education system of Singapore includes high-quality and strong principals, who have long-term visions, and quality teachers (UNESCO, 2011b) which influence the school climate.

The H_{a4} is partially confirmed. The model emerges with four factors that explain the 25.2% of its variance; however, only the distributed leadership acts as a significant factor in this model

which means that it has a positive effect on principal's job satisfaction. School leaders are in charge of improving schools, for that reason, those who opt for encouraging a collaborative culture, for empowering staff or for encouraging distributed leadership (Barker, 2007; Daly, 2009) are promoting less traditional or rigid organisational cultures. Without doubt, high levels of participative practices (Kim, 2002) increase job satisfaction that, simultaneously, has an impact on a shared aim: the school progress. In this model, it is surprising that Brazil has a negative effect on principal's job satisfaction; in fact, the model suggests that considering the other factors in it, Brazilian schools will have the lower principal's job satisfaction as compared to the other two countries. Brazil may consider the possibility of rewarding teachers for their work such as new professional development opportunities, promotions, public recognition or a new role in school improvement (OECD, 2012) and the use of participative strategic planning processes (Kim, 2002).

In summary, this study achieved the goals established but only one of the four hypotheses was totally confirmed. Results suggest that there are several gaps in the literature that could help us to understand how leadership in these countries, and others, impact on other school variables.

Implications for practice

Several lessons are learned from this study, but two important ideas can be translated into a more practised context. On the one hand, women show a tendency to lead in schools through a distributed leadership which is a disadvantage if we consider that they should master both instructional and distributed leadership styles.

On the other hand, both male and female school principals need to attend training activities that help them to understand both leadership styles and to apply them in their specific context. This training could be formally implemented -continuous professional development courses- or informally promoted –communities of practice among principals-. A better

understanding of this topic will impact on a high self-confidence on principals' job and therefore on their job satisfaction and school climate.

Limitations of the study and further researches

The main limitation in this study is the amount of countries selected to be analysed. Even though the three countries were chosen according to their performance in PISA (2012), the addition of more countries that participated in both PISA (2012) and TALIS (2013) would help us to achieve a better understanding of the problem studied. Furthermore, TALIS (2013) provide information about other variables that could explain some of the results; in this respect, our study has a limited range in understanding and explaining leadership styles' impact on school variables.

Aligned with this, the last limitation is the fact that TALIS (2013) only measures two types of leadership styles and even though these are the most powerful to guarantee a quality school, knowing what other leadership styles school principals are currently using -democratic and/or participative, transformational or transactional- could help us understand the topic a bit more.

Furthermore, more countries participating in PISA and TALIS surveys could be analysed in order to compare their results and to understand their academic performance in terms of leadership styles. Primary schools could be also studied if TALIS would include them in their database. Finally, qualitative research could be conducted with the countries and schools analysed in this study in order to deepen the outcomes and establish specific strategies to promote a more distributed and instructional leadership irrespective of their gender, and enhance a more positive school climate and a higher principals' and possibly teachers' job satisfaction.

Reference list

Antonakis, J., Avolio, B.J. and Sivasubramaniam, N. 2003. Context and leadership: An examination of the nine-factor full-range leadership theory using the Multifactor Leadership Questionnaire. The Leadership Quarterly. **14**(3), pp.261-295.

Arias, A.R. and Cantón, I. 2006. El liderazgo y la dirección de Centros Educativos. Barcelona: Davinci Continental.

Aron, A.M. and Milicic, N. 1999. Climas sociales tóxicos y climas sociales nutritivos para el desarrollo personal en el contexto escolar. Revista Psykhé. **2**(9), pp.117-123.

Bartol, K.M. and Martin, D.C. 1986. Women and men in task groups. In: Ashmore, R.D and Del Boca, F.K. Eds. The social psychology of female-male relations. A critical analysis of central concepts. Orlando, FL: Academics Press, pp.259-310.

Bass, B.M. and Avolio, B.J. 1994. Shatter the glass ceiling: Women may make better managers. Human resource management, **33**(4), pp.549-560.

Beycioglu. K. and Pashiardis, P. Coords. 2014. Multidimensional Perspectives on Principal Leadership Effectiveness. Hersey: IGI Global.Bogler, R. 2001. The Influence of Leadership Style on Teacher Job Satisfaction. Educational Administration Quarterly. **37**(5), pp.662-683.

Cáceres, M.P., Trujillo, J. M., Hinojo, F.J. Aznar, I. and García, M. 2012. Tendencias actuales de género y el liderazgo de la dirección en los diferentes niveles educativos. Revista Educar. **48**(1), pp.69-89.

Cuevas, M., García, M. and Leulmi, Y. 2014. Mujeres y Liderazgo: controversias en el ámbito educativo. Journal of Educators, Teachers and Trainers JETT. **5**(3), pp.79-92.

Darling-Hammond, L., Meyerson, D., LaPointe, M. and Orr, M. 2010. Preparing principals for a changing world: lessons from effective school leadership programs. San Francisco: Jossey Bass.

Eagly, A.H. 1987. Reporting sex differences. American Psychologist. **42**(7), pp.756-757.

Eagly, A.H. and Johnson, B.T. 1990. Gender and leadership style: A meta-analysis. Psychological bulletin. **108**(2), pp.233-256.

Eagly, A.H., Johannesen-Schmidt, M.C. and van Engen, M.L. 2003. Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. Psychological bulletin. **129**(4), pp.569-591.

Elmore, R. 2000. Building a new structure for school leadership. Washington, DC: The Albert Shanker Institute.

Fansher, T.A. and Buxton, T.H. 1984. A Job Satisfaction Profile of the Female Secondary School Principal in the United States. NASSP Bulletin. **68**(468), pp.32-29.

Firas, S., Jinan, I. and Paiman, M. 2011. Perceptions towards Distributed Leadership in School Improvement. International Journal of Business and Management. **6**(10), pp.256-264.

Flath, B. 1989. The principal as instructional leader. ATA Magazines. **69**(3), pp.19-22,

Grant, C.P. 2011. The *Relationship between Distributed Leadership and Principal's* Leadership Effectiveness in North Carolina. Ph.D. thesis, North Carolina State University.

Grizzard, T. 2007. The impact of instructional leadership on school climate: A model for principal and teacher improvement, Ph.D. thesis, Tennessee State University.

Gronn, P. 2009. From distributed to hybrid leadership practice. In: Harris, A. Ed. Distributed leadership: Different perspectives. London: Springer, pp. 197-217.

Halverson, R. and Clifford, M. 2013. Distributed instructional leadership in high schools. Journal of School Leadership. **23**(2), pp.389-419.

Hall, C.S. 1984. A ubiquitous sex difference in dreams" revisited. Journal of Personality and Social Psychology. **46**, pp.1109-1117.

Hallinger, P. and Heck, R.H. 2010. Collaborative leadership and school improvement: understanding the impact on school capacity and student learning. School Leadership & Management: Formerly School Organization. **30**(2), pp.95-110.

Harris, A. 2009. Distributed Leadership in Schools: Developing leader tomorrow. London: Routledge & Falmer Press.

Harris, A. 2004. Distributed leadership and school improvement. Educational Management Administration & Leadership. **32**(1), pp.11-24.

Heck, R.H., and Hallinguer, P. 2010. Collaborative leadership effects on school improvement: integrating unidirectional –and reciprocal- effects models. Elementary School Journal. **111**(2), pp.226-252.

Heck, R.H. and Hallinger, P. 2005. The study of educational leadership and management: Where does the field stand today? Educational Management, Administration & Leadership. **33**(2), pp.229–244.

Kanter, R.M. 1977. Men and Women of the Corporation. New York: Basic Books.

Kim, S. 2002. Participative Management and Job Satisfaction: Lessons for Management Leadership. Public Administration Review. **62**(2), pp.231-241.

King, D. 2002. The changing shape of leadership. Educational Leadership. **59**(8), pp.61–63.

Leithwood, K. 1994. Leadership for school restructuring. Educational Administration Quarterly. **30**(4), pp.498-518.

Leithwood, K., Mascall, B. and Strauss, T. 2009. What we have learned, where we go from here. In: Leithwood, B.M.K. and Strauss, T. Ed. Distributed leadership according to the evidence. New York: Routledge, pp. 269–282.

Lieberman, A. and Miller, L. 2004. Teacher leadership. San Francisco, California: Jossey Bass.

Marks, H.M. and Printy, S.M. 2003. Principal leadership and school performance: An integration of transformational and instructional leadership. Educational Administration Quarterly. **39**(3), pp.370-397.

Martín, M. 2000. Clima de trabajo y organizaciones que aprenden. Revista Educar. **27**, pp.103-117.

Martín, M., García, M., Zahonero, A., Aguilera, V. and Alvear, L. H. (2014). Liderazgo y clima de trabajo en las organizaciones educativas. In: Medina, A., Rodríguez, C. and Ansoleaga, D.A. Coords. Desarrollo de las instituciones y su incidencia en la innovación de la docencia. Madrid: Universitas, pp. 365-380.

Martínez, M., Badia, J. and Jolonch, A. Coords. 2013. Lideratge per a l´aprenentatge. Estudis de cas a Catalunya. Barcelona: Fundación Jaume Bofill.

Milicic, N. 2001. Creo en ti. La construcción de la autoestima en el contexto escolar. Santiago: LOM Ediciones.

Mulford, B. 2003. School leaders: challenging roles and impact on teacher and school effectiveness. Tasmania: OECD, Leadership for Learning Research Group.

Murillo, F. J. 2006. Una dirección escolar para el cambio: del liderazgo transformacional al liderazgo distribuido. Revista Electrónica Iberoamericana sobre Calidad, Eficacia y Cambio en Educación. **4**, pp.11-24.

Nguni, S., Sleegers, P. and Denessen, E. 2006. Transformational and transactional leadership effects on teachers' job satisfaction, organizational commitment, and organizational citizenship behaviour in primary schools: The Tanzanian case. School effectiveness and school improvement, **17**(2), pp.145-177.

Nieva, V. F. and Gutek, B. A. 1981. Women and work: A psychological perspective. Santa Barbara, CA: Praeger Publishers.

OECD 2014a. Brazil. Country note. Results from PISA 2012. [Online]. Paris: OECD Publishing. [Accessed 10 September 2015]. Available from: http://goo.gl/yHrgjR

OECD 2014b. Singapore. Country note. Results from PISA 2012 Problem solving. [Online]. Paris: OECD Publishing. [Accessed 12 September 2015]. Available from: http://goo.gl/frKA1C

OECD 2014c. PISA 2012 Results in Focus. What 15-year-olds know and what they can do with what they know. [Online]. Paris: OECD Publishing. [Accessed 18 October 2015]. Available from: http://goo.gl/fYx07r

OECD 2014d. TALIS 2013 Technical Report. [Online]. Paris: OECD Publishing. [Accessed 10 April 2015]. Available from: http://goo.gl/x73HYw

OECD 2013a. Assessing higher education learning outcomes in Brazil. Higher Education Management and Policy. [Online]. Paris: OECD Publishing. [Accessed 28 September 2015]. Available from: http://dx.doi.org/10.1787/hemp-24-5k3w5pdwk6br

OECD 2013b. Leadership for 21st Century Learning, Educational Research and Innovation. Paris: OECD Publishing.

OECD 2012. Spain. Key findings. Results from PISA 2012. [Online]. Paris: OECD Publishing. [Accessed 20 September 2015]. Available from: http://goo.gl/ZxjeQ5

OECD 2011. Lessons from PISA for the United States, Strong Performers and Successful Reformers in Education. [Online]. Paris: OECD Publishing. [Accessed 17 October 2015]. Available from: http://goo.gl/nRE4V7

OECD 2009. Creating effective teaching and learning environments: First results from TALIS. [Online]. Paris: OECD Publishing. [Accessed 10 September 2015]. Available from: http://goo.gl/RBYfud

Oyetunji, M. O. 2006. The relationship between leadership style and school climate in botswana secondary schools. Ph.D. thesis, University of South Africa.

Printy, S.M., Marks, H.M. and Bowers, A.J. 2009. Integrated Leadership: How Principals and Teachers Share Transformational and Instructional Influence. Journal of School Leadership. **19**(5), pp.504-532.

Raczinsky, D. and Muñoz, G. 2005. Efectividad escolar y cambio educativo en condiciones de pobreza en Chile. Santiago de Chile: Mineduc.

Revees, M. 2010. Liderazgo directivo en escuelas de altos niveles de vulnerabilidad social. Ph.D. thesis, University of Chile.

Reynolds, C. Ed. 2002. Women and School Leadership. International Perspectives. New York: State University of New York Press Albany.

Riger, S., and Galligan, P. 1980. Women in management: An exploration of competing paradigms. American Psychologist. **35**(10), pp.902-910.

Rose, H., David, M., and Woodward, D. 1998. An accidental academic. In: David, M. and Woodward, D. Eds. Negotiating the Glass Ceiling: careers of senior women in the academic world. London, Washington, DC: Routledge, pp. 101-113.

Sans-Martín, A., Guàrdia, J., and Triadó-Ivern, X.M. 2015. El liderazgo educativo en Europa: Una aproximación transcultural. Revista de Educación, **371**, pp.83-106.

Sans, A., Guàrdia, J., Triadó X.M. and Cabrera, V. 2014. Las Europas de la educación. Semblanzas y diferencias en las características del liderazgo a partir del informe TALIS. In: Instituto Nacional de Evaluación Educativa Ed. TALIS 2013. Estudio Internacional de la Enseñanza y el Aprendizaje. Informe español. Análisis secundario. Madrid: INEE, pp. 211-228.

Shakeshaft, C. 1989. Women in educational administration. California: Sage Publications.

Silverthorne, C. 2004. The impact of organizational culture and person-organization fit on organizational commitment and job satisfaction in Taiwan. Leadership & Organization Development Journal, **25**(7), pp.592–599.

Spillane, J.P. 2006. Distributed leadership. San Francisco: Jossey-Bass.

Spillane, J., Halverson, R. and Diamond, J. (2000).Toward a theory of leadership practice: A distributed perspective. Evanston, IL: Institute for Policy Research.

Spillane, J.P. and Diamond, J.B. Eds. 2007. Distributed leadership in practice. New York: Teachers College Press.

Tajasom, A. and Ahmad, Z. 2011. Principals' leadership style and school climate: teachers' perspectives from Malaysia. The International Journal of Leadership in Public Services, **7**(4), pp.314-333.

Terborg, J.R. 1977. Women in management: A research review. Journal of Applied Psychology, **62**(6), 647.

UNESCO 2011a. World data on education. Brazil. [Online]. 7th Edition. Geneva: International Bureau of Education. [Accessed 10 September 2015]. Available from: http://goo.gl/tH68IM

UNESCO 2011b. World data on education. Singapore. [Online]. 7th Edition. Geneva: International Bureau of Education. [Accessed 18 September 2015]. Available from: http://goo.gl/T98xnC

Vartanian, T. P. 2011. Secondary data analysis. New York: Oxford University Press.

Volante, P. 2008. Influencia del liderazgo instruccional en resultados de aprendizaje. In: Maueira, Ó. Ed. Perspectivas de gestión para la innovación y el cambio educativo. Santiago: Ediciones Universidad Católica Cardenal Raúl Silva Henríquez, pp. 185-214.

Walumbwa, F.O., Orwa, B., Wang, P. and Lawler, J.J. 2005. Transformational leadership, organizational commitment, and job satisfaction: A comparative study of Kenyan and U.S. financial firms. Human Resource Development Quarterly. **16**(2), pp.235–256.

Appendix 1. Item wordings of the four TALIS scales used in this study.

Scale	Items
Distributed leadership	This school provides staff with opportunities to actively participate in school decisions
	This school provides parents or guardians with opportunities to actively participate in school decisions
	This school provides students with opportunities to actively participate in school decisions
Instructional leadership	I took actions to support co-operation among teachers to develop new teaching practices
	I took actions to ensure that teachers take responsibility for improving their teaching skills
	I took actions to ensure that teachers feel responsible for their students' learning outcomes
School climate of mutual respect	School staff have an open discussion about difficulties
	There is mutual respect for colleagues' ideas
	There is a culture of sharing success
	The relationships between teachers and students are good
Principal job satisfaction - Satisfaction with current work environment	I enjoy working at this school
	I would recommend my school as a good place to work
	I am satisfied with my performance in this school
	All in all, I am satisfied with my job
Principal job satisfaction - Satisfaction with profession	The advantages of this profession clearly outweigh the disadvantages
	If I could decide again, I would still choose this job/position

I regret that I decided to become a principal

Appendix 2. Multiple regressions on Schools' Climate of mutual respect.

	B	SE B	β
Step 1			
Constant	13.161	.088	
Year(s) working as a principal in total	.056	.010	.165*
Step 2			
Constant	13.317	.095	
Year(s) working as a principal in total	.051	.010	.152*
Principals did not attended instructional leadership courses	-.583	.138	-.122*
Step 3			
Constant	13.186	.101	
Year(s) working as a principal in total	.050	.010	.147*
Principals did not attended instructional leadership courses	-.525	.139	-.109*
School located in large city	.451	.126	.103*
Step 4			
Constant	13.177	.101	
Year(s) working as a principal in total	.050	.010	.149*
Principals did not attended instructional leadership courses	-.557	.139	-.116*
School located in large city	.402	.126	.092**
Having a master degree or more	1.110	.372	.086**
Step 5			
Constant	8.193	.444	
Year(s) working as a principal in total	.049	.009	.146*
Principals did not attended instructional leadership courses	-.338	.134	-.070**
School located in large city	.543	.124	.124*

Having a master degree or more	.902	.353	.070**
Degree of distributed leadership in school	.216	.026	.232*
Degree of instructional leadership in school	.179	.028	.179*
Step 6			
Constant	4.613	.504	
Year(s) working as a principal in total	.027	.009	.079**
Principals did not attended instructional leadership courses	-.267	.126	-.056**
School located in large city	.270	.118	.062**
Degree of distributed leadership in school	.172	.025	.185*
Degree of instructional leadership in school	.146	.027	.146*
Principals' job satisfaction level	.366	.029	.341*

Note: $R^2 = .026$ for Step 1, $\Delta R^2 = .01$ for Step 2 (p< .001), $\Delta R^2 = .01$ for Step 3 (p< .001), $\Delta R^2 = .01$ for Step 4 (p< .05), $\Delta R^2 = .10$ for Step 5 (p< .001), $\Delta R^2 = .10$ for Step 6 (p< .001). SE = standard error; * p< .001; ** p< .05.

Appendix 3. Multiple regressions on Principals' Job Satisfaction.

	B	SE B	β
Step 1			
Constant	13.623	.092	
Brazil	-.916	.112	-.233*
Step 2			
Constant	13.158	.114	
Brazil	-.832	.111	-.211*
Year(s) working as a principal in total	.059	.009	.189*
Step 3			
Constant	12.904	.140	
Brazil	-.630	.128	-.160*
Year(s) working as a principal in total	.059	.009	.189*
School located in large city	.406	.132	.100**
Step 4			
Constant	12.696	.161	
Brazil	-.660	.129	-.168*
Year(s) working as a principal in total	.057	.009	.181*
School located in large city	.355	.133	.087**
Principals attended instructional leadership courses	.334	.126	.075**
Step 5			
Constant	12.656	.161	
Brazil	-.654	.128	-.166*
Year(s) working as a principal in total	.057	.009	.182*
School located in large city	.317	.133	.078**

Principals attended instructional leadership courses	.360	.126	.081**
Having a master degree or more	.947	.337	.079**
Step 6			
Constant	12.600	.162	
Brazil	-.650	.128	-.165*
Year(s) working as a principal in total	.036	.012	.113**
School located in large city	.386	.136	.095**
Principals attended instructional leadership courses	.353	.126	.079**
Having a master degree or more	.962	.336	.080**
Year(s) working as a principal at this school	.038	.015	.099**
Step 7			
Constant	12.617	.162	
Brazil	-.627	.128	-.159*
Year(s) working as a principal in total	.036	.012	.114**
School located in large city	.378	.135	.093**
Principals attended instructional leadership courses	.344	.126	.077**
Having a master degree or more	.961	.336	.080**
Year(s) working as a principal at this school	.037	.015	.097**
Principal's role is part-time without teaching obligations	-.533	.259	-.057**
Step 8			
Constant	9.792	.406	
Brazil	-.792	.127	-.201*
Year(s) working as a principal in total	.034	.012	.108**
School located in large city	.387	.135	.095**
Having a master degree or more	.823	.329	.068**

Year(s) working as a principal at this school	.038	.015	.098**
Principal's role is part-time without teaching obligations	-.509	.253	-.055**
Degree of distributed leadership in school	.138	.025	.160*
Degree of instructional leadership in school	.106	.027	.113*
Step 9			
Constant	7.249	.432	
Brazil	-.722	.120	-.183*
Year(s) working as a principal at this school	.036	.014	.093**
Degree of distributed leadership in school	.067	.024	.078**
School climate of mutual respect	.321	.026	.345**

Note: R^2 = .053 for Step 1, ΔR^2 = .03 for Step 2 (p< .001), ΔR^2 = .01 for Step 3 (p< .05), ΔR^2 = .00 for Step 4 (p< .05), ΔR^2 = .01 for Step 5 (p< .05), ΔR^2 = .00 for Step 6 (p< .05), ΔR^2 = .00 for Step 7 (p< .05), ΔR^2 = .04 for Step 8 (p< .05), ΔR^2 = .10 for Step 9 (p< .05). SE = standard error; * p< .001; ** p< .05.