Strategic decision-making in secondary schools: the impact of a principal's demographic profile

Abstract:

Purpose

- Building on arguments drawn from Upper Echelons Theory, this study provides insights into how certain demographic characteristics related to principals —gender, age, tenure and formal education— may facilitate or hinder the adoption of three generic modes of strategic decision-making: autocratic, participative, and collaborative.

Design

- Data were collected from a survey of Spanish secondary schools. The final sample consisted of 105 schools. The survey was administered to the principals at each school. A multinomial logistic regression was used to test the relationships between the study's main variables of interest.

Findings

- There is a positive relationship between principals aged 41-50, those with a tenure at the school equal to or less than 10 years and the likelihood of implementing a participative/ collaborative mode of strategic decision-making. The lower the principal's formal education, the lower the likelihood of adopting a collaborative mode. The effect of a principal's gender is not statistically significant. The adoption of a participative/collaborative mode also depends on other school factors (such as, for example, a lower staff turnover or a higher teacher training).

Practical implications

- The measures adopted by the Spanish educational authorities might make access to the position of principal easier for younger candidates and those with a shorter tenure at the school. They might also encourage those with Master's degree and PhD studies. As there are no significant differences in the way male and female principals make strategic decisions, the educational authorities need "not act as if there really were". Nevertheless, considering that women are still underrepresented in leadership positions in Spanish secondary schools, our findings could also be interpreted as a further call for the adoption of measures that promote greater parity.

Originality

- To the best of our knowledge, there is still a lack of research exploring how certain demographic characteristics and other school factors may influence a principal's adoption of different modes of strategic decision-making. This study may also clarify how school governance works. Over the past few years, scholars, experts and policymakers from around the world have been calling for the need to adopt models that are more participative/ collaborative regarding decision-making in schools. This study could therefore shed light on those factors that most contribute to achieving this aim in a country with high dropout and failure rates.

Keywords: Strategic decision-making, principals, gender, age, tenure, formal education, Spanish secondary schools.

Introduction

Scholars, experts and policymakers in the field of education have traditionally focused on school leadership and its performance, emphasizing the prominent role principals may play as decision-makers when implementing the strategic actions[1] usually required for their school's effective management. Decision-making is essential for principals because schools, like most organizations, are basically decision-making structures (Hoy and Miskel, 2013: 330; Martin et al., 2016). It is a process that ultimately guides the strategic actions adopted by principals, which are based on their beliefs, values and previous experiences. It is clear that principals must know why they adopt particular paths, which specific decision-making model to use, and who to involve (Martin et al., 2016). Principals, like leaders in other organizations, cannot accurately gather or predict all the potential alternatives; they are sometimes aware that other stakeholders deserve to be involved and that input and collaboration might lead to better strategic actions. A key aspect principals might need to consider when choosing different strategic actions is therefore to decide upon the level of involvement in decision-making of other stakeholders, such as teachers, parents or students.

Several studies in education have examined the different options or modes of involvement in decision-making that principals may adopt when they choose different strategic actions, as well as their effects on their schools' performance, teacher empowerment and satisfaction, and student success (e.g., Bogler, 2001; Calabrese and Zepeda, 1999; Cranston, 1991; Leech and Fulton, 2008; Patrinos, Barrera-Osorio, and Fasih, 2009; Pitner, 1988; Weiss and Cambone, 1994). Terms such as 'autocratic', 'participatory', 'collaborative' and 'delegative'[2] have been widely used in the literature in recent years to refer to principals' different approaches to

[1]In general, the strategic actions that principals may adopt refer to those linked to aspects such as the planning of school goals and objectives, the formulation of policies and procedures that inform school operations, curricular development, and teaching and learning processes –choice of materials and methods, design of academic programmes, etc.–, staff development, and school budget management.

[2] The extant literature normally uses interchangeable terms such as autocratic/hierarchical/independent/ directive, participative/consultative, collaborative/consensual/team/group, and delegative/laissez faire.

strategic decision-making (e.g., Bogler, 2001; Cranston, 1991; Martin et al., 2016; Patrinos et al., 2009; Smylie, Lazarus, and Brownlee-Conyers, 1996; Weiss and Cambone, 1994).

This study seeks to provide fresh insights into the potential factors that may facilitate or hinder a principal's adoption of different ways of involving other school stakeholders in strategic decision-making. In this regard, we have singled out three common modes that prior research has traditionally considered in the field of education (e.g., Bogler, 2001; Cranston, 1991; Martin et al., 2016), namely, autocratic, participative and collaborative. Specifically, our main interest is to test whether a principal's demographic profile, together with other school factors, can influence the adoption of each mode. In the case of the demographic characteristics under consideration, we propose several hypotheses. The underlying assumption is that a principal's demographic characteristics, such as gender, age, tenure and formal education, may have a significant influence on the final adoption of each mode. These hypotheses are primarily based on the rationale of Upper Echelons Theory (UET) (Hambrick and Mason, 1984; Hambrick, 2007). A core premise in UET is that leaders' "experiences, values, and personalities, [which are actually examined by considering certain observable demographic characteristics] greatly influence their interpretations of the situations they face and, in turn, affect their choices" (Hambrick, 2007: 334). In the case of other school factors, we have not formulated any hypotheses on the nature of the effect such factors may have on each mode. Our main concern here is to control for their potential effect, without stating a priori what the nature of this effect may actually be. The research setting selected consists of a sample of 105 Spanish secondary schools.

This study makes several contributions. First, it could improve our understanding on the potential determinants of the different modes principals may adopt when making strategic decisions. To the best of our knowledge, there is a lack of empirical studies exploring this issue in the educational field. We also contend that a principal's specific demographic characteristics,

together with other school factors, may facilitate or hinder the exercise of a greater/lower level of involvement in strategic decision-making. This may be a helpful step towards a better understanding of the true workings of school governance. This is also important because scholars, experts and policymakers around the world have been calling for the need to adopt more participative/collaborative decision-making models in schools. The present study could therefore allow us to identify those factors that contribute most to achieving this aim, paying particular attention to a set of personal factors related to the leader managing the school. Moreover, this could also help to guide policies on the future appointments of principals, valuing the adaptation of principal profiles depending on the potential fit between their own personal characteristics and other school factors.

A final contribution involves the choice of the research context (i.e., Spanish secondary schools). Spain is a developed country, but it lags behind many OECD countries both in terms of education spending and academic outcomes.[3] Recent research and reports (e.g., Eurydice, 2013; INEE, 2016; OECD, 2018b; Pont et al., 2008) have also warned of the Spanish education system's lack of efficiency and quality in general and of secondary education in particular, mainly due to factors related to school organization and governance. For example, as noted below, despite the continuous attempts to reform the legislation on education and improve the system's performance in recent years, Spain has not managed to increase its efficiency, and still remains below the OECD average in PISA (OECD, 2015). This study might therefore help to

[3] For example, in terms of public spending on education (expressed as a percentage of GDP and of total government spending, divided by primary, primary to post-secondary, non-tertiary and tertiary levels) in 2014 Spain occupied one of the last positions (6%), far behind countries such as New Zealand (13.2%), Korea (11.2%), Ireland and Iceland (10.1%), Australia (9.6%), Israel and the UK (9.5%), Denmark (9.3%), Canada (8.8%), the United States (8.3%), Norway (8.2%), Sweden (7.6%), the Netherlands (7.5%), Poland (7.4%) and Finland (7.0%). In fact, only five countries are behind Spain (Italy, Russia, Hungary, Czech Republic and Austria) with percentages ranging between 5.5% and 5.9% (OECD, 2018a). In terms of expenditure on secondary education (expressed as a percentage of government expenditure on education) Spain recorded the average for OECD members (36.91%), being outperformed by countries such as France (43.68%), Italy (42.70%), Germany (42.53%) and the UK (40.14%) (The World Bank, 2018). Regarding academic outcomes, the dropout rates in Spanish secondary education are among the highest in the European Union (EU). It is also one of the countries with the highest level of school failure in the EU, and one of the developed countries with the lowest graduation rates in upper-secondary education (Eurostat, 2018, OECD, 2018a).

draw comparisons —identifying potential similarities and differences— with other countries that a priori have better school governance in relation to the specific way principals make decisions that affect the everyday operation of the schools they manage.

Theoretical model and hypotheses

As noted above, this study is based on the rationale of UET. This theory "is built on the premise of bounded rationality" (Carpenter, Geletkanycz, and Sanders, 2004; Hambrick and Mason, 1984; Hambrick, 2007: 334), which refers to human constraints in "accessing, processing, and using information" (Cyert and March, 1963; Holmes et al., 2011: 1072; March and Simon, 1958). Interestingly, this theory assumes that leaders' cognitive bases and personality traits shape their choices by influencing "their personalized interpretation of the strategic situations they face" (Hambrick, 2007: 334; see also Beyer et al., 1997; Carpenter et al., 2004; Wang, Holmes, Oh, and Zhu, 2016). The existence of a potential relationship between leader's cognitive bases and personality traits is also consistent with personality and information-processing theories and with Leithwood and Jantzi's (2005) and Begley and Johansson's (2008) arguments about how certain internal factors and moderators impact and/or moderate leadership behaviors.

A core assumption of UET is that an organization's performance reflects the choices its leaders make, but because it is difficult to collect psychometric data on leaders' cognitive bases, perceptions and personal values, UET suggests that researchers can instead examine certain "observable managerial characteristics as indicators" of these variables (Hambrick and Mason, 1984: 196). Thus, UET scholars have often considered demographic characteristics such as gender, age, tenure or formal education as observable and reasonable proxies for the psychological constructs that shape a leader's interpretation of the internal and external situation and facilitate the adoption of appropriate modes of strategic decision-making (Carpenter et al., 2004; Wang et al., 2016). According with personality and information-

processing theories and with Leithwood and Jantzi's (2005) and Begley and Johansson's (2008) arguments, tenure and formal education are also viewed as internal antecedents since they give rise to leaders' actions and are consciously altered, whereas gender and age can be viewed as moderators since they contribute to moderate what leaders do and they are not alterable.

Figure 1 summarizes the theoretical model and hypotheses that are empirically tested in this study. As noted above, and in line with prior research, we identify three generic modes of strategic decision-making (e.g., Bogler, 2001; Cranston, 1991; Martin et al., 2016): 1) autocratic, 2) participative, and 3) collaborative. These three modes can be defined as follows: a) the degree of authority exerted by the principal in strategic decision-making; and b) the level of stakeholder autonomy or engagement in the school. Thus, the degree of authority exerted by a principal in autocratic decision-making is high compared to both participative and collaborative decision-making, and other stakeholders are not usually involved. Rather, the principal's own perceptions and knowledge are used to decide. On the other hand, the degree of authority in participative decision-making is lower compared to autocratic decision-making, but higher compared to a collaborative one. Moreover, other stakeholders usually contribute with their opinions and suggestions, albeit to a lesser extent than in collaborative decision-making. In this mode, principals consult with other stakeholders but makes their own decisions. In collaborative decision-making, the principal does not usually exercise sole authority, and other stakeholders are highly involved. The principal greatly values the input of school staff and other stakeholders, as all of them are primarily concerned with reaching consensus for mutually beneficial decision-making. Unlike autocratic and participative decision-making, the principal makes joint decisions with other stakeholders.

Insert Figure 1 here

Most importantly, as also illustrated in this figure, we assume a relationship between a principal's observable demographic characteristics (gender, age, tenure and formal education) and the adoption of each mode of strategic decision-making. Finally, as also depicted in this figure, we argue that other school factors may also significantly affect the adoption of each mode of strategic decision-making.

Principals' characteristics and modes of strategic decision-making

Gender

According to the proponents of UET, leaders' cognitive frames (i.e., their information-seeking and information evaluation processes, Hambrick, 2007) "are contingent on their experiences, knowledge and values" (Hambrick and Mason, 1984; Post and Byron, 2015: 1548). Moreover, because such experiences, knowledge, and values condition how principals seek and interpret the information available, leaders' cognitive frames can ultimately play an important role in the shaping of strategic decision-making processes. In general, female and male principals may differ in their cognitive frames, so principal diversity in terms of gender is likely to have a different impact on strategic decision-making processes.

On the one hand, female leaders are likely to have different cognitive frames in the organization due to differences in their experiences and knowledge compared to their male counterparts (Post and Byron, 2015). For example, female leaders could bring different experiences and knowledge to the organization by virtue of their roles and experiences outside of work. Studies examining potential differences between male and female leaders stress that the latter tend to have a more diverse set of non-work interests and a greater sensitivity to the needs of others (e.g., Groysberg and Bell, 2013; Nielsen and Huse, 2010; Zenger and Folkman, 2012). In this sense, compared to their male counterparts, who are frequently more career-centric and concerned with maximizing their financial return from work, female leaders tend to view their work more holistically, as an additional component of their overall life plan (e.g.,

Sperando and Devdas, 2015). These differences in female leaders' interests and social networks might translate into insights of relevance to all stakeholders (Post and Byron, 2015: 1548).

On the other hand, due to differences in values, and as suggested by some researchers (e.g., Post and Byron, 2015: 1548), female leaders' cognitive frames may also influence how strategic decisions are made. A plausible reason for this is that female leaders are also more likely to place greater value on attributes such as understanding, benevolence, empathy, tolerance and interdependence (Adams and Funk, 2012; Helgesen, 1990; Rosener, 1990), which might help elicit information and perspectives from their peers in leadership positions and other agents and stimulate closer collaboration with them. Thus, it is argued that male leaders are more likely to make "decisions using rules, regulations and traditional ways of doing business or getting along", while female leaders are more likely to use more collaborative or more people-focused decision-making approaches (Bart and McQueen, 2013: 97). In this vein, several studies confirm that in strategic decision-making processes women tend to follow more democratic, participative, supportive, and inspirational approaches than men (e.g., Bass and Avolio, 1994; Delaney, Strough, Parker, and de Bruin, 2015; Eagly and Johannesen-Schmidt, 2007; Eagly and Johnson, 1990; Rosener, 1990), which may be especially appropriate for strengthening other people's self-worth and recognition (Eagly, Johannesen-Schmidt, and van Engen, 2003; Eagly and Karau, 1991).

In the field of education, several scholars (e.g., Ortiz and Marshall, 1988; Trinidad and Normore, 2005; Williamson and Hudson, 2001) have been especially interested in exploring the role played by women in educational administration. Most prior studies point out that women usually value close relationships with students, staff, colleagues, parents, and other stakeholders, as a key aspect of school leadership when making decisions and solving problems. As also suggested by Trinidad and Normore (2005: 583), amongst others, it is precisely women's greater concern for shared decision-making and problem-solving with all the school's

stakeholders that leaves enough space to deviate from the more hierarchical or autocratic systems of approval and concentrate on the search for the best solution to most problems in the interests of the greater good. These arguments have been confirmed in both qualitative and quantitative research on school leaders (e.g., Brunner, 1997; Grogan, 1996; Marshall, Patterson, Rogers, and Steel, 1996), where women are actually "identified as more relational and interpersonal, logging in more one-on-one contacts with staff" (Shakeshaft et al., 2007: 117). In a similar vein, gender-related findings from the American Association of School Administrators 2015 Mid-Decade Survey highlight that women are more likely than men to report the major influence the different school stakeholders have on their decisions (Robinson, Shakeshaft, Grogan and Newcomb, 2017). Accordingly, in light of the prior arguments and empirical evidence, it seems logical to argue that, compared to their male counterparts, female leaders in schools prioritise the adoption of more participative and/or collaborative strategic decision-making over an autocratic one. Therefore:

Hypothesis 1: There will a positive association between a female principal and the likelihood of her applying a participative/collaborative mode of strategic decision-making in the school.

Age

In UET, a leader's age is typically viewed as an important indicator of their givens and behaviours. UET theorists have posited that age affects the way in which leaders make strategic decisions because it may have different consequences for their emotional functioning and cognitive ability (e.g., Carpenter et al., 2004; Hambrick and Mason, 1984).

Several empirical studies recognize that certain cognitive abilities (e.g., reasoning, fluid intelligence, working memory, strategic information processing, and problem solving) tend to deteriorate with age (e.g., Bruine de Bruin, Parker, and Fischhoff, 2012; Johnson, 1990; Thornton and Dumke, 2005). Other studies also find that older individuals tend to be less

innovative, more resistant to change, more reluctant to accept relevant changes, more sceptical, less motivated, less trusting, and generally less willing to participate in training and career development (e.g., Ng and Feldman, 2012; Park, 1996), which may also influence relationships with others (e.g., Gooty et al., 2010). Likewise, other studies argue that age generally modifies concerns about the amount of work and effort invested in the leadership role because older individuals become more selective about their work and non-work activities by prioritizing non-work activities, given their more limited future time perspective (e.g., Mor-Barak, 1995; Park, 1996; Zacher and Frese, 2009). In addition, other studies show that younger leaders tend to have better attitudes towards individual and group work and higher work outcomes because they are more likely to show more initiative, enthusiasm and proactivity, have a constant desire to learn, evolve and face different challenges, and feel more appreciated for the work they perform (e.g., Kunze, Raes, and Bruch, 2015). Thus, younger leaders tend to see more opportunities for change within a time horizon that is perceived to extend longer, and they can devote more personal resources to maximizing the future outcomes of their decisions (Park, 1996).

It might therefore be acknowledged that age differences may affect critical aspects of strategic decision-making processes (e.g., Bruine de Bruin et al., 2012; Hitt and Tyler, 1991; Johnson, 1990; MacNeil, 2006; Sanz de Acedo Lizarraga et al., 2007; Taylor, 1975; Thornton and Dumke, 2005). Depending on their age, individuals do not behave in the same way when they make strategic decisions because the significance they allocate to the task or the environmental factors that determine the resolution process differs in certain aspects (Sanz de Acedo Lizarraga et al., 2007). For example, due to their more limited experiences, younger leaders often lack the complex and well-developed cognitive schema of older ones. Moreover, younger leaders "have greater difficulty seeing, understanding, and appreciating the possibility that their ... choices might produce returns below what they envision" (Wang et al., 2016: 781).

Accordingly, they could be more predisposed to collaborate with other stakeholders in strategic decision-making processes. Instead, because older leaders' cognitive schemas have had more time to mature and consolidate (Wang et al., 2016) and tend to show "a greater psychological commitment to the organizational status quo" (Hambrick and Mason, 1984: 198), they might be less willing or able to learn and integrate new information and knowledge from different external and internal stakeholders. In this sense, extant research also reveals that younger managers can be more inclined toward speculative behaviour and decision-making than older ones (e.g., Gardner and Steinberg, 2005; Hitt and Tyler, 1991; Serfling, 2014). In a similar vein, Ireland et al. (1987) suggest that younger executives may place greater value on a more participatory management style in decision-making processes than older ones, and Delaney et al. (2015) show that older people are more likely to have independent or self-controlled decision-making profiles.

As far as we know, there are virtually no empirical studies in the field of education linking a principal's age to the adoption of a specific mode of strategic decision-making. Some noteworthy exceptions, however, are Leithwood (2005) and Piaw and Ting (2014). For example, Leithwood (2005) concludes that principals' age can be viewed as a potential internal antecedent of their behaviours. Likewise, Piaw and Ting (2014) also find that age is a significant predictor of a principal's mindset and leadership style. Yet these studies do not explain in detail how age and the choice of strategic decision-making are actually related. Based on prior research conducted in other types of organizations (e.g., Ng and Feldman, 2012; Zacher and Frese, 2009; Zacher et al., 2011), we contend that younger principals' limited experience and heightened expectations of change may make them more likely to provide both their team members and other stakeholders with more support and confidence by encouraging and engaging them by seeking their views and suggestions during the strategic decision-making

process. A way to achieve this might indeed be to promote more participative/collaborative strategic decision-making. Therefore:

Hypothesis 2: There will be a positive relationship between younger principals and their likelihood of applying a participative/collaborative mode of strategic decision-making in their schools.

Tenure

Tenure is certainly among the most studied characteristics in UET research, and like age it is also considered an important indicator of a leader's prior experience (Finkelstein, Hambrick, and Cannella, 2009; Wang et al., 2016). Tenure "is usually taken to mean time of continuous service with a single organization" (Fritz and Ibrahim, 2010; Lovett and Cole, 2003: 4). Accordingly, tenure is used here to reflect the amount of time a principal has been at his/her current school. Even though it is frequently treated as a demographic characteristic in the literature, it is different to other characteristics such as gender or age because it is based on personal choices (Fritz and Irahim, 2010) and, thus, can be consciously altered by leaders themselves (Leithwood and Jantzi, 2005). This means a leader (i.e., principal) could, to a certain extent, choose to remain in an organization (i.e., school) or leave it.

Like age, UET predicts that tenure affects a leader's cognition, and hence may also play an important role in shaping his/her behaviour and decision-making (e.g., Finkelstein et al., 2009; Hambrick and Mason, 1984; Katz, 1982; March and March, 1977). A leader's longer tenure in the organization could potentially generate changes in his/her attitudes towards work, team members and staff, and represent an accumulated personal investment in time and resources. It could also provide more knowledge, familiarity, and understanding of environmental characteristics and organizational needs, as well as a greater ability to solve problems (e.g., Collins and Smith, 2006; Huang, 1999). Nonetheless, during long tenures, leaders can also accumulate more power, knowledge, and skills to deal with potential pressures from different

internal and external stakeholders (Meyer, 1975; Wang et al., 2016). Thus, as tenure increases, a leader's autonomy may also increase, while the pressure from other members may decrease (Wang et al., 2016). As a result, the leader's willingness to adopt more participative or collaborative strategic decision-making options might be reduced.

Some studies have stressed that leaders with long tenures have a more passive and less change-oriented leadership style (e.g., Ng and Feldman, 2012; Zacher et al., 2011). In a similar vein, Kellermanns and Eddleston (2004) argue that a leader's long tenure might stifle the lively consideration and debate of ideas and divergent points of view, which would, to a certain extent, be consistent with the adoption of more hierarchical modes of strategic decision-making. Likewise, other researchers suggest that the longer the tenure, the more likely a leader will be psychologically committed to the organizational status quo, and firmly justify maintaining it (e.g., Finkelstein et al., 2009; Finkelstein and Hambrick, 1990; Henderson, Miller, and Hambrick, 2006; Miller and Shamsie, 2001; Sharma and Rai, 2003). This increasing commitment to the status quo might also be incompatible with the constant questioning of ongoing ideas, proposals or practices that usually involve the adoption of more participative or collaborative modes of strategic decision-making.

As also occurred for age, there seem to be a lack of studies examining the potential effects of a principal's tenure on the adoption of different modes of strategic decision-making. Nevertheless, based on prior arguments and empirical research conducted in other types of organizations (see, for example, Finkelstein and Hambrick, 1990; Henderson et al., 2006; Miller and Shamsie, 2001; Sharma and Rai, 2003), we suggest that principals with a longer tenure might behave in a more authoritarian manner than their colleagues with shorter tenures. In contrast, because they are less familiar with the school's operation and organizational culture, principals with shorter tenures are more likely to be open and willing to accept the advice and

opinions of other stakeholders, and may be readier to adopt more participative/collaborative styles of strategic decision-making. Therefore:

Hypothesis 3: There will be a positive association between the short tenure of a principal and their likelihood of adopting a participative/collaborative mode of strategic decision-making in their school.

Formal education

It refers to the number and/or level of formal qualifications leaders may have, including any postsecondary degrees (such as a Master or PhD) they may hold. According to the UET, a leader's educational background may be considered an indicator of his/her knowledge, skill and competence base. In this regard, it is suggested that both the amount of education and its type are relevant, as to some extent they serve as proxies of her or his values, cognitive preferences, and so on (Carpenter et al., 2004; Hambrick and Mason, 1984; Hitt and Tyler, 1991). Thus, based on personal values, cognitive preferences and formal education, one might expect those with more education to use different cognitive models in strategic decision-making than those without such formal education (Hambrick and Mason, 1984; Wang et al., 2016). As occurs with tenure, it can also be viewed as an internal factor that may be consciously altered by leaders themselves (Leithwood and Jantzi, 2005).

Finkelstein et al. (2009: 106) contend that because leaders "typically are many years beyond their formal education, it may seem unlikely that their educational experiences would affect their current strategic choices and behaviors". However, a large body of research has recognized that the formal education of leaders might be mirrored in the characteristics of the organizations they manage. For example, Hambrick and Mason (1984) have hypothesized about the potential existence of a positive relationship between the level of leaders' formal education and their ability to make more innovative decisions in their organizations. In a similar vein, Hunter (1986) and Wally and Baum (1994) have argued that leaders' formal education may help

them make decisions faster and acquire and process more complex information. Formal education may also signal a leader's innate and permanent curiosity and openness to novel concepts and ideas. It is frequently argued that those leaders with high levels of formal education are more likely to be more open-minded (e.g., Rogers and Schoemaker, 1971; Wee, Lim, and Lee, 1994). In this regard, some researchers have also suggested that individuals with more education are often more receptive to new ideas from other stakeholders (e.g., Thomas, Litscert, and Ramaswamy, 1991). Furthermore, such education may also furnish leaders with the absorptive capacity necessary to understand and process information about continuously changing situations affecting their environments and organizations (Wang et al., 2016).

In support of these prior arguments, for example, Kimberly and Evanisko (1981) have found that formal education is positively related to individuals' receptivity to innovation and change (see also Marvel and Lumpkin, 2007; Ng and Feldman, 2009). By extension, a leader's formal education may also increase their desire to pursue more novel and complex ways of doing things or making decisions. Education level has also been linked to the extent people search for and analyze information (e.g., Dollinger, 1984). It is also argued that a highly-educated leader is more likely to demand more detailed information when he/she has to deal with different issues —and especially with new and complex ones—, with the aim of making a more rational-comprehensive strategic decision (Bantel, 1993; O'Reilly, 1982). This also suggests that a high level of education might be associated with hierarchical decentralization and lateral communication in an organization (Papadakis, 2006), with the aim of facilitating the exchange and sharing of ideas, information and feelings between the different stakeholders. Based on these arguments, we may speculate that those school leaders with a high level of education are more likely to adopt a more participative/collaborative mode of strategic decision-making than their colleagues with more basic education. Therefore:

Hypothesis 4: There will be a negative association between a low level of formal education of a principal and the likelihood of adopting a participative/collaborative mode of strategic decision-making in the school.

The Spanish education system: Some considerations on a principal's role

The Spanish education system was dominated by a non-professionalization model for most of the 20th century. In general, this model was characterized by a method of appointing school leaders without any prior training or specific profile. However, the last few decades, mainly from the mid-1980s onwards, have witnessed different reforms aimed at the greater professionalization of principals and their empowerment in strategic decision-making. In this sense, the two latest educational reforms enacted in Spain — the Organic Law on Education (Ley Orgánica de Educación, LOE) passed in 2006, and the Organic Law for the Improvement of Educational Quality (Ley Orgánica para la Mejora de la Calidad Educativa, LOMCE) passed in 2013— have been clear attempts in this direction, as one of their main purposes regarding school leadership is to achieve 1) more effective management and 2) more shared decision-making.

Specifically, the reform linked to the LOMCE—in force during the period in which this study was conducted—sought to enhance the managerial function by creating a more managerial model, while also seeking to reinforce school autonomy. This reform is precisely committed to the exercise of greater pedagogical and management leadership that also manages to involve most of the school community in the teaching and learning process. In addition, one of the most innovative aspects of this reform for principals concerns their ability to manage the Educational Quality Project that might foster curricular diversity and specialization.

Although the LOMCE establishes greater autonomy for schools and more decision-making capabilities for school leaders (mainly in terms of curriculum and schedules within a national framework), there are still major differences in relation to what happens in many other OECD

countries. The Spanish educational system is also relatively more decentralized, and most decisions in secondary education are taken either by the autonomous communities (regions) or by the central government (state), with schools still having less decision-making power than would be desirable (e.g., OECD, 2018b; Pont et al., 2008).[4] Therefore, compared to principals in other countries with ample decision-making powers in many school-related issues, Spanish principals still have little autonomy.

Unlike Spain, many countries also require formal induction programmes for principals that typically last several months, as well as headship licenses —e.g., England, Sweden, Hungary, Ireland and Slovenia— (OECD, 2018b; Pont et al., 2008). In Spain, to be a teacher, and consequently access the position of principal in secondary education, the minimum requirement is to have a basic level of formal education: a bachelor's (or undergraduate) degree. Furthermore, the majority of principals in other countries have more in-service professional training for school leadership. On the other hand, the selection criteria for candidates used in Spain are generally leadership experience, teaching background and the submission of a work proposal for the school. However, unlike many other countries, less importance is given to interpersonal and personal skills or vision/values for school leadership. In addition, regarding recruitment procedures, while in other countries school principal positions are nationally advertised, in Spain preference is explicitly given to candidates from the same school (mainly in the case of state schools). This tends to restrict the pool of applicants from which recruiters can choose, as qualified candidates from other schools or regions may be deterred from applying (INEE, 2016; Pont et al., 2008).

[4] For example, most of the decisions that affect secondary education in many OECD countries are taken at school level (e.g., the Netherlands, the UK, Belgium, Estonia, Slovenia, Ireland, Australia and New Zealand) or at local level (e.g., Canada and the United States). Such countries have models of *school empowerment* or *local empowerment.*[4] In countries where *school empowerment* prevails, the teaching staff, parents and community representatives are often formally or informally included in the school-level decision-making process, and school leaders need to continuously negotiate stakeholders' demands (OECD, 2018b).

Methodology

Data collection and sample

The empirical analysis for testing our hypotheses is based on data from a survey of Spanish secondary schools in the Community of Madrid, which is one of the regions that most contributes to Spain's GDP (18.9%) and population (13.9%). The survey collected information on different issues related to the schools' organization and operation, their management teams, and teachers. We drafted many of the questions in the survey following the guidelines of the OECD Teaching and Learning International Survey (TALIS)— Principal Questionnaire.

The first step in the sampling process involved identifying the total population of secondary schools in the Community of Madrid. We retrieved the information available on the website of the Department of Education of the Community of Madrid. According to this information, the target population consisted of 597 schools (the total number of secondary schools in the Community of Madrid when the study was conducted). The second step involved the preparation of a questionnaire that was emailed to the principal at each school. Although many of the questions included in our questionnaire were based on the TALIS guidelines, the questionnaire was also first reviewed and discussed by several academics. Additionally, we held face-to-face interviews with the principals and several teachers from two schools in order to receive feedback on the clarity of the questions included in the questionnaire, thereby ensuring that unfamiliar and ambiguous terms or issues were not included in any of the questions and that the questionnaire was as concise as possible. This process improved its content, design, wording, and clarity, thus making potential completion of the questionnaire easier and more attractive.

A customized survey was considered the most appropriate manner to collect data because, to our knowledge, comprehensive and detailed archival information on the issues examined

were not available from secondary sources[5]. The survey was administered via email by the authors of this research. The survey was directly sent to the principals of each secondary school in the Community of Madrid (i.e., 597 principals). Thus, in terms of sampling strategy, it can be said that in our study all secondary schools (i.e., principals) in the Community of Madrid had an equal probability of being invited to participate (i.e., responding to the questionnaire proposed). Data were collected between May and September 2015. After three follow-up reminders, a total of 105 usable questionnaires were returned via email, which represents approximately 17.60% of the target population. This response rate is comparable to most prior studies using this type of primary source (e.g., Fricker and Schonlau, 2002; Manfreda et al., 2008).

We performed a χ^2 test and *one-sample t-test* to check whether there were significant differences between the reference population and our study sample. These tests are used to check the representativeness of our sample and, thus, to know if we will be able to confidently generalize the results of our study to that population. We used the following two variables as we had available complete information on them (both for our sample and the reference population considered in the course 2014-2015). The variable *district* was used for conducting the χ^2 test, as all secondary schools are grouped by districts or geographical areas in the Community of Madrid (Madrid City, Madrid North, Madrid South, Madrid West, and Madrid East). The χ^2 were 6.653 (p=0.155). *School student achievement* (measured as the average score obtained by each school in the standardized university admission test conducted at the end of the academic year) was used for conducting the *one-sample t-test*. The data on this latter variable were obtained from the website of the Department of Education of the Community of Madrid. In this case, we compared the mean value of this variable in our sample (6.2004) with the average value for the whole population of secondary schools in the Community of Madrid

[5] We have not used the TALIS database because, at the precise moment of conducting the present study, we had no access to most information in this database.

(6.37). The *t* values were -0.265 (p=0.791). These findings show that there were no statistically significant differences between the schools included in the whole population and the final sample in terms of geographical areas and student achievement. To a certain extent, these findings could be interpreted as a clear indication of sample representativeness and the potential absence of selection bias in our empirical study.

Variable measurements

The dependent variable of interest is *Modes of strategic decision-making.* Based on prior research (e.g., Bogler, 2001; Cranston, 1991; Friedman, 1985; Martin et al., 2016; Vroom and Yetton, 1973), we identified three main modes[6]: 1) autocratic, 2) participative, and 3) collaborative. As in most past research, this variable is measured at a nominal level. Specifically, principals were asked to directly indicate which specific mode of strategic decision-making best fitted their approach according to the following three options. *Option a) In general, most strategic decisions are made by the principal without considering the opinions of other stakeholders (i.e., teachers, parents, or students). Option b) Other stakeholders actively participate in strategic decision-making giving advice and suggestions, although the final decision is made by the principal. Option c) There is a strong collaborative culture in the school, which is characterized by mutual support among the principal and other stakeholders in strategic decision-making, and so the final decision is made collectively.* Options a, b and c are related to an autocratic, participative and collaborative type of strategic decision-making, respectively. *Modes of strategic decision-making* takes a value of 0 when principals chose Option a, and a value of 1 and 2 when they chose Options b and c, respectively.

[6] Most prior studies identify four modes: In addition to autocratic, participative and collaborative, they consider a delegative or laissez faire mode ―where the principal gives one or more stakeholders the authority to decide. Because none of the principals mentioned this mode in our study, we have discarded it. On the other hand, our measure does not rule out the likely coexistence of different modes depending on the specific issue/aspect considered, but it is also clear that it reflects the potentially dominant mode adopted by principals to make most strategic decisions.

The main independent variables of interest were as follows. *Principal's gender* is a dichotomous variable taking a value 1 if the principal was a woman and 0 if the principal was a man. *Principal's age* was measured on a scale in years from 1 to 4, where 1= ≤ 40, 2= 41-50, 3 =51-60, and 4= >60. *Principal's tenure* used a scale from 1 to 3, where 1 = ≤ 10 years at the school, 2= 11-20 years at the school, and 3= > 20 years at the school. *Principal's formal education* was a dichotomous variable taking a value 0 if the principal only had a bachelor's degree and 1 if he/she also had a Master's degree or a PhD.

The empirical model also included a set of control variables related to school factors, which could also have an effect on the way of making strategic decisions. Many of these variables have also been used in prior research (e.g., Du Plessis, Carroll, and Gillies, 2015, 2017; Ingersoll and Merrill, 2011). All these variables were obtained by directly asking principals for the following information. *School size* indicated the total number of secondary-level teachers. *Staff instability* was measured as the percentage of teachers with fewer than five years' service at the school. *Teacher training* was measured as the percentage of teachers who carry out continuous training (for instance, attendances at courses, seminars in person or online, or team teaching with experienced teachers).

Statistical procedure

We specified a multinomial logistic model with three possible outcomes for the dependent variable for a given observation: autocratic, participative, and collaborative. Multinomial logistic regression is frequently used to predict categorical placement in or the probability of category membership on a dependent variable based on several independent variables. The dependent variable is measured at the nominal level, while explanatory variables can be either dichotomous (i.e., binary) or continuous (i.e., interval or ratio in scale). Multinomial logistic regression is considered an extension of binary logistic regression, which allows for more than two categories of the dependent or outcome variable. Like binary logistic regression,

multinomial logistic regression uses maximum likelihood estimation to evaluate the probability of categorical membership (in our case, the three modes of strategic decision-making adopted by principals). Variable selection or model specification methods for multinomial logistic regression are similar to those used with standard multiple regression. The Pseudo R-square is treated as a measure of effect size, similar to how R-square is treated in standard multiple regression. In multinomial logistic regression, there are several Pseudo R-square measures (Cox and Snell, Nagelkerke and McFadden). Nonetheless, these types of metrics do not represent the amount of variance in the outcome variable accounted for by the predictor variables. In general, higher values indicate better fit, but they should be interpreted with caution. Of much greater importance is the Likelihood Ratio chi-square test, which is an alternative test of goodness-of-fit.

In a first step, we entered only the control variables (this is the basic model). In a second step, we entered only the independent variables of interest (i.e., gender, age, tenure, and formal education). In the last step, we consider all independent and control variables together (this is the full model). We maximized the likelihood function based on cumulative logistic distribution, and normalized the model by setting the parameters for the outcome associated with autocratic to zero. Therefore, the first level of the outcome variable (i.e., autocratic = 0) was treated as the reference level. This statistical tool was chosen because it also allowed gauging the extent to which the factors influencing the modes of participative and collaborative strategic decision-making were similar or not. Ultimately, this analysis also allowed us to identify commonalities and differences between all the types considered.

Results

Table 1 presents the descriptive statistics and the correlations of all the variables used in our study sample. Approximately 24% of the principals in our sample have adopted an autocratic mode of strategic decision-making, while approximately 60% have adopted a participative

mode, and the remaining 16% a collaborative one. In 38% of the schools in our sample, the principal was a woman. The principal's average age ranged between 51 and 60, and the principal's average tenure at the school was between 11 and 20 years. On the other hand, 35% of the principals in our sample had a Master's degree and/or a PhD. Moreover, it can be seen that multicollinearity is not a problem in our empirical study because the correlations between the explanatory variables are lower than 0.212, and this is one of the main assumptions that should be met to apply multinomial logistic regression analysis.

Insert Table 1 here

Table 2 presents the results of the multinomial logistic regression analysis regarding the determinants of adopting each mode of strategic decision-making considered. Columns 1 and 2 only show the effects of the control variables on the probability of adopting a participative and collaborative mode, respectively (as noted above, an autocratic mode is considered the reference level). Columns 3 and 4 only show the potential effect of the independent variables of interest (i.e., gender, age, tenure and formal education). Finally, Columns 5 and 6 consider the effects of all explanatory variables simultaneously (i.e., control and independent variables).

Insert Table 2 here

Columns 3-6 show that the principal's gender and the probability of adopting a participative or collaborative mode of strategic decision-making are not statistically correlated. In light of these results, we find no support for Hypothesis 1, whereby a positive association was expected between educational organizations with women-led management teams and more participative/collaborative modes of strategic decision-making.

Columns 3-6 reveal that a principal's age (if between 41 and 50) and the probability of adopting participative and/or collaborative modes of strategic decision-making are significantly and positively correlated. These findings are consistent with the arguments contained in

Hypothesis 2. Specifically, our findings confirm a positive association between young principals and the likelihood of adopting a more participative/collaborative mode in relation to their older counterparts.

Columns 3-6 also reveal that the likelihood of adopting a participative and/or collaborative mode and the principal's tenure at the school are significantly and positively correlated when the principal has been at the school for 10 years or less. These results are consistent with Hypothesis 3, whereby a positive association was expected between principals with a shorter tenure at the school and the likelihood of implementing a participative/collaborative mode of strategic decision-making rather than an autocratic one.

Columns 3-6 also show that the likelihood of applying a collaborative mode and the principal's formal education, when a principal only has a Bachelor's degree, are negatively and significantly correlated (see Columns 4 and 6). These findings are, to a certain extent, in consonance with the arguments contained in Hypothesis 4, whereby a negative association was expected between principals with lower levels of formal education and the likelihood of adopting a participative/collaborative mode of strategic decision-making in their schools. Thus, we can conclude that our results provide some statistical support for Hypothesis 4.

Interestingly, Columns 1-2 and 5-6 show that the likelihood of adopting a participative/collaborative mode of strategic decision-making is closely related to certain other variables involving other school factors. The variable *staff instability* has a negative and statistically significant association to the adoption of a participative and a collaborative mode (see Columns 5-6) while *teacher training* has a positive and statistically significant association with the same modes (see Columns 1-2 and 5-6).

The likelihood ratio χ^2 of 37.420 in Columns 1-2 ($p<0.01$), 54.206 in Columns 3-4 ($p<0.001$) and 92.231 in Columns 5-6 ($p<0.001$) indicate that our different models as a whole fit significantly better than a null model (i.e., a model with no predictors). Interestingly, the

introduction of a principal's characteristics seems to significantly improve the fit of the model that considers only control variables. All *Pseudo* R^2 values in Columns 3-4 and 5-6 are always higher than in Columns 1-2. Finally, the fact that the *Pearson* χ^2 statistics in all our models is not statistically significant also means that all our models fit the data well.

In order to provide additional evidence on the robustness of our findings, we have estimated several alternative models considering other type and number of control variables as well as the combined effects between some independent variables of interest. For example, besides *school size* and *staff instability* we now consider as control variables the following: *financial resources* used a scale from 1 to 4 to measure whether, according to the principal, the overall school budget was considered sufficient to meet all its needs (1= completely disagree that the overall budget is sufficient; 4= completely agree that the overall budget is sufficient); *teacher specialization* is a continuous variable, measured as the percentage of teachers assigned to teach according to their fields of specialty and training, and *teacher workload* indicated the average number of groups taught by each teacher according to the school's academic planning, and takes two values: 1= fewer than or equal to four groups; and 2= more than four groups. Similar variables have also been used in prior research (e.g., Du Plessis, Carroll, and Gillies, 2015, 2017; Ingersoll and Merrill, 2011). And also drawing from prior research (e.g., Barbuto et al., 2007; Coleman, 2012; van Engen and Willemsen, 2004), we not only examined the individual effect of the principals' demographic profile but also the combined effects of some of these characteristics. Thus, the empirical model added two other variables of interest: the interactions between *Principal's gender* and *Principal's age*, on the one hand, and *Principal's formal education* and *Principal's age*, on the other.

Table 3 in Appendix shows the results of these estimations. Columns 1 and 2 show the effects of the control variables on the probability of adopting a participative and collaborative mode, respectively (as noted above, an autocratic mode is considered the reference level) (this

is the basic model). Columns 3 and 4 also include the individual effects the main independent variables of interest have on each mode. Columns 5-6 and 7-8 add the potential impact of the interaction between gender and age and formal education and age, respectively. Overall, it can be seen that the results regarding the potential relationship between the independent variables of interests (i.e., gender, age, tenure, and formal education) and the probability of adopting a participative and/or collaborative strategic decision-making approach are practically identical to those that appear in Table 2.

Discussion and conclusions

The main purpose of this study was to explore how a set of variables can contribute to the adoption of different modes of strategic decision-making by principals. Specifically, we investigated whether certain demographic characteristics associated with principals (gender, age, tenure and formal education) and other school factors can be considered determinants that facilitate or inhibit such adoptions. This is one of the first attempts in the educational field to explicitly explore this issue. In light of our results the most prominent demographic influencers on the choice of modes of strategic decision-making by principals in our sample of study (and particularly on the choice of a participative and/or collaborative mode) are the following: principal's age (especially when the principal's age is in the interval between 41–50 years), principal's tenure (when the principal has been at the school during a period equal to or lower than 10 years), and principal's formal education (when the principal has a Master's degree or PhD studies).

Our findings consistently reveal that principals aged 41-50[7] were more likely to adopt a participative or collaborative mode of strategic decision-making. These findings are consistent with the results reported by past research in other types of organizations (e.g., Kunze et al.,

[7] At this point, it is interesting to note there are few principals aged under 40 in Spain —the average age is 49.4—, given some of the essential requirements for this position (see, for example, OECD, 2018; Pont et al., 2008).

2015; Ng and Feldman, 2012; Zacher and Frese, 2009). Prior research suggests that younger principals are more likely to have more initiative, enthusiasm, proactivity and a constant desire to learn, so they might also show a greater willingness to listen and consider points of view from other stakeholders when dealing with and seeking to resolve different problems. This quality generally requires the adoption of a participative or collaborative mode of decision-making to obtain these people's active involvement.

Likewise, our results consistently highlight a positive relationship between principals with a shorter tenure at the school and the likelihood of adopting a participative or collaborative mode of strategic decision-making, compared to their counterparts with longer tenures. This is also consistent with prior research in other types of organizations (e.g., Collins and Smith, 2006; Finkelstein and Hambrick, 1990; Henderson et al., 2006; Huang, 1999; Miller and Shamsie, 2001; Sharma and Rai, 2003). Thus, because a principal with a shorter tenure at the school is usually less familiar with its operations and culture, like a younger principal he/she might be more open and willing to accept advice and perspectives from other stakeholders. And it seems clear that a greater degree of involvement of other stakeholders might generally be easier to achieve when the principal adopts participative or collaborative modes of strategic decision-making.

Regarding formal education, our findings consistently indicate a negative relationship between a lower level of formal education among principals and the implementation of a participative/collaborative mode of strategic decision-making. Specifically, our findings suggest that the lower the principals' education level, the lower the likelihood of implementing a collaborative mode. This means that a principal's formal education involving a Bachelor's degree (which in the case of schools considered in this study coincides with the minimum level required to be a teacher and, ultimately, hold the position of principal) might be considered an important factor in inhibiting the adoption of a more collaborative mode of strategic decision-

making at the sample of schools under study. Alternatively, our results suggest that a principal holding a Master's degree or PhD can guarantee to a greater extent the adoption of a more collaborative strategic decision-making at school. This is also in consonance with findings of some prior studies (e.g., Kimberly and Evanisko, 1981; Marvel and Lumpkin, 2007; Ng and Feldman, 2009).

With respect to gender, our findings consistently show there are no statistically significant differences in the choice of the different modes of strategic decision-making, especially when the characteristics are individually considered. In other words, the adoption of each mode seems to be independent of gender in our study sample. This means there are more similarities than differences in the way women and men make strategic decisions in the sample of schools considered. These results are also consistent with those reported by other researchers (e.g., Coleman, 2002; Grogan and Shakeshaft, 2011), who suggest there is no determinism in the way in which women principals lead or manage schools —i.e., not all women (like men) operate in a similar way when they make strategic decisions.

In line with prior research conducted in other types of organizations (e.g., Barbuto, 2005), the adoption of one or other mode of strategic decision-making is also heavily influenced by other school characteristics not directly under the principal's control. With respect to these conditions, our econometric analysis provides strong statistical evidence that a principal is more likely to adopt a more participative and/or collaborative mode under the following situations: there is a lower staff turnover or teacher training is higher.

Practical implications

Our findings have some interesting practical implications. As noted above, the greater involvement of different stakeholders in strategic decision-making has become one of the key objectives of the so-called *school-based management policy* that has recently been rolled out in most countries around the world. In fact, our study confirms that most principals in the sample

considered (76%) have adopted modes that involve a greater collective involvement in their decision-making (i.e., participative and collaborative). Therefore, if one of the goals is to achieve this greater participation or involvement, according to our findings the measures taken by the Spanish educational authorities might be aimed at facilitating greater access to the position of principal for younger people, those with shorter tenures, and with higher levels of formal education.

In many countries, there is a new emphasis on breaking hierarchical models of leadership to enable talented, well-trained and dedicated younger or newcomer candidates to access leadership positions (e.g., Pont et al., 2008). In this regard, our findings suggest that the Spanish educational authorities might rethink/overhaul the current recruitment procedures and/or selection criteria for potential candidates for the principal position. Nowadays, such criteria are primarily based on the importance of seniority and tenure in the same school. The new criteria might value more the principal's abilities or vision/values for school leadership. It is not about erecting barriers for older candidates and, hence, have a long tenure in the school, but instead to increase the opportunities for younger teachers and newcomers who may be perceived as highly desirable candidates in view of their competences, abilities and values.

Our study also reveals there are no significant differences in the way women and men make strategic decisions in the sample of Spanish schools considered. As pointed out by Powell (1990: 71) in the case of business firms, if there are no such differences educational authorities might "not act as if there really were", which might lead to the adoption of the following two measures: First, "To be gender-blind in their decisions regarding open managerial positions and present or potential [principals] except when consciously trying to offset the effect of past discrimination". Second, "To try to minimize differences in the job experiences of the male and female [principals], so that artificial sex differences in career success do not arise" (Powell, 1990: 71). Women in Spain are still under-represented in management and leadership positions

in secondary schools. Specifically, according to the Ministry of Education, Culture and Sports (MECD), women accounted for 34.8% and 37.3% of principals in secondary schools in Spain in 2015 and 2016, respectively (MECD, 2016) —in our sample, 38% of principals are women. It is true that progress has been made towards gender equality in Spain in recent years, but more work remains to be done, as there are still barriers to women's access to leadership positions in most organizations in general, and in schools in particular. Thus, because there is still an underrepresentation of women principals in the sample of schools considered, it could be argued that being 'gender blind' in such a situation would not be helpful, and might even validate the existing discrimination. This recommendation might be applicable to any country where the proportion of women principals is similar to the Spanish case considered here.

As noted above, in Spain, as in many other countries (e.g., France, Germany, Greece, Portugal, Canada, Japan and Mexico), some of the most important decisions on staff management are taken by state, regional or local authorities. Principals at Spanish state schools cannot currently hire teachers, although they may implement control mechanisms. Our findings, therefore, suggest that if the aim is truly to foster more collaborative or participatory approaches at schools it might be advisable to give more autonomy or freedom to school leaders regarding decisions on the management of their own staff, especially when recruiting new teachers in state schools, as occurs in other countries. Principals are more in touch with the day-to-day, and so no one is more familiar with the specific needs of the schools they are managing. In a similar vein, it might also be advisable to state as a prerequisite to have a Master's degree or PhD studies for The existence of a potential relationship between leader's holding the position of principal at schools.

Limitations and future research directions

Our results need to be considered in light of a number of limitations. First, we are aware the questionnaire has provided us with relatively easy access to the population examined in this

analysis, but it has not allowed us to explore each school's individual circumstances and observe in detail the work, performance and decisions of the principals and stakeholders. The limitations regarding the possible subjective nature of part of the information contained in the questionnaire, and therefore used to construct certain variables, would likewise be applicable here. While most of the measures of variables used in our study can be considered suitable (as they have also been used by other researchers), additional insights into their association may be gained by adopting measures of several variables of interest that reflect different perspectives. This could be the case, for example, of the variable associated with the mode of strategic decision-making adopted by principals. It would be interesting to ask other stakeholders to see whether they share the same perceptions. This study has focused on three specific modes of decision-making that have attracted the attention of many researchers in recent years. Nonetheless, because the discussion on the way principals make their decisions seems to be shifting to other options, such as values-led/moral/spiritual modes, it would also be interesting to discover the extent to which these modes are present in Spanish secondary schools.

Further research also needs to examine the combined effects that the demographic characteristics (i.e., internal factors and moderators), as well as other school or external factors, have on different modes of strategic decision-making. Moreover, it could be interesting to considerer the interaction between these characteristics and principals' other personality traits. This is undoubtedly a complex issue, and future research might explicitly address it to gain a better or more precise picture of the phenomenon. Although the study's cross-sectional nature precludes claims of causality, additional research adopting a longitudinal design would provide interesting insights into the direction of the relationships between the main variables of interest. This type of study would also be useful to see whether or not the modes of decision-making that involve other stakeholders are in fact dominant over time. Likewise, the results obtained need to be framed within the specific nature of the organizations and context analysed. This

renders it expedient to conduct a similar study on another kind of educational organization (e.g., primary schools or universities) and/or national contexts to verify the extent to which the findings are more or less consistent with the ones reported here. This might be particularly interesting because, for example, the gender balance is different depending on the educational level, with women leaders predominating at primary level and men leading higher education, although there are also major differences across countries. Undoubtedly, this analysis of different educational contexts would be especially helpful to better understand the potential impact of the so-called external factors on leadership behaviors (Leithwood and Jantzi, 2005).

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TABLE 1

Descriptive Statistics (mean and standard deviation) and Correlations

	Mean	s.d.	1	2	3	4	5	6	7
1. Modes of strategic decision-making	1.91	0.64							
2. Principal's gender	0.38	0.49	0.043						
3. Principal's age	2.67	0.77	-0.295*	-0.043					
4. Principal's tenure in the school	2.05	0.79	-0.279*	-0.023	0.201*				
5. Principal's formal education	0.35	0.48	0.384*	-0.086	-0.122	-0.070			
6. School size	41.76	18.82	-0.173	-0.061	0.162	0.144	-0.093		
7. Staff instability	0.32	0.24	-0.100	-0.107	-0.178	-0.208*	-0.002	-0.002	
8. Teacher training	0.64	0.24	0.476***	0.032	-0.212*	-0.038	0.169	-0.150	-0.026

* $p<0.05$; ** $p<0.01$; N= 105.

TABLE 2

Multinomial Logistic Regression (*Dependent variable=Modes of strategic decision-making; Autocratic is the reference level*)

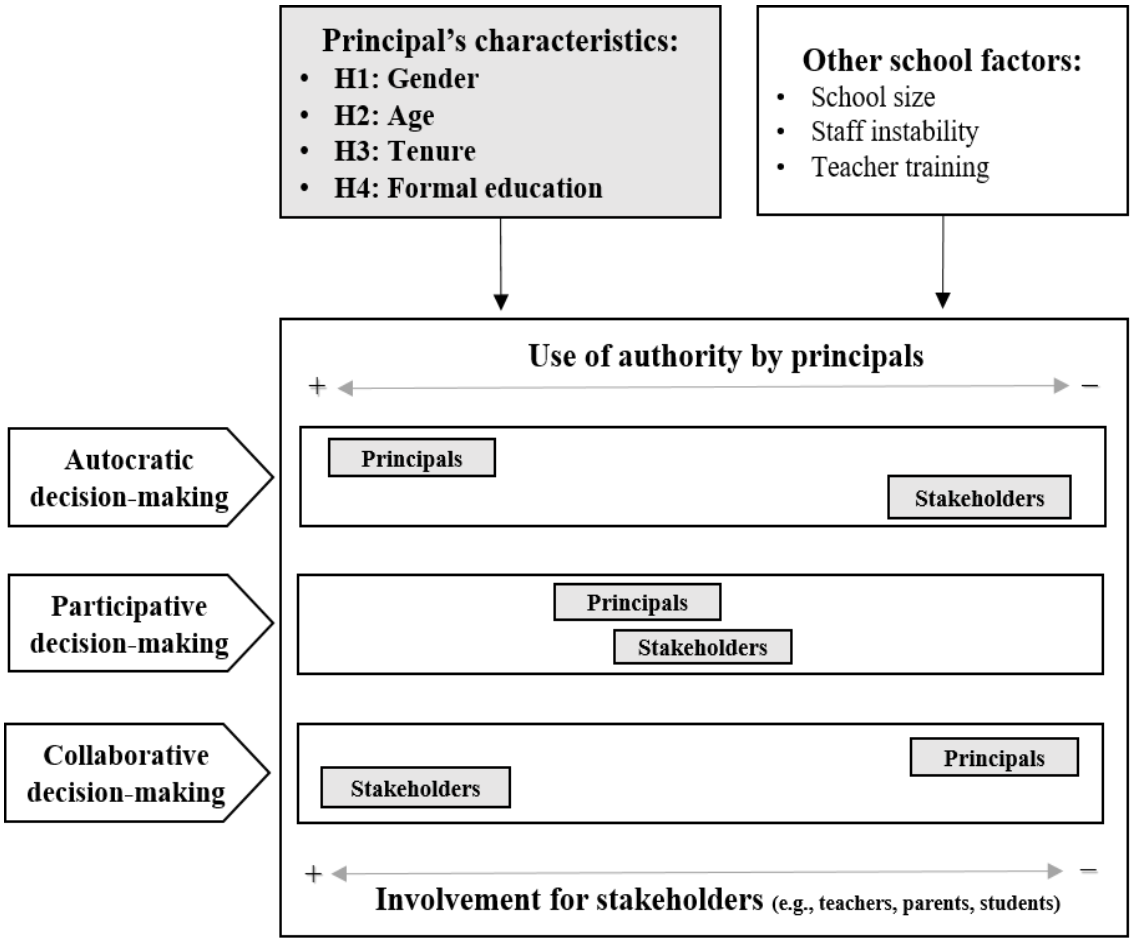
Variables	**Column 1 (Particip.)**	**Column 2 (Collab.)**	**Column 3 (Particip.)**	**Column 4 (Collab.)**	**Column 5 (Particip.)**	**Column 6 (Collab.)**
School size	0.012	-0.025			0.022	-0.038
Staff instability	-1.809	-1.439			-5.408**	-5.837**
Teacher training	5.28***	8.787***			6.370***	9.720***
Principal's gender (man)[(1)]			-0.506	-0.215	-0.065	-0.149
Principal's age (≤40) [(1)]			0.499	1.456	0.069	1.264
Principal's age (41-50) [(1)]			1.697[†]	4.102**	2.690[†]	4.868**
Principal's age (51-60)			0.205	1.136	1.662	0.585
Principal's tenure in the school (≤10 years)			1.418[†]	1.908*	5.038**	5.012*
Principal's tenure in the school (11-20 years)			0.239	1.093	0.564	0.738
Principal's formal education (Bachelor's degree)			-0.690	-3.579***	-0.079	-3.679**
Log-likelihood	*147.128*		*79.195*		*91.317*	
χ^2	*37.420***		*54.206****		*92.231****	
Pseudo R^2 (Cox and Snell)	*0.317*		*0.406*		*0.614*	
Pseudo R^2 (Nagelkerke)	*0.374*		*0.477*		*0.724*	
Pseudo R^2 (McFadden)	*0.203*		*0.273*		*0.505*	
Pearson χ^2	*192.385 (n.s.)*		*56.197 (n.s.)*		*100.350 (n.s.)*	
N	105		105		*105*	

[†] *p<0.1;* * *p<0.05*; ** *p<0.01*; *** *p<0.001*; *n.s.*: not significant.

[(1)] The values of the coefficients for the main independent variables of interest (gender, age, tenure and formal education) refer to the category that appears in brackets.

FIGURE 1

Relationships between a principal's demographic profile, other school factors, and modes of strategic decision-making



Source: The authors

APPENDIX

TABLE 3. Multinomial Logistic Regression (*Dependent variable=Modes of strategic decision-making; Autocratic is the reference level*)

Variables	Column 1 (Particip.)	Column 2 (Collab.)	Column 3 (Particip.)	Column 4 (Collab.)	Column 5 (Particip.)	Column 6 (Collab.)	Column 7 (Particip.)	Column 8 (Collab.)
School size	-0.018	-0.068*	-0.004	-0.061†	-0.010	-0.122*	-0.004	-0.142*
Financial resources (score =1)	-1.243	-4.650*	-1.252	-4.488†	-1.257	-4.580*	-2.810†	-4.719*
Financial resources (score =2)	-0.979	-4.573*	-1.352	-4.249†	-1.193	-4.507*	-1.907†	-4.693*
Financial resources (score =3)	-0.705	-4.245*	-1.006	-4.083*	-0.897	-4.291*	-1.800†	-4.238*
Staff instability	-1.980*	-1.001	-2.194*	-4.648*	-2.035†	-4.954*	-3.777*	-4.317*
Teacher workload	-1.455*	-0.994	-2.126*	-1.343	-2.086*	-1.407	-2.653**	-2.947*
Teacher specialization	2.818*	0.011	2.104†	0.688	2.725*	1.176	3.202**	2.457*
Principal's gender (man) [(1)]			-0.332	-0.916	-0.970	-1.003	-0.336	-1.128
Principal's age (≤40)			0.057	0.348	1.002	1.131	0.883	0.273
Principal's age (41-50)			3.172*	4.346*	4.842*	5.374*	3.948*	7.579*
Principal's age (51-60)			0.666	-0.243	1.287	-1.235	0.916	-1.699
Principal's tenure in the school (≤10 years)			4.462**	4.150*	4.339*	3.986*	6.117**	5.798*
Principal's tenure in the school (11-20 years)			0.037	-0.301	0.152	-0.588	0.641	-1.079
Principal's formal education (Bachelor's degree)			-0.352	-3.014*	-0.457	-3.493*	-0.139	-3.627*
Principal's gender * Principal's age (≤40)					-4.438	-3.160**		
Principal's gender * Principal's age (41-50)					-0.468	-0.325		
Principal's gender * Principal's age (51-60)					0.032	0.459		
Principal's formal education * Principal's age (≤40)							0.550	0.278
Principal's formal education * Principal's age (41-50)							1.342	3.679
Principal's formal education * Principal's age (51-60)							-2.362	-4.964
Log-likelihood	*147.131*		*95.232*		*84.365*		*72.796*	
χ^2	*36.396***		*88.295****		*99.162****		*101.731****	
Pseudo R^2 (Cox and Snell)	*0.313*		*0.598*		*0.640*		*0.681*	
Pseudo R^2 (Nagelkerke)	*0.368*		*0.704*		*0.754*		*0.802*	
Pseudo R^2 (McFadden)	*0.198*		*0.481*		*0.540*		*0.603*	
Pearson χ^2	*177.710 (n.s.)*		*111.230 (n.s.)*		*87.277 (n.s.)*		*135.806 (n.s.)*	

N= 105; † *p<0.1;* * *p<0.05*; ** *p<0.01*; *** *p<0.001*; *n.s.*: not significant.

[1)] The values of the coefficients for the main independent variables of interest (gender, age, tenure and formal education) refer to the category that appears in brackets.